Test Series: March, 2018

FOUNDATION COURSE

MOCK TEST PAPER

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time Allowed 3 Hours **Maximum Marks: 100**

QUESTIONS

PART A: BUSINESS MATHEMATICS: 40 MARKS

1. P, Q and R three cities. The ratio of average temperature between P and Q is 11: 12 and that between P and R is 9:8. The ratio between the average temperature Q and R

   (a) 22.27

   (b) 27.22

   (c) 32: 33

   (d) none

2. The third proportional between (a^2-b^2) and $(a+b)^2$ is :

   (a) $\frac{a+b}{a-b}$

   (b) $\frac{a-b}{a+b}$

   (c) $\frac{(a-b)^2}{a+b}$

   (d) $\frac{(a+b)^2}{a-b}$

3. If 8th term of an AP is 15, the Sum of the 15 its term is

   (a) 15

   (b) 0

   (c) 225

   (d) 225/2

4. For what values of x, the number $-\frac{2}{7}, x, -\frac{7}{2}$ are in G.P.?

   (a) $\pm$ 1

   (b) $\pm$ 3

   (c) $\pm$ 2

   (d) none of these

5. For what value of x; the sequence x+1, 3x, 4x+2 are in AP?

   (a) 3

   (b) 2

   (c) 4

   (d) 5

6. If $a^{1/x} = b^{1/y} = c^{1/z}$ and a,b,c are in GP then x, y, z are in

   (a) AP

   (b) GP

   (c) HP

   (d) AGP

7. The derivative of $e^x \log x$

   (a) $\frac{e^x}{x}(1+x\log x)$

   (b) $\frac{e^x}{x}(1+\log x)$

   (c) $(1+\log x)$

8. If $y = \sqrt{\frac{1-x}{1+x}}$ then $(1-x^2)\frac{dy}{dx}$ =

   (a) y

   (b) -x

   (c) -y

   (d) 0

9. Find the gradient of the curve $y = 3x^2-5x+4$ at the point (1, 2)

   (a) 1

   (b) -1

   (c) 0

   (d) 2

10. The equation of the curve in the form y = f(x) if the cuve passese through the point (1, 0) and Find f'(x) = 2x-1 is

    (a) $y = x^2-x$

    (b) $x= y^2-y$

    (c) $y = x^2$

    (d) none of these

11. $\int \frac{1}{x\log x}\,dx$ =?

    (a) log|x| + c

    (b) log |logx| + c

    (c) $(\log x)^2$ + c

    (d) none of these

12. $\int_1^2 \frac{2x}{1+x^2}dx$ is equal to

    (a) $\log_e(5/2)$

    (b) $\log_e 5 - \log_e 2+k$

(c) $\log_e(2/5)$

(d) none of these

13. Find *f o g* for the functions f (x) = x^8, g(x) = $2x^2+1$

(a) $x^8 (2x^2+1)$

(b) x^8

(c) $2x^2+1$

(d) $(2x^2+1)^8$

14. The number of proper subsets of the set {3, 4, 5, 6, 7} is

(a) 32

(b) 31

(c) 30

(d) 25

15. On the sets of lines in a plane the Relation "is perpendicular to" is

(a) Reflexive

(b) Symmetric

(c) Transitive

(d) none of these

16. In how many ways 3 prizes out of 5 van be distributed amongst 3 brothers equally

(a) 10

(b) 45

(c) 60

(d) 120

17. There 12 questions to be answered to be Yes or No. How Many ways this can be answered

(a) 1021

(b) 2048

(c) 4096

(d) None of the above

18. $15C_{3r}$ = 15 $C_{r+3,}$ then r is equal to

(a) 2

(b) 3

(c) 4

(d) 5

19. A polygon has 44 diagonals then the number of sides are

(a) 6

(b) 7

(c) 8

(d) 9

20. Number ways of painting of a face of a cube by 6 colours is

(a) 36

(b) 6

(c) 24

(d) 20

21. How many Six-digit telephone numbers can be formed by using 10 distinct digits

(a) 10^8

(b) 6^{10}

(c) $10C_9$

(d) $10P_6$

22. $nC_1+nC_2+nC_3+$…….=

(a) 2^n-1

(b) 2^n

(c) 2^n+1

(d) none of these

23. The value of $\log_{0.1} 0.001$ =

(a) 3

(b) 2

(c) 4

(d) 1/3

24. if $\log_4 x = -3/2$. Then x is

(a) 1/8

(b) ¼

(c) ½

(d) 1/3

25. A number consists of two digits. The digits in tens place is 3 times the digit in the unit's place. If 54 is subtracted from the digits are reversed. The number is

(a) 39

(b) 92

(c) 93

(d) 94

26. The equation $x^2 -(P+4) x + 2P+5 = 0$ has equal roots

The value of p is

(a) 2

(b) -2

(c) ± 2

(d) 3

27.

x	5	6	7	8
y	11	13	15	17

In the above table corresponding values of two variable x and y have been given. Which of the following equations establishes the relationship between the two variables?

(a) y=3x+2

(b) y=2x–1

(c) y=2x+1

(d) y=3x+1

28. A manufacturer produces two items A and B. He has `10,000 to invest and a space to store 100 its ms. A table costs him `400 and a chair `100. Express this in the form of linear inequalities.

(a) $x + y \leq 100,\ 4x + y \leq 100,\ x \geq 0,\ y \geq 0$

(b) $x + y \leq 1000,\ 2x + 5y < 1000,\ x \geq 0,\ y \geq 0$

(c) $x + y > 100,\ 4x + y \geq 100,\ x \geq 0,\ y \geq 0$

(d) none of these

29. Two matrices A and B are multiplied to get AB if

(a) both are rectangular

(b) both have same order

(c) no of columns of A is equal to rows of B

(d) no of rows of A is equal to no of columns of B

30. If |A| = 0, then A is

(a) zero matrix

(b) singular matrix

(c) non-singular matrix

(d) 0

31. If the order of matrix *A* is *m*×*p*. And the order of *B* is *p*×*n*. Then the order of matrix *AB* is?

(a) m × n

(b) n × m

(c) n × p

(d) m × p

32. if $A=\begin{pmatrix} 2i & 3i \\ 2i & -i \end{pmatrix}$ ($i^2=-1$) then $|A|$ = ?

(a) 2

(b) 8

(c) 4

(d) 5

33. Future value of Ordinary Annuity

(a) $A(n, i) = A\left\lfloor \frac{(1+i)^n - 1}{i} \right\rfloor$

(b) $A(n, i) = A\left[\frac{(1+i)^n + 1}{i}\right]$

(c) $A(n, i) = A\left[\frac{1-(1+i)^n}{i}\right]$

(d) $A(n, i) = A\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$

34. Nominal rate of Interest 9.9% p.a. If Interest is compounded monthly. What will be the effective rate of Interest? (Given $\left(\frac{4033}{4000}\right)^{12} = 1.1036$

(a) 10.36 %

(b) 9.36%

(c) 11.36%

(d) 9.9 %

35. A machine worth of Rs. 4,90,740 is depreciated at 15% on its opening value each year. When its value reduce to Rs. 2,00,000

(a) 5 years 6 months

(b) 5 years 7 months

(c) 5 years 5 months

(d) none

36. A sinking fund is created redeeming debentures worth Rs. 5,00,000 at the end of 25 years. How much provision need to be made out of profits each year provided sinking fund investments can earn at 4 % per annum

(a) 12,006

(b) 12,040

(c) 12039

(d) 12035

37. Nominal Rate of Return =

(a) Real Rate of Return – Inflation

(b) Real Rate of Return + Inflation

(c) Real Rate of Return / Inflation

(d) Real Rate of Return × Inflation

38. Net Present value≥ 0, then

(a) Accept the Proposal

(b) Reject the proposal

(c) Not Feasible

(d) None of the above

39. A sum of Money doubles itself at compound interest in 10years. In how many years will it become eight times

(a) 10

(b) 30

(c) 40

(d) 35

40. The time in which a sum of money will be doubled at 6% compound interest compounded interest compounded interest compounded annually approximately.

(a) 10 years

(b) 12 years

(c) 13 years

(d) 14 years

PART B: LOGICAL REASONING: 20 MARKS

41. 18, 24, 21, 27, ?, 30, 27

(a) 33

(b) 30

(c) 24

(d) 21

42. 5, 7, 11, ?, 35, 67

(a) 23

(b) 28

(c) 30

(d) 19

43. If GARDEN is coded as 325764 and WATER as 92165, how can we code the word WARDEN in the same way?

(a) 925764

(b) 295764

(c) 952764

(d) 957264

44. If F=6, MAT=34, then how much is CAR?

(a) 21

(b) 22

(c) 25

(d) 28

45. 1, 4, 9, 16, 20, 36, 49

(a) 1

(b) 9

(c) 20

(d) 36

46. 16, 25, 36, 72, 144, 196, 225

(a) 36

(b) 72

(c) 196

(d) 225

47. Mohan starts from point A and walks 1 km towards south, turns left and walks 1 km. Then he turns left again and walks 1 km. Now he is facing

(a) East

(b) West

(c) North

(d) South-West

48. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction she is now facing?

(a) South

(b) West

(c) East

(d) North

49. A car travelling from south covers a distance of 8 kms, then turns right and runs another 9 kms and again turns to the right and was stopped. Which direction does it face now?

(a) South

(b) North

(c) West

(d) East

50. There are five houses P, Q, R, S and T. P is right of Q and T is left of R and right of P. Q is right of S. Which house is in the middle?

(a) P

(b) Q

(c) T

(d) R

51. Six friends A, B, C, D, E and F are sitting in a row facing towards North, C is sitting between A and E, D is not at the end, B is sitting at immediate right of E, F is not at the right end, but D is sitting at 3rd left of E. Which of the following is sitting to the left of D?

(a) A

(b) F

(c) E

(d) C

52. Six girls are standing in such a way that they form a circle, facing the centre. Subbu is to the left of Pappu, Revathi is between Subbu and Nisha, Aruna is between Pappu and Keerthna. Who is to the right of Nisha?

(a) Ravathi

(b) Aruna

(c) Subbu

(d) Keerthana

53. A is B's brother. C is D'S father. E is B's mother. A and D are brothers. How is E related to C?

(a) Sister

(b) Sister-in- law

(c) Niece

(d) Wife

54. A is B's brother, C is A's mother, D is C's father, E is B's son, How is B related to D?

(a) Son

(b) Granddaughter

(c) Grandfather

(d) Great Grandfather

55. A is the mother of D and sister of B. B has a daughter C who is married to F. G is the husband of A. How is G related to D?

(a) Uncle

(b) Husband

(c) Son

(d) Father

56. P and Q are brothers. R and S are sister. P's son is S's brother. How is Q related to R?

(a) Uncle

(b) Brother

(c) Father

(d) Grandfather

57. Statements: Some Cats are Rats. All bats are tables. All Rats are Bats. Conclusion:

I. Some Cats are bats

II. All bats are rats

III. All tables are cats

IV. All bats are cats

(a) Only I & II follow

(b) Only II follows

(c) Only I & IV follow

(d) None of these

58. Statements: Some ships are boats. All boats are submarines. Some submarines are yatches. Conclusion:

I. Some yatches are boats.

II. Some submarines are boats.

III. Some submarines are ships.

IV. Some yatches are ships

(a) All follow

(b) Only II and III follow

(c) Only III follows

(d) Only IV follows

59. Statements: All Carrots are birds. Some telephones are Carrots. All bedsheets are telephone. Conclusion:

I. All bedsheet are birds

II. Some bedsheet are birds

III. Some birds are telephone

IV. All telephone are birds

(a) Only I follows

(b) Only II follows

(c) Only I and III follow

(d) Only III follows

60. Statements: Most CPUs are keyboards. No keyboard is a Mouse. All Mouses are CPU. Conclusion:

I. Some keyboards are CPU

II. All CPU's are Mouse

III. No Mouse is a keyboard

IV. Some Mouse are keyboard

(a) Only I follows

(b) Only II and III follow

(c) Only I and III follow

(d) Only II follows

PART: C STATISTICS: 40 MARKS

61. The _____ is satisfied when $P_{ab} \times P_{bc} \times P_{ca} = 1$

(a) Time reversal test

(b) Factor reversal test

(c) Circular Test

(d) none of these

62. The index number of prices at a place in 2008 is 355 with 2003 as base. This means

(a) There has been on the average a 255% increase in prices.

(b) There has been on the average a 355% increase in price.

(c) There has been on the average a 250% increase in price.

(d) None of these.

63. The number of tests of Adequacy

(a) 2

(b) 3

(c) 4

(d) 5

64. If two events A and B are independent, the probability that both will occur is given by
    (a) P(A) x P(B)
    (b) P (A) + P (B)
    (c) P(A) + P(B) – P(AUB)
    (d) P(A) + P(B) – P(A∩B)
65. If p: q is the odds in favor of an event, then the probability of that event is
    (a) p/q
    (b) $\frac{q}{p+q}$
    (c) $\frac{p}{p+q}$
    (d) none of these
66. If P (A) = 4/9; then the odd against the event 'A' is
    (a) 4:9
    (b) 4:5
    (c) 5:4
    (d) 4:14
67. If two letters are taken at random from the word HOME, what is the Probability that none of the letters would be vowels?
    (a) 1/6
    (b) 1/2
    (c) 1/3
    (d) ¼
68. Equations of two lines of regression are 4x+3y+7 = 0 and 3x+ 4y + 8 = 0, the mean of x and y are
    (a) 5/7 and 6/7
    (b) – 4/7 and –11/7
    (c) 2 and 4
    (d) None of these
69. Correlation Co-efficient is _____ of the units of measurements
    (a) Independent
    (b) Dependent
    (c) Both
    (d) none of these
70. If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient?
    (a) 0.01
    (b) 0.625
    (c) 0.4
    (d) 0.5

71. Statistics is concerned with
    (a) Qualitative information
    (b) Quantitative information
    (c) (a) or (b)
    (d) Both (a) and (b).
72. The standard deviation of 25, 32, 43, 53, 62, 59, 48, 31, 24, 33 is
    (a) 13.23
    (b) 12.33
    (c) 11.33
    (d) none of these
73. The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is
    (a) 0.675.
    (b) 67.50.
    (c) 2.70
    (d) 3.20.
74. If the range of x is 2, what would be the range of – 3x + 50?
    (a) 2
    (b) 6
    (c) -6
    (d) 44
75. If the quartile deviation of a normal curve is 4.05, then its mean deviation is
    (a) 5.26
    (b) 6.24
    (c) 4.24
    (d) 4.80
76. The mean of first 3 terms is 14 and the mean of next 2terms is 18. The mean of 5 numbers is
    (a) 14.5
    (b) 15
    (c) 14
    (d) 15.6
77. The Standard deviation is independent of change of
    (a) Origin
    (b) Scale
    (c) Both
    (d) none
78. If two variables are uncorrelated then regression lines are
    (a) Parallel
    (b) Perpendicular
    (c) Coincident

(d) Inclined at 45^0

79. When 'p' = 0.5, the
    (a) Asymmetrical.
    (b) Symmetrical.
    (c) Both of above.
    (d) None of above
80. In a normal distribution skewness is ___
    (a) 0
    (b) >3
    (c) <3
    (d) <1
81. If mean and standard deviation of a binomial distribution is 10 and 4 respectively; q will be ___
    (a) 0.4
    (b) 0.44
    (c) 40
    (d) 0.16
82. Which one is not a condition of Poisson model
    (a) the probability of having failures in a small time interval is constant
    (b) the probability of having success more than one in a small time interval is very small
    (c) the probability of having success in this time interval is independent of time 't' as well as earlier success
    (d) the probability of having success in a small time interval (t, t+td) is Kt for a positive constant k.
83. In _____ distribution, mean = variance.
    (a) Normal
    (b) Binomial
    (c) Poisson
    (d) none of these
84. The points of inflexion of the normal curve $f(t) = \frac{1}{4\sqrt{2\pi}} e^{\frac{-(t-10)^2}{32}}$ are
    (a) 6, 14
    (b) 5,15
    (c) 4,16
    (d) none of these
85. The mean of Binomial Distribution is 4 and the Standard Deviation $\sqrt{3}$. what is the value of P.
    (a) $\frac{1}{3}$
    (b) $\frac{1}{4}$

(c) $\frac{1}{5}$

(d) $\frac{3}{4}$

86. 'Stub' of a table is the _____ part of the table describing the _____.
    (a) Left, Columns
    (b) Right, Columns
    (c) Right, Rows
    (d) Left, Rows
87. The pair of averages whose value can be determined graphically?
    (a) Mean and Median
    (b) Mode and Mean
    (c) Mode and Median
    (d) None of these
88. Find the Expected value of the following distribution

x	-20	-10	30	75	80
P(x)	3/20	1/5	1/2	1/10	1/20

    (a) 20.5
    (b) 21.5
    (c) 22.5
    (d) 24.5
89. Secular trend can be measured by:
    (a) Two methods
    (b) Three methods
    (c) Four methods
    (d) Five methods
90. Increase in the number of patients in the hospital due to heat stroke is:
    (a) Secular trend
    (b) Irregular variation
    (c) Seasonal variation
    (d) Cyclical variation
91. The multiplicative time series model is:
    (a) Y = T + S + C + I
    (b) Y = TSCI
    (c) Y= a+bx
    (d) $y = a+bx+Cx^2$
92. The difference between the upper and lower limit of a class is called
    (a) Class Interval
    (b) Mid Value

(c) Class Boundary

(d) Frequency

93. A man travels from Delhi to Agra at an average speed of 30km per hour and back at an average speed of 60 km per hour. What's the average Speed.

(a) 48 Km/ hr

(b) 40 km/hr

(c) 45 km/hr

(d) 35 km/hr

94. If the mean of frequency distribution is 100 and coefficient of variation is 45% then standard deviation is.

(a) 45

(b) 0.45

(c) 4.5

(d) 450

95. if the mean and SD of X are a and b respectively, then the S.D of $\frac{x-a}{b}$ is

(a) a/b

(b) -1

(c) 1

(d) ab

96. Standard Error of Correlation coefficient

(a) $\frac{1-r^2}{\sqrt{N}}$

(b) $\frac{1+r^2}{\sqrt{N}}$

(c) $\frac{1+r^2}{N}$

(d) $\frac{1-r}{N}$

97. Probable Error can be obtained using Correlation coefficient as

(a) $0.675 \times \frac{1-r^2}{\sqrt{N}}$

(b) $\frac{2}{3} \times \frac{1+r^2}{\sqrt{N}}$

(c) $\frac{1+r^2}{N}$

(d) $\frac{1-r^2}{r^2}$

98. What is exclusive Series

(a) In which both upper and lower limit are not included in class frequency

(b) In which lower limit is not included class frequency

(c) In which upper limit is not included in class frequency

(d) None of the above

99. If the arithmetic mean between two numbers is 64 and the Geometric Mean between them is 16 . The Harmonic mean between them is ___

(a) 64

(b) 4

(c) 16

(d) 40

100. When the mean is 3.57 and mode is 2.13, then the value of median is ___

(a) 3.09

(b) 5.01

(c) 5.01

(d) none of these.

Test Series: March, 2018

FOUNDATION COURSE

MOCK TEST PAPER

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

ANSWERS

PART A: BUSINESS MATHEMATICS

1	**(b)**	2	**(d)**	3	**(c)**	4	**(a)**	5	**(a)**
6	**(a)**	7	**(a)**	8	**(c)**	9	**(a)**	10	**(a)**
11	**(b)**	12	**(b)**	13	**(d)**	14	**(b)**	15	**(b)**
16	**(c)**	17	**(c)**	18	**(b)**	19	**(d)**	20	**(b)**
21	**(d)**	22	**(a)**	23	**(a)**	24	**(a)**	25	**(c)**
26	**(c)**	27	**(c)**	28	**(a)**	29	**(c)**	30	**(b)**
31	**(a)**	32	**(b)**	33	**(a)**	34	**(a)**	35	**(a)**
36	**(a)**	37	**(b)**	38	**(a)**	39	**(b)**	40	**(b)**

PART B: LOGICAL REASONING

41	**(c)**	42	**(d)**	43	**(a)**	44	**(b)**	45	**(c)**
46	**(b)**	47	**(c)**	48	**(b)**	49	**(a)**	50	**(a)**
51	**(b)**	52	**(a)**	53	**(d)**	54	**(b)**	55	**(d)**
56	**(a)**	57	**(d)**	58	**(b)**	59	**(d)**	60	**(c)**

PART C: STATISTICS

61	**(c)**	62	**(a)**	63	**(c)**	64	**(a)**	65	**(c)**
66	**(c)**	67	**(a)**	68	**(b)**	69	**(a)**	70	**(b)**
71	**(d)**	72	**(a)**	73	**(c)**	74	**(b)**	75	**(d)**
76	**(d)**	77	**(a)**	78	**(b)**	79	**(b)**	80	**(a)**
81	**(a)**	82	**(a)**	83	**(a)**	84	**(a)**	85	**(b)**
86	**(d)**	87	**(c)**	88	**(b)**	89	**(c)**	90	**(b)**
91	**(b)**	92	**(a)**	93	**(b)**	94	**(a)**	95	**(c)**
96	**(a)**	97	**(a)**	98	**(c)**	99	**(b)**	100	**(a)**

Test Series: October, 2018

FOUNDATION COURSE

MOCK TEST PAPER - 2

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time Allowed 3 Hours **Maximum Marks: 100**

PART A: BUSINESS MATHEMATICS

QUESTIONS

1. For a, b, c > 0 the value of each ratio is

   $\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b}$, then find the value of each ratio if $a + b + c \neq 0$

   (a) ½

   (b) 1/3

   (c) ¼

   (d) 1

2. If $\frac{x}{b+c-a} = \frac{y}{c+a-b} = \frac{z}{a+b-c}$, then find the value of $(b - c)x + (c - a)y + (a - b)z =$

   (a) 0

   (b) -1

   (c) +1

   (d) ½

3. x:y:z = 2:3:5 . If x+y+z = 60 then the value of z is

   (a) 30

   (b) 15

   (c) 9

   (d) 12

4. Simplify $\log_2 3 \log_3 4 \log_4 5 \log_5 6 \log_6 7 \log_7 8$

   (a) 2

   (b) 3

   (c) 4

   (d) 3/2

5. The roots of the equation $x^3 + x^2 - 20x = 0$

   (a) 0, 4,5

   (b) 0,-4,5

   (c) 0,4, -5

   (d) 0, -4, -5

6. Find the quadratic equation Sum of whose roots is 3 and the Sum of the cubes of roots is 7

   (a) $21x^2 - 147x + 20 = 0$

   (b) $21x^2 + 147x + 20 = 0$

   (c) $21x^2 - 147x - 20 = 0$

(d) $-21x^2 - 147x + 20 = 0$

7. Find the quadratic equation given that $5+\sqrt{3}$ is one root

(a) $x^2 - 10x + 22 = 0$

(b) $x^2 + 10x - 22 = 0$

(c) $x^2 - 10x - 22 = 0$

(d) $-x^2 - 10x + 22 = 0$

8. If α and β are the roots of the equation $3x^2 - 5x + 3 = 0$ then the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ is

(a) 7/9

(b) -7/9

(c) 8/9

(d) -8/9

9. Find the truth set of $3x - 6 < 3$

(a) $\{x : x < 5\}$

(b) $\{x : x > 5\}$

(c) $\{x : x < 3\}$

(d) $\{x : x \leq 3\}$

10. Find the value of $\frac{x}{3} - \frac{1}{4}(x+2) > 3x - 1\frac{1}{3}$

(a) $x < 2/7$

(b) $x > 2/7$

(c) $x < 3/7$

(d) $x > 4/7$

11. A manufacturer produces two items A and B. He has Rs.10,000 to invest and a space to store 100 items. A table costs him Rs.400 and a chair Rs.100. Express this in the form of linear inequalities.

(a) $x + y \leq 100,\ 4x + y \leq 100,\ x \geq 0,\ y \geq 0$

(b) $x + y \leq 1000,\ 2x + 5y < 1000,\ x \geq 0,\ y \geq 0$

(c) $x + y > 100,\ 4x + y \geq 100,\ x \geq 0,\ y \geq 0$

(d) none of these

12. A sum of money placed at compound interest double itself in 3 years. In how many years will it amount to eight times itself?

(a) 5 years

(b) 9 years

(c) 8 years

(d) 7 years

13. The difference between the compound interest and simple interest on Rs. 1,000 for 2 years at the rate of 10% per annum is

(a) Rs.40

(b) Rs.20

(c) Rs.30

(d) Rs.10

14. Sanjana borrows Rs.5,00,000 to buy a house. If she pays equal instalments for 20 years and 10% interest on outstanding balance what will be the equal annual installment? ([P(20,0.10) = 8.51356)

(a) Rs. 58,729.84

(b) Rs. 58,792.54

(c) Rs. 85,729.54

(d) Rs. 85,792.45

15. X bought a TV costing 25,000 making down payment of Rs. 5000 and agreeing to make equal annual payment for four years. How much would be each payment if the interest on unpaid amount be 14% compounded annually? [P(4, 0.14) = 2.91731]

(a) Rs.6855.63

(b) Rs.6850.63

(c) Rs.6859

(d) Rs.6871

16. In how many ways can the letters of words "ACCOUNTANT" be arranged if vowels always occur together?

(a) 7560

(b) 7650

(c) 7660

(d) 7550

17. From a committee of 8 persons, in how many ways can we choose a chairman and a vice chairman assuming one person cannot hold more than one position?

(a) 50

(b) 56

(c) 62

(d) none of these

18. $\int \frac{1}{x \log x} dx$ =?

(a) log|x| + c

(b) log |logx| + c

(c) $(\log x)^2 + c$

(d) none of these

19. If $x = at^2$ and $y = 2at$ then $\frac{dy}{dx}$ at t = 1

(a) 2

(b) 1

(c) 1/2

(d) $\frac{1}{2a}$

20. $\int_0^2 \frac{\sqrt{x}}{\sqrt{x}+\sqrt{2-x}}dx$ is equal to

(a) -1

(b) 0

(c) 2

(d) 1

21. The marginal cost function for production is $10+24x-3x^2$. If the total cost of producing one unit is Rs. 25 find the total cost function.

(a) $4+10x+12x^2-x^3$

(b) $4+10x-12x^2+x^3$

(c) $4+10x-12x^2-x^3$

(d) $4-10x-12x^2-x^3$

22. If $y = e^x - e^{-x}$ then $\frac{dy}{dx} - \sqrt{y^2+4}$ is equal to

(a) 1

(b) 0

(c) -1

(d) none of these

23. Evaluate: $\int \frac{1}{x(x+1)}dx$

(a) x+log (x+1)+c

(b) x–log (x+1)+c

(c) $\log x - \log(x+1) + c$

(d) none of these

24. The domain of {(1,7),(2.6)} is

(a) (1,6)

(b) (7,6)

(c) (1,2)

(d) {6,7}

25. The point of Intersection between the straight lines 3x+2y=6 and 3x-y=12 lie in

(a) 1st quadrant

(b) 2nd quadrant

(c) 3rd quadrant

(d) 4th quadrant

26. An employer recruits experienced (x) and fresh work men (y) for his firm under the condition that he can't employ more than 9 people .x and y can be related by the inequality

(a) $x+y\neq 9$

(b) $x+y\leq 9, x\geq 0, y\geq 0$

(c) $x+y \geq 9, x \geq 0, y \geq 0$

(d) none of these

27. A machine can be purchased for Rs. 50,000. Machine will contribute Rs. 12,000 per year for the next five years. Assume borrowing cost is 10% per annum compounded annually. Determine whether machine would be purchased or not?

(a) Purchased

(b) Not purchased

(c) Profitable

(d) None of the above

28. If the effective interest is 12% per annum and the interest is compounded quarterly, the nominal interest per annum is.

(a) 11.78 %

(b) 11.21%

(c) 11.89%

(d) 11.49%

29. A machine depreciated at the rate of 20% on reducing balance. The original lot of the machine was Rs. 1,00,000 and ultimate scarp value is Rs. 30,000. The effective life of the machine in years is.

(a) 4.5

(b) 5.4

(c) 4.9

(d) 5

30. The future value of annuity on Rs. 5000 a year for 7 years at 14% per annum compound interest is given $(1.14)^7 = 2.5023$

(a) Rs.5300

(b) Rs.53653.57

(c) Rs.5480

(d) Rs.5465.23

31. Rs, 5,000 is paid every year for ten years to pay off a loan , what is the loan amount the loan amount if interest rate be 14% per annum compounded annually is (Given P(10, 0.14) = 5.21611)

(a) Rs.26080.55

(b) Rs.1917.13

(c) Rs. 52,161.1

(d) Rs. 19,171, 3

32. $A \cap A$ is equal to

(a) A

(b) φ

(c) Universal Set

(d) none of these

33. If $f(x) = x+3$, $g(x) = x^2$, then fog(x)

(a) x^2+3

(b) x^2+x+3

(c) $(x+3)^2$

(d) none of these

34. ${}^{n+2}C_n = 45$ find the value of n

(a) 7

(b) 8

(c) 9

(d) 6

35. Assuming that the discount rate is 7% per annum , how much would you pay to receive Rs.50 , growing at 5% annually forever ?

(a) 2,600

(b) 2,000

(c) 2,500

(d) 3,000

36. Transpose of a rectangular Matrix is

(a) Rectangular Matrix

(b) Diagonal Matrix

(c) Square matrix

(d) Scalar Matrix

37. What's a, if A = $\begin{pmatrix} 2 & 3 \\ 4 & a \end{pmatrix}$ is a singular matrix ?

(a) 5

(b) 6

(c) 7

(d) 8

38. The two arithmetic means between 4 and 13 are

(a) 7,10

(b) 3,14

(c) 5,12

(d) 6,11

39. The Sum of First n terms of an A.P is $5n^2+7n$. The 10^{th} term is

(a) 101

(b) 96

(c) 84

(d) 102

40. Four letters are written and 4 envelopes are addressed. The number of ways in which all the 4 letters do not go into correct envelopes is

(a) 511

(b) 1023

(c) 23

(d) 15

Part B : Logical Reasoning

41. 10, 18, 28, 40, 54, ?, 88

(a) 70

(b) 86

(c) 87

(d) 98

42. 18, 24, 21, 27, ?, 30, 27

(a) 33

(b) 30

(c) 24

(d) 21

43. If F=6, MAT=34, then how much is CAR?

(a) 21

(b) 22

(c) 25

(d) 28

44. If in a certain language NAME is written as 4258 then what is coded as MEAN?

(a) 2458

(b) 5842

(c) 8524

(d) 5824

45. 52, 51, 48, 43, 34, 27, 16

(a) 27

(b) 34

(c) 43

(d) 48

46. 1, 4, 9, 16, 24, 25, 36

(a) 9

(b) 24

(c) 25

(d) 36

47. A man is facing East, then he turns left and goes 10 m, then turns right and goes 5 m then goes 5 m to the South and from there 5 m to West. In which direction is to be from his original place?

(a) East

(b) West

(c) North

(d) South

48. A rat run 20 feet towards East and turns to right runs 10 feet and turns to right runs 9 feet and again turns to left runs 5 feet and then turns to left runs 12 feet and finally turns to left and runs 6 feet . Now what direction is the rat facing.

(a) East

(b) North

(c) West

(d) South

Six persons P, Q, R, S, T and U are sitting in two rows, three in each.

T is not at the end of any row

S is the second to the left of U

R the neighbour of T, is sitting diagonally opposite to S.

Q is the neighbour of U

49. Which of the following are sitting diagonally opposite to each other?

(a) U and R

(b) S and P

(c) P and R

(d) P and U

(e) P and Q

50. Which of the following are in the same row?

(a) P and T

(b) T and S

(c) R and Q

(d) P and Q

(e) R and T

51. Which of the following are in one of the two rows?

(a) UQR

(b) RTQ

(c) SQU

(d) PTU

(e) PQU

52. After interchanging seat with T, who will be the neighbours of S in the new position?

(a) R and P

(b) U and Q

(c) Only Q

(d) Only P

(e) Only R

53. P and Q are brothers. R and S are sister. P's son is S's brother. How is Q related to R?
    (a) Uncle
    (b) Brother
    (c) Father
    (d) Grandfather
54. A is B's daughter. B is C's mother. D is C's brother. How is D is related to A?
    (a) Father
    (b) Brother
    (c) Son
    (d) Grandfather
55. A and B are brothers. E is the daughter of F. F is the wife of B. What is the relation of E to A?
    (a) Sister
    (b) Daughter
    (c) Niece
    (d) Cousin
56. X and Y are the children of A. A is the father of X but Y is not his son. How is Y related to A?
    (a) Sister
    (b) Brother
    (c) Son
    (d) Daughter
57. Statement: All pens are cups.
    All cups are bowls.
    Conclusions: I. All pens are bowls.
    II. All cups are pots.
    (a) If only I follows
    (b) If only conclusion II follows
    (c) If either I and II follows
    (d) If neither I nor II follows
    (e) If both I and II follow
58. Statement: All tables are rats.
    Some rats are chairs.
    Conclusions: I. All rats are tables.
    II. Some chairs are not rats.
    (a) If only I follows
    (b) If only conclusion II follows
    (c) If either I and II follows
    (d) If neither I nor II follows
    (e) If both I and II follow

59. Statement: Some cats are kittens.

All rats are kittens.

Conclusions: I. Some cats are rats.

II. Some rats are cats.

(a) If only I follows

(b) If only conclusion II follows

(c) If either I and II follows

(d) If neither I nor II follows

(e) If both I and II follow

60. Statement: Some chairs are caps.

No cap is red.

Conclusions: I. Some caps are chairs.

II. No chair is red.

(a) If only I follows

(b) If only conclusion II follows

(c) If either I and II follows

(d) If neither I nor II follows

(e) If both I and II follow

Part C : Statistics

61. Correlation Co-efficient is _____ of the units of measurements

(a) Independent

(b) Dependent

(c) Both

(d) none of these

62. If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient?

(a) 0.01

(b) 0.625

(c) 0.4

(d) 0.5

63. Two lines of regression are given by 5x+7y–22=0 and 6x+2y–22=0. If the variance of y is 15, find the standard deviation of x?

(a) $\sqrt{5}$

(b) $\sqrt{7}$

(c) $\sqrt{6}$

(d) $\sqrt{8}$

64. In a normal distribution skewness is ___

(a) 0

(b) >3

(c) <3

(d) <1

65. The mean of 1,2,3, ……. n is $\frac{6x}{11}$; then the value of x is

(a) 14

(b) 13

(c) 126

(d) 11

66) Two variables x and y satisfy the relation 3x - 2y - 25 = 0 the mode of x is 25. Then the mode of y is:

(a) 25

(b) 30

(c) 37.5

(d) 52/3

67. for two numbers "a" and "b", Standard Deviation given by

(a) $\frac{|a-b|}{2}$

(b) $\sqrt{\frac{a-b}{2}}$

(c) $\frac{a+b}{2}$

(d) $\sqrt{\frac{a+b}{2}}$

68. Which measure of dispersion is not affected in the presence of extreme observations?

(a) Range

(b) Mean deviation

(c) Standard deviation

(d) Quartile deviation

69. If x and y are related as 3x + 4y = 20 and the quartile deviation of x in 12. Then the Quartile deviation of y is:

(a) 16

(b) 14

(c) 10

(d) 9

70. For the two of towns, the co-efficient of rank correlation between the people living below the poverty line and increase population in 0.50. The sum of the squares difference in ranks awarded to their factors is 82.50, find the number of towns:

(a) 10

(b) 11

(c) 12

(d) 9

71. For a bivariate frequency table having (p + q) classification the total number of cells is

(a) P

(b) P + q

(c) q

(d) pq

72. The two lines of regression becomes identical when

(a) r = 1

(b) r = -1

(c) r = 0

(d) (a) or (b)

73. If x and y are two correlated variables with correlation coefficient 0.60. If u =3x +5 and V = 5y-7. The correlation coefficient of U and V is:

(a) - 0.60

(b) 0.60

(c) 1

(d) 0.36

74. If the two regression co-efficient are 4 and 16 the percentage of unexplained variation is:

(a) 64

(b) 36

(c) 54

(d) 46

75. _____ in the entire upper part of the table which includes columns and sub-column numbers, unit(s) measurement

(a) Stub

(b) Box-head

(c) Body

(d) Caption

76. r, bxy, byx all have_____sign.

(a) Different

(b) Same

(c) Both

(d) None of them

77. For a random variable x; the probability deviatory function is given by:

$f(x) = \frac{e^{-(x-4)^2}}{\sqrt{\Pi}}$ for $-\infty < x < \infty$ Find the mean and variance of its distribution

(a) $\mu = 2;\ \sigma^2 = \frac{1}{4}$

(b) $\mu = 4;\ \sigma^2 = \frac{1}{2}$

(c) $\mu = \frac{1}{4};\ \sigma^2 = \frac{1}{2}$

(d) None of them

78. Find the points of inflexion of the normal curve

$f(x) = \frac{1}{4\sqrt{2\pi}} . e^{\frac{-(x-10)^2}{32}}$ for $-\infty < x < \infty$

(a) 6 and 14

(b) 6 and 12

(c) 7 and 10

(d) 10 and 12

79. If x and y are independent normal variably with mean 100 and 80 respectively and Standard deviation as 4 and 3 respectively. What is the Standard deviation of (x+y) ?

(a) (180, 5)

(b) (180, 25)

(c) (100, 15)

(d) None of them

80. The value of e is

(a) 2.7183

(b) 2.1786

(c) 2.1643

(d) 0

81. ____is an extent of time reverted test

(a) Factor reversal test

(b) Circular Test

(c) Both

(d) None of them

82. The ideal average particular suitable for the construction of Index number is

(a) AM

(b) GM

(c) HM

(d) None

83. Consumer price Index number from a year 2004 to 2010 changed 100 to 200. The salary of an employee has changed from Rs.3,000 to

(a) Rs.3,500

(b) Rs.2,500

(c) Rs.6,000

(d) Rs.3,500

84. A, B and C are three mutually exclusive and exhaustive events such that P(A)=2P(B)=3P(C). What is P(B)?

(a) 6/11

(b) 3/11

(c) 1/6

(d) 1/3

85. The odds in favour of an event is 2:3 and the odds against another event is 3:7. Find the probability that only one of the two events occurs.

(a) $\frac{27}{50}$

(b) $\frac{17}{50}$

(c) $\frac{37}{50}$

(d) none of these

86. Given that P(A) =1/2 and P(B) =1/3 ,P(A∩B)=1/4,what is P(A'/B')

(a) 1/2

(b) 7/8

(c) 5/8

(d) 2/3

87. The probability distribution of a random variable is as follows

X	1	2	4	6	8
P	k	2k	3k	3k	k

The variance of x is

(a) 2.1

(b) 4.41

(c) 2.32

(d) 2.47

88. If x is a Poisson variate such that P(x=2) = 9P(x=4) + 90P(x=6), find mean of x.

(a) m = 2

(b) m = 1

(c) m = ± 1

(d) m = –4

89. The probability of A solving a problem is $\frac{7}{12}$ the odds against solving a problem

(a) 5:7

(b) 4:7

(c) 5:8

(d) 4:5

90. If variance of random variable x is 23, then what's the variance of 2x+10

(a) 56

(b) 33

(c) 46

(d) 92

91. The coefficient of Mean deviation about mean for the first 9 natural numbers?

(a) 200/9

(b) 80

(c) 400/9

(d) 50

92. Mode of distribution can be obtained from

(a) Histogram

(b) Less than type of ogives

(c) More than type of ogives

(d) Frequency polygon

93. If cov (x, y) = 25, what restrictions should put for the standard deviations of x and y?

(a) No restriction

(b) The product of Standard deviations should be more than 25

(c) The product of Standard deviations should be less than 25

(d) The sum of Standard deviations should be less than 25

94. What is the coefficient of variation of x, characterised by the following probability density function: f(x) = $\frac{1}{4\sqrt{2\pi}}\, e^{\frac{-(x-10)^2}{32}}$ for $-\alpha < x < \alpha$

(a) 50

(b) 60

(c) 40

(d) 30

95. A binomial distribution has n= 48, p = ¼. Then SD

(a) 12

(b) 3

(c) 6

(d) 8

96. Median of a distribution can be obtained from

(a) Frequency polygon

(b) Histogram

(c) Less than type ogives

(d) None of these.

97. Using the following table for trend values taken three year Moving Averages using a, b and C are

Year	Profit	3 Yearly Moving Averages
2002	40	----
2003	60	a
2004	68	b
2005	70	c
2006	90	-----

(a) AP

(b) HP

(c) GP

(d) Neither AP or nor HP or GP

98. The sum of the squares of deviations of a Set of observations has the smallest value. when the deviations are taken from their:

(a) A.M

(b) H.M

(c) G.M

(d) None of these

99. An areophane flies from A to B at the rate of 500 Km/hr and comes back from B to A at the rate of 700 km/ hr. The average speed of the areophane

(a) 600 km/hr

(b) 583.33km/hr

(c) $100\sqrt{35}$ km/hr

(d) 620 km / hr

100. ____& _____ are called ratio averages

(a) H.M and G.M

(b) H.M and A.M

(c) A.M and G.M

(d) None

Paper 4: Business Mathematics, Logical Reasoning and Statistics

Key Part A: Business Mathematics

1	**(a)**	2	**(a)**	3	**(a)**	4	**(b)**	5	**(c)**
6	**(a)**	7	**(a)**	8	**(a)**	9	**(c)**	10	**(a)**
11	**(a)**	12	**(b)**	13	**(d)**	14	**(a)**	15	**(a)**
16	**(a)**	17	**(b)**	18	**(b)**	19	**(d)**	20	**(d)**
21	**(c)**	22	**(b)**	23	**(c)**	24	**(c)**	25	**(d)**
26	**(b)**	27	**(a)**	28	**(d)**	29	**(b)**	30	**(b)**
31	**(a)**	32	**(a)**	33	**(a)**	34	**(b)**	35	**(c)**
36	**(a)**	37	**(b)**	38	**(a)**	39	**(d)**	40	**(c)**

Key Part B: Logical Reasoning

41	**(a)**	42	**(c)**	43	**(b)**	44	**(d)**	45	**(b)**
46	**(b)**	47	**(c)**	48	**(b)**	49	**(d)**	50	**(a)**
51	**(c)**	52	**(a)**	53	**(a)**	54	**(b)**	55	**(c)**
56	**(d)**	57	**(a)**	58	**(d)**	59	**(d)**	60	**(a)**

Key Part C: Statistics

61	**(a)**	62	**(b)**	63	**(b)**	64	**(a)**	65	**(d)**
66	**(a)**	67	**(a)**	68	**(d)**	69	**(d)**	70	**(a)**
71	**(d)**	72	**(d)**	73	**(b)**	74	**(b)**	75	**(b)**
76	**(b)**	77	**(b)**	78	**(a)**	79	**(a)**	80	**(a)**
81	**(b)**	82	**(b)**	83	**(c)**	84	**(b)**	85	**(a)**
86	**(c)**	87	**(b)**	88	**(b)**	89	**(a)**	90	**(d)**
91	**(c)**	92	**(a)**	93	**(b)**	94	**(c)**	95	**(b)**
96	**(c)**	97	**(a)**	98	**(a)**	99	**(b)**	100	**(a)**

Test Series: August, 2018

FOUNDATION COURSE

MOCK TEST PAPER - 1

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time Allowed 3 Hours **Maximum Marks: 100**

PART A: BUSINESS MATHEMATICS

QUESTIONS

1. For p, q, r, s > 0 the value of each ratio is

$$\frac{p}{q+r}=\frac{q}{r+s}=\frac{r}{s+p}=\frac{s}{p+q}$$

(a) ½

(b) 1/3

(c) ¼

(d) 1

2. Let x, y and z are three positive numbers and P = $\frac{x+y+z}{2}$; if (p-x): (p-y): (p-z) = 3:5:7 then the ratio of x:y:z is

(a) 4:5:6

(b) 6:5:4

(c) 3:5:7

(d) 7:5:3

3. if x = $\sqrt{\sqrt{6}+6+(\sqrt{7+2\sqrt{6}})}-\sqrt{6}$ then the value

(a) 1

(b) 2

(c) 3

(d) 6

4. If $\log_7\log_5\left(\sqrt{x+5}+\sqrt{x}\right)$ = 0, the value of x is

(a) 0

(b) 1

(c) ¼

(d) 4

5. if α,β,γ are the roots of equation x^3-4x^2+x+6 then the equation roots are $\frac{1}{\alpha},\frac{1}{\beta}and\frac{1}{\gamma}$ is

(a) $x^3-4x^2+x+6=0$

(b) $4x^3-6x^2+x-1=0$

(c) $6x^3+x^2-4x+1=0$

(d) $6x^3-x^2+4x-1=0$

6. For the value of x will the matrix $\begin{bmatrix} 3 & 1 & 2 \\ x & 2 & 4 \\ 2 & 3 & 6 \end{bmatrix}$ become singular:

(a) 4

(b) 6

(c) 8

(d) 12

7. A number consist of three digit of which the middle one is zero and the sum of other digits is 9. The number formed by interchanging the first and third digits is more than the original number by 297 find the number?

(a) 306

(b) 309

(c) 603

(d) 307

8. The age of a person is twice the sum of the ages of his two sons and five years ago his age was thrice the sum of their ages. Find his present age.

(a) 60 years

(b) 52 years

(c) 51 years

(d) 50 years

9. The Solution of the 8 in equality $8x+6 < 12x+14$ is

(a) (-2,2)

(b) (0, -2)

(c) $(2, \infty)$

(d) $(-2, \infty)$

10. The rules and representations demand that employed should employ not more than 8 expressed leads to 1 fresh one and then fact can be expressed as

(a) $y \geq x/8$

(b) $8y \leq x$

(c) $8y = x$

(d) $y = 8x$

11. on the average experienced person does 6 units work while A person 2 units of work daily but employer has to maintain as output of at least 24 units of per day. This situation can be expressed as

(a) $6x +2y \leq 24$

(b) $6x+2y = 24$

(c) $6x+2y \geq 24$

(d) $6x+2y \neq 4$

12. A lent Rs. 6000 to B for 2 years and 1500 to C for 4 years and received total interest of Rs. 900 from both. The rate of interest of Rs. 900 from both. The rate of interest, when simple interest method calculated.

    (a) 5%

    (b) 6%

    (c) 7.5%

    (d) 9%

13. If the difference between the interests received from two different banks on Rs. 5000 for 2 years is Rs. 50 then the difference between this rates.

    (a) 0.25 %

    (b) 0.40%

    (c) 0.50%

    (d) 0.75%

14. The simple interest of P % for P years will be Rs. P on a sum of :

    (a) Rs. $\frac{P}{100}$

    (b) Rs. $\frac{100}{P}$

    (c) Rs. ($\frac{P}{100}$ +1)

    (d) Rs. $\left(\frac{100}{P}-1\right)$

15. The compound interest on a certain sum is Rs. 209 simple interest is Rs. 200 for 2 years. What is the rate per cent for 2 years? what is the rate percent?

    (a) 9%

    (b) 18%

    (c) 4.5%

    (d) 10%

16. The value of a machine depreciates 12% annually. If the present value of Rs.68,1450 then its value in 3 years ago was.

    (a) Rs. 1,10,000

    (b) Rs. 1,00,00

    (c) Rs. 92,000

    (d) Rs. 97,000

17. What principal will amount to Rs. 370 in 6 years at 8% p.a. at simple interest

    (a) Rs.210

    (b) Rs.250

    (c) Rs.310

    (d) Rs.310

18. The effective rate of interest is an amount Rs. 25,000 is deposited in a bank for one year at value of 6% per annum compounded semi-annually is

    (a) 5.99%

    (b) 5.95%

    (c) 6.09%

    (d) 6.90%

19. Find the future value of annuity Rs.1000 made annually for 7 years at interest rate of 14% compounded annually is ____ Given $(1.14)^6 = 2.5023$

    (a) Rs.10730.71

    (b) Rs.10735

    (c) Rs.10734

    (d) Rs.10237

20. Rs. 10,000 is paid every year to off a loan, the loan amount if interest be 14% per annum compounded annually is (Given P(10, 0.14) = 5.21611)

    (a) Rs.5216.11

    (b) Rs.1917.13

    (c) Rs. 52,161.1

    (d) Rs. 19,171, 3

21. The present value of Rs.1 to be receive after 3 year compounded annually at 11% interest is

    (a) 0.713

    (b) 0.811

    (c) 0.731

    (d) 0.658

22. Suppose your further decides to gift you Rs. 5,000 every year starts from today for the next four years. You deposit the amount is a bank as and when you receive and get 10% per annum interest rate compound annually. The present value of this annuity is --------(given P(3,0.10) = 2.48685)

    (a) Rs. 17,434.25

    (b) Rs. 17,344.25

    (c) Rs.17434.52

    (d) Rs. 17,344.52

23. Find the Present value of Rs.10,000 to be required after 5 years , If the Interest be 9 % . Given $(1.09)^5 = 1.5386$

    (a) Rs.6500

    (b) Rs. 6499.42

    (c) Rs. 6600.52

    (d) Rs.6700.52

24. Rs.500 is invested is invested at the end of each month is an account paying interest 8% per year compounded monthly. The future value of annuity after 10^{th} payment is $(1.08)^{10} = 2.15893$

    (a) Rs.7243.31

    (b) Rs.7423.30

(c) Rs.3451.50

(d) Rs. 3541.50

25. The Sum of all the 4 digits' numbers that can be formed with the digits 3,4,5,5 is

(a) 18887

(b) 33333

(c) 38887

(d) 56661

26. There are 12 points in a plane which are collinear no three points is a straight lie, number of triangular that can be formed with the vertices as there points are:

(a) 216

(b) 220

(c) 110

(d) 108

27. In a lawn different ways can four persons stand in a line for a group photograph.

(a) 24

(b) 16

(c) 8

(d) 64

28. A Company wishes top simultaneously promotes three of its 8 department assistant mangers. In how many ways these promotions can take place?

(a) 336

(b) 56

(c) 8

(d) 1680

29. The n^{th} element of the series 1,3,5,7, …… is

(a) n

(b) 2n-1

(c) 2n+1

(d) none of these

30. If $\frac{1+3+5+.....+n\,\text{terms}}{2+4+6+.....+n\,\text{terms}} = \frac{2}{51}$, then the value of 'n'

(a) 9

(b) 10

(c) 12

(d) 13

31. If 6^{th} and 13^{th} term of an A.P are 15 and 36 respectively the A.P is

(a) 2,5, 8, 11

(b) 1,4,6,8

(c) -4, -1,2,5

(d) 3,6,9,12

32. $\int \frac{1}{\left(e^x - 1\right)^2} dx =$

(a) $\log\left|\frac{e^x}{e^x - 1}\right| + \frac{1}{e^x - 1} + c$

(b) $\log\left|\frac{e^x - 1}{e^x}\right| + \frac{1}{e^x - 1} + c$

(c) $\log\left|\frac{e^x}{e^x - 1}\right| - \frac{1}{e^x - 1} + c$

(d) $\log\left|\frac{e^x}{e^x - 1}\right| - \frac{1}{e^x + 1} + c$

33. If MC = 10-0.01x +0.009$x^2$where x is quantity of production and the total fixed cost = Rs.100, then the total cost is

(a) 100+10x-0.05x^2+0.0009x^3

(b) 100+10x-0.005x^2+0.0003x^3

(c) 100+10x-0.05x^2+0.0009x^3

(d) 100-10x-0.05x^2+0.0009x^3

34 if e^{xy+xy} = e then $\frac{dy}{dx} =$

(a) $-\frac{y}{x}$

(b) $-\frac{1}{xy}$

(c) xy

(d) $\frac{x}{y}$

35. If A and B are two sets A = {1, 2,3,4} and B = {2,3 ,4} then (A-B) U (B-A)

(a) {1, 2}

(b) {1, 2, 3}

(c) {1, 3}

(d) {1, 2, 3, 4}

36. The number of subsets {1,2, 5} is

(a) 3

(b) 8

(c) 6

(d) 9

37. On the set of lines, being Perpendicular is a _____ relation.
    (a) Reflexive
    (b) Symmetric
    (c) Transitive
    (d) None of these

38. A Sum of money doubles itself in 10 years. The number of years it would be trebled itself is :
    (a) 25 years
    (b) 15 years
    (c) 20 years
    (d) None

39. if $x = at^3$; $y = 3bt^2$; then $\frac{dy}{dx}$ =
    (a) $\frac{3x}{2y}$
    (b) $\frac{2y}{3x}$
    (c) $\frac{3y}{2x}$
    (d) $\frac{2x}{3y}$

40. $\int_0^{2a} \frac{f(x)}{f(x)+f(2a-x)}dx$
    (a) a
    (b) -a
    (c) 0
    (d) 2a

PART B: LOGICAL REASONING

41. In a certain code language "EXAM' is coded as 39 'PAPER' is coded at 51 then PAAS is coded as
    (a) 39
    (b) 47
    (c) 489
    (d) 51

42. Find the oddman out
    (a) January
    (b) April
    (c) July

(d) October

43. Find the oddman out of the series 5,10, 17, 25

(a) 5

(b) 10

(c) 17

(d) 25

44. Mohan Starts from Point A and walks 1 km towards south, turns left and walks 1 km. Then he turns again and walks 1 km. Now he is facing.

(a) East

(b) West

(c) North

(d) South- West

45 Arun Started from Point A and Walked 10 kms East to Point B , then turned to North and walked 3 kms to point C and then turned West and walked 12 kms to point D , then again turned South and walked 3 kms to point E . In which direction is he form his starting point?

(a) East

(b) South

(c) West

(d) North

46. I Stand with my right hand extended side-ways towards South. Towards which direction will my back be?

(a) North

(b) West

(c) East

(d) South

47. In a certain language MADRAS is coded as NBEST, how BOMBAY is coded in that language?

(a) CPNCBX

(b) CPNCBZ

(c) CPOCBZ

(d) CQOCBZ

48. There are Five houses A, B, C, C, D, E, A is the right of B and E is left of C and right of A, B is right of D, which house is middle

(a) A

(b) B

(c) C

(d) D

49. Girls are sitting on a bench, Q is the left of R but on the right of P. S is to be right of R but not left of T. Who are the extremes.

(a) P,T

(b) P,S

(c) Q,T

(d) Q,S

50. Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle?

(a) S

(b) T

(c) Q

(d) R

51-52. Read the following information and answer the Questions that follows.

(1) Six friends A, B, C, D, E and F are sitting in a closed circle facing the center.

(2) E is to the left of D.

(3) C is between A and B.

(4) F is between E and A.

51. Who is to the left of B?

(a) A

(b) C

(c) D

(d) E

52. Who is to the right of C?

(a) A

(b) B

(c) D

(d) E

53. In a march past, seven persons are standing in a row. Q is standing left to R but right to P. O is standing right to N and left to P. Similarly, S is standing right to R and left to T. Find out who is standing in middle?

(a) P

(b) Q

(c) R

(d) O

54. A is the sister of B. B is the brother of C. C is the son of D. How is D related to A?

(a) Mother

(b) Daughter

(c) Son

(d) Uncle

55. If P is the husband of Q and R is the mother of S and Q. What is R to P?

(a) Mother

(b) Sister

(c) Aunt

(d) Mother-in-law

56 P is the father of T. T is the daughter of M. M is the daughter of K. What is P to K?

(a) Father

(b) father-in-law

(c) Brother

(d) Son-in-law

57. A and B are brothers. E is the daughter of F. F is the wife of B. What is the relation of E to A?

(a) Sister

(b) Daughter

(c) Niece

(d) Daughter

58. In this questions two statements and two conclusions are given. Its required to check.

Statement

I: Some boys are student.

II: All students are Engineers.

Conclusions:

I. All Engineers are students.

II. Some boys are Engineers.

(a) Only I follows

(b) Only II follows

(c) Both I and II follow

(d) Neither I nor II follows.

59. A conclusion drawn from two given statements, mark the conclusion as

(a) if it is necessarily following the two statements.

(b) if it is only far drawn conclusion

(c) if it is conflict with the two given statements

(d) if it is doubtful

Statement P: The Sum of angles of a triangle ABC is 180^0

Q: Angle A in the triangle ABC = 90^0

Conclusion: Angle B is 45^0

60. Given below are two statements, P and Q followed by a conclusion. marks the conclusion as:

(a) If Statements P supports the conclusion.

(b) If statements Q supports the conclusion.

(c) If Statement P and Q together support the conclusion

(d) If neither statement support the conclusion

Statement P: oxygen is essential for survival

Q: There is no atmosphere on Mars

Conclusion: No living being can survive on Mars.

PART -C : STATISTICS

61. For frequency distribution and time series which from the presentation is rarely used.
    (a) Diagrammatic presentation
    (b) Graphic
    (c) both Diagrammatic and Graphic
    (d) More information required
62. Mid values are also called
    (a) Lower limit
    (b) Upper limit
    (c) Class mark
    (d) None
63. The technician of graphic presentation is extremely helpful in which of the following
    (a) Analysing the changes at different points of Time
    (b) Analysing cause and effect relationship
    (c) Analysing proportional relationship
    (d) Analysing the degree of relationship
64. Statistics Analyses:
    (a) Qualitative
    (b) Quantitative
    (c) Either Qualitative or Quantitative
    (d) Quantitative and Qualitative
65. Frequency Polygon is meant for ---------frequency distribution.
    (a) Single
    (b) Double
    (c) Multi
    (d) None of the above
66. Ogive is also called as
    (a) frequency graph
    (b) cumulative frequency graph
    (c) Histogram
    (d) None of these
67. There are _____ types of frequency curves.
    (a) 1
    (b) 2
    (c) 3
    (d) 4
68. The J shaped curve starts with a _____frequency
    (a) Minimum

(b) Maximum

(c) Either maximum or minimum

(d) none of these

69. If the mean of the set of observations $x_1, x_2, x_3, \ldots\ldots x_n$, is $\overline{X}$, then the mean of the observation x_i+Ki, where I = 1,2,3, ……n and

(a) $\overline{X}+K(n+1)$

(b) $\overline{X}+kn$

(c) $\overline{X}+\frac{K}{n}$

(d) $\overline{X}+\frac{K}{2}(n+1)$

70. The mean age of a group of 100 men and women is 25 years. If the mean age of the group of men is 26, then that of the group of women is 21 then the ratio of women and men in the group:

(a) 1:1

(b) 1:2

(c) 1:3

(d) 1:4

71. The Geometric mean of the series 1, k, k^2, ……., k^n; where k is constant is

(a) $K^{(n+1)/2}$

(b) $K^{n+0.5}$

(c) K^{n+1}

(d) $K^{n/2}$

72. If the SD of a variance X is σ then Quartile Deviation (QD) is

(a) 4/5 σ

(b) 3/2 σ

(c) 2/3 σ

(d) 5/4 σ

73. If X and Y are independent normal Variables with mean 100 and 80 respectively and standard deviation as 4 and 3 respectively. What is the distribution of (X+Y)?

(a) 180, 5

(b) 180, 25

(c) 90, 5

(d) 180, 0

74. The mean salary for a group of for a group of 50 male workers is Rs.4800 per month and that for a group of 50 female workers is Rs. 5600. the combined mean salary is

(a) 5100

(b) 5200

(c) 5300

(d) 5400

75. The relationship between Mean, Median and Mode
    (a) Mean-Mode = 3(Mean-Median)
    (b) Mode = 2 Median – 3 Median
    (c) Median- Mode = 3 (Median-mean)
    (d) none of these
76. The MD about the Mean for the data 6,9,11,10,12,12
    (a) 1.47
    (b) 1.57
    (c) 1.67
    (d) 1.87
77. Coefficient of Variation (CV) is calculated
    (a) $\frac{SD}{AM}\times 100$
    (b) $\frac{AM}{SD}\times 100$
    (c) $\frac{AM}{MD}\times 100$
    (d) none of these
78. Relationship between AM, GM, and HM
    (a) GM ≥AM≥ HM
    (b) AM ≥GM≥ HM
    (c) HM ≥AM≥ GM
    (d) none of these
79. The SD for the data 6, 9, 10, 3, 7 is
    (a) 2.35
    (b) 2.45
    (c) 2.55
    (d) 2.65
80. If P(A) = 1 and P(B) = 1/3 then P(A/B) =
    (a) 1/3
    (b) 2/3
    (c) 1
    (d) ½
81. The probability of A solving a problem is $\frac{7}{12}$ the odds against solving a problem
    (a) 5:7
    (b) 4:7

(c) 5:8

(d) 4:5

82. The correlation coefficient between x and y is 0.8, the correlation coefficient between u and v are $2u + x + 4 = 0$ and $4v + 16x + 11 = 0$

(a) r = 0.8

(b) r = -0.8

(c) r = 0

(d) r = +1

83. If two letters are taken at random from the word HOME, what is the Probability that none of the letters would be vowels?

(a) 1/6

(b) 1/2

(c) 1/3

(d) ¼

84. Two events A& B Probabilities 0.24 and 0.52 respectively. If the probability of both A and B occurs simultaneously is 0.15. Then the probability that neither A nor B occur is 0.15, then the probabilities that neither A nor B is.

(a) 0.39

(b) 0.375

(c) 0.61

(d) 0.86

85. From a bag is containing 10 black and 20 white balls, a ball is drawn at random. What is the probability that is black?

(a) ½

(b) 1/3

(c) 1

(d) 2

86. A probability in statistics is given to five students A, B, C, D and E. Their chances of is ½, 1/3,1/4, 1/5, 1/6. What's the probability that the problem will be solved.

(a) 1/6

(b) 5/6

(c) 1

(d) none of these

87. The mean of binomial distribution is

(a) Always more than its variance

(b) always equal to variance

(c) less than its variance

(d) always equal to Standard deviation

88. If X is normal variate with mean 6 and variance 16 then the value of the probability. $P(2 \leq x \leq 10)$ is equal to.

(a) $2P(2 \leq x \leq 10)$

(b) $2P(6 \leq X \leq 10)$

(c) $P(0 \leq x \leq 6)$

(d) $3P(6 \leq x \leq 10)$

89. In Binomial Distribution the trails are statistics

(a) dependent

(b) independent

(c) either independent or dependent

(d) none of these

90. If p is increased for a fixed n; the Binomial distribution shifts to the

(a) Right

(b) left

(c) Above

(d) Below

91. If the relation between two variables x and y in given by $2x+3y+4=0$, then the Value of the correlation coefficient between x and y is

(a) 0

(b) 1

(c) -1

(d) negative

92. For two variables x and y with the same mean the regression equation are $y = 2x-\alpha$ and $x = 2y-\beta$; what is the value of common mean

(a) $-\alpha$

(b) β

(c) 0

(d) $-\beta$

93. Fishers' Ideal Index number is

(a) The median of Laspyre's and Paasches Index numbers

(b) The Arithmetic mean of Laspyres and Paasche's Index numbers

(c) The geometric mean of Laspyres and Paasche's Index Numbers

(d) None of these

94. Using the following table for trend values taken three year Moving Averages using a, b and C are

Year	Profit	3 Yearly Moving Averages
2002	40	----
2003	60	a
2004	68	b
2005	70	c
2006	90	-----

(a) AP

(b) HP

(c) GP

(d) Neither AP or nor HP or GP

95. Fishers Ideal Formula satisfaction

(1) Unit Test

(2) Circular Test

(3) Factor Reversal Test

(4) Time Reversal Test

(a) 1 and 2

(b) 3 and 4

(c) 1 and 3

(d) 1,2 and 3

96. While construction of Index numbers which of the following has to be considered as point of the following has to be considered as point of reference in company various data describing individual behaviour.

(a) Selection of weights

(b) Base Period

(c) Selection of Formulae

(d) Choice of variables

97. If three Judges appointed for a beauty competition, then how many different rank correlation coefficients are required to analyse the judge competition.

(a) 3

(b) 1

(c) 2

(d) 6

98. In a bivariate population, the linear regression lines 3x+y-2=0 and y+x = 0 then the coefficient of correlation is

(a) 0

(b) 1/3

(c) -1/3

(d) $-1/\sqrt{3}$

99. If the two regression co-efficients are 4 and 16 the percentage of unexplained variation is:

(a) 64

(b) 36

(c) 54

(d) 46

100. Which of the options does not contain the proper use of Index numbers

(a) Helpful in policy determination

(b) Useful in Forecasting

(c) Equally useful in all condition for different purpose

(d) Helpful in comparison

Test Series: August, 2018

FOUNDATION COURSE

MOCK TEST PAPER - 1

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Key Part A: Business Mathematics

1	**(a)**	2	**(b)**	3	**(a)**	4	**(d)**	5	**(c)**
6	**(b)**	7	**(a)**	8	**(d)**	9	**(d)**	10	**(a)**
11	**(c)**	12	**(a)**	13	**(c)**	14	**(b)**	15	**(a)**
16	**(b)**	17	**(b)**	18	**(c)**	19	**(a)**	20	**(c)**
21	**(c)**	22	**(a)**	23	**(b)**	24	**(a)**	25	**(d)**
26	**(a)**	27	**(a)**	28	**(b)**	29	**(b)**	30	**(b)**
31	**(d)**	32	**(c)**	33	**(b)**	34	**(b)**	35	**(a)**
36	**(b)**	37	**(b)**	38	**(c)**	39	**(b)**	40	**(a)**

Key Part B: Logical Reasoning

41	**(d)**	42	**(b)**	43	**(d)**	44	**(c)**	45	**(b)**
46	**(b)**	47	**(c)**	48	**(a)**	49	**(a)**	50	**(a)**
51	**(c)**	52	**(a)**	53	**(b)**	54	**(a)**	55	**(d)**
56	**(d)**	57	**(c)**	58	**(b)**	59	**(b)**	60	**(c)**

Key Part C: Statistics

61	**(a)**	62	**(c)**	63	**(a)**	64	**(a)**	65	**(a)**
66	**(b)**	67	**(d)**	68	**(a)**	69	**(d)**	70	**(d)**
71	**(a)**	72	**(c)**	73	**(a)**	74	**(b)**	75	**(a)**
76	**(c)**	77	**(a)**	78	**(b)**	79	**(b)**	80	**(c)**
81	**(a)**	82	**(a)**	83	**(a)**	84	**(a)**	85	**(b)**
86	**(b)**	87	**(a)**	88	**(b)**	89	**(b)**	90	**(a)**
91	**(c)**	92	**(b)**	93	**(c)**	94	**(a)**	95	**(b)**
96	**(b)**	97	**(a)**	98	**(d)**	99	**(b)**	100	**(c)**

Test Series: March, 2019

FOUNDATION COURSE

MOCK TEST PAPER

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time Allowed 2 Hours **Maximum Marks: 100**

QUESTIONS

PART A: BUSINESS MATHEMATICS AND LOGICAL REASONING

1. The ratio compounded of 2:3, 9:4, 5:6 and 8: 10 is
   (a) 1: 1
   (b) 1:5
   (c) 3: 8
   (d) none of these
2. The sub-triplicate ratio of 8: 27
   (a) 27: 8
   (b) 24: 81
   (c) 2: 3
   (d) none of these
3. If $\frac{p}{q}=\frac{r}{s}=\frac{p-r}{q-s}$, the process is called
   (a) Subtrahendo
   (b) Componendo
   (c) Alternendo
   (d) none of these
4. The value of $\left(\frac{x^a}{x^b}\right)^{\left(a^2+ab+b^2\right)}\times\left(\frac{x^b}{x^c}\right)^{\left(b^2+bc+c^2\right)}\times\left(\frac{x^c}{x^a}\right)^{\left(c^2+ca+a^2\right)}$
   (a) 1
   (b) 0
   (c) -1
   (d) none of these
5. If a = $\log_{12}24$, b = $\log_{36}24$, b = $\log_{48}36$ then prove that 1 + abc =
   (a) 2bc
   (b) 2ca
   (c) 2ba
   (d) 3bc
6. If $x = 5^{1/3} + 5^{-1/3}$, $5x^3-15x$ is given by
   (a) 25

(b) 26

(c) 27

(d) 30

7. Ten years ago the age of a father was four times his son. Ten years hence the age of the father will be twice that of his son. The present age of the father and the son are

(a) (50, 20)

(b) (60, 20)

(c) (55, 25)

(d) none of these

8. When two roots of quadratic equations are α and $\frac{1}{\alpha}$ then what will be quadratic equation.

(a) $\alpha x^2-(\alpha^2+1)\ x + \alpha = 0$

(b) $\alpha x^2- \alpha^2 x + \alpha = 0$

(c) $\alpha x^2-(\alpha^2+1) x + \alpha = 0$

(d) none of these

(9) Let α and β be the roots of equation $x^2+7x + 12 = 0$. Then the value of $\left(\frac{\alpha^2}{\beta}+\frac{\beta^2}{\alpha}\right)$ will be

(a) $\left(\frac{49}{144}+\frac{144}{49}\right)$

(b) $\left(\frac{7}{12}+\frac{12}{7}\right)$

(c) $\left(-\frac{91}{12}\right)$

(d) none of these

10. If $A = \begin{pmatrix} 5 & -2 \\ -1 & 3 \end{pmatrix}$, then Adjoint of Matrix A

(a) $\begin{pmatrix} 3 & -2 \\ -1 & 5 \end{pmatrix}$

(b) $\begin{pmatrix} 5 & 2 \\ -1 & 3 \end{pmatrix}$

(c) $\begin{pmatrix} 3 & -2 \\ 1 & 5 \end{pmatrix}$

(d) $\begin{pmatrix} 3 & 2 \\ 1 & 5 \end{pmatrix}$

11. If $A = \begin{pmatrix} 5 & x \\ y & 0 \end{pmatrix}$ and $A = A^T$, then

    (a) x = 0, y = 5

    (b) x = y

    (c) x + y = 5

    (d) none of these

12. If $A = \begin{pmatrix} 2i & 3i \\ 2i & i \end{pmatrix}$ (here $i^2 = -1$) then $|A| =$

    (a) 2

    (b) 8

    (c) 4

    (d) 5

13. On solving the inequalities $5x + y \leq 100$, $x + y \leq 60$, $x \geq 0$ and $y \geq 0$, we get the following situation.

    (a) (0, 0), (20, 0), (10, 50) and (0,60)

    (b) (0, 0), (60, 0), (10, 50) and (0,60)

    (c) (0, 0), (20, 0), (0, 100) and (10,50)

    (d) none of these

14. A certain money doubles itself in 10 years when deposited on simple interest. It would triple itself in

    (a) 30 years

    (b) 20 years

    (c) 25 years

    (d) 15 years

15. A man deposited Rs. 8, 000 in a bank for 3 years at 5% per annum compound interest, after 3 years he will get

    (a) Rs. 9,000

    (b) Rs.8, 800

    (c) Rs. 9,200

    (d) Rs. 9261

16. The effective rate of interest for one year corresponding to a nominal at 7% rate of interest per annum convertible quarterly is

    (a) Rs. 240

    (b) Rs. 200

    (c) Rs.220

    (d) Rs.210

17. The value of furniture depreciates by 10% a year, if the present value of the furniture in an office is Rs. 21870, calculate the value of furniture 3 years ago.

    (a) Rs. 30,000

    (b) Rs. 35,000

(c) Rs. 40,000

(d) Rs. 45,000

18. The population of a town increases every year by 2 % of the population beginning of that year. The number of years by which the total increase of population be 40% is

(a) 7 years

(b) 10 years

(c) 17 years (approximately)

(d) none of these

19. Find the future value of an annuity of Rs. 500 made annually for 7 years at interest rate of 14 % per annum [Given that $(1.14)^7 = 2.5023$]

(a) Rs. 5365.35

(b) Rs. 5000

(c) Rs. 5325.65

(d) Rs.6000.35

20. Rs. 200 invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of this annuity after 10^{th} payment? [Given that $(1.005)^{10} = 1.0511$]

(a) Rs. 2045

(b) Rs.5055

(c) Rs.2044

(d) Rs.2065

21. Suppose your father decides to gift you Rs. 10,000 every year starting from today for the next five years, you deposit this amount in a bank as and when you receive and get 10% per annum interest rate compounded annually. What is the present value of this annuity? (P(4, 0.10) = 3.16987)

(a) Rs.41, 698.70

(b) Rs.45, 698.70

(c) Rs.41, 698.70

(d) Rs.41, 698.70

22. Nominal Rate of Return =

(a) Real Rate of Return – Inflation

(b) Real Rate of Return + Inflation

(c) Inflation -Real Rate of return

(d) None of the above

23. Net Present Value (NPV)

(a) Present value of net cash Inflow – Total net Investment

(b) Present value of net cash Inflow – Present value of cash outflow

(c) Total net Investment- Present value of net cash Inflow

(d) a or b

24. The annual birth rates per 1,000 are 39.4 and 19.4 respectively. The number of years which the population will be doubled assuming there is no immigration or emigration is

(a) 35 years

(b) 30 years

(c) 25 years

(d) none of these

25. Y bought Motor Bike Costing 80,000 by making down payment of Rs. 30000 and agreeing to make annual payment for four years. How much would be each payment if the interest on unpaid amount be 14% compounded annually. [Given P (4, 0.14) = 2.91371]

(a) Rs. 17160.25

(b) Rs. 17600.25

(c) Rs.15600.25

(d) Rs. 16600.25

26. The value of K, for which the terms 7K +3, 4K-5, 2K+10 are in A.P., is

(a) 13

(b) - 23

(c) 13

(d) 23

27. If A = {1,2,3,4} and B = {1,4,9,16,25} is a function of f is defined set A to B where $f(x) = x^2$ then the range of f is

(a) {1,2,3,4}

(b) {1,4,9,16}

(c) {1,4,9,16, 25}

(d) none of these

28. If ${}^nP_r = 336$ and ${}^nC_r = 56$, then n and r will be

(a) (3,2)

(b) (8, 3)

(c) (7, 4)

(d) none of these

29. If A = {1,2,3,4,5,6,7} and B = {2,4,6} Cardinal number of AUB

(a) 3

(b) 16

(c) 5

(d) 7

30. In how many ways the letters of the word 'ARRANGE' be arranged?

(a) 1,200

(b) 1,250

(c) 1,260

(d) 1,300

31. The number of ways in which 8 examination papers be arranged so that the best and worst papers never come together.

(a) 8! - 2× 7!

(b) 8! - 7!

(c) 8!

(d) 7!

32. ${}^{n}P_{r} = 720$ and ${}^{n}C_{r} = 120$ then value of r is

(a) 4

(b) 5

(c) 3

(d) 6

33. Find the three numbers in G.P, whose sum is 19 and product is 216.

(a) 9,6,4 or 4,6,9

(b) 9,6,3 or 3,6,9

(c) 9,3,1 or 1,3,9

(d) 9,3, -1 or -1,3,9

34. The n^{th} term of the sequence -1,2, -4, 8,.is

(a) $(-1)^{n} 2^{n-1}$

(b) 2^{n-1}

(c) 2^{n}

(d) none of these

35. If $f(x) = x+3$ and $g(x) = x^2$, then fog(x)

(a) x^2+3

(b) x^2+x+3

(c) $(x+3)^2$

(d) none of these

36. Given $x = 2t + 5$, $y = t^2 - 2$; $\frac{dy}{dx}$ is calculated

(a) t

(b) -1/t

(c) 1/t

(d) none of these

37. The slope of the tangent to the curve $y = x^2-x$ at the point, where the line $y= 2$ cuts the curve in the first quadrant, is

(a) 2

(b) 3

(c) -3

(d) 2

38. For the curve $x^2+y^2+2gx+2hy = 0$, the value of $\frac{dy}{dx}$ at (0,0) is

(a) -g/h

(b) g/h

(c) h/g

(d) -h/g

39. $\int e^{-3x}dx$ =

(a) $-\frac{1}{3}e^{-3x}+c$

(b) $\frac{1}{3}e^{-3x}+c$

(c) $-\frac{1}{3}e^{3x}+c$

(d) $-3e^{-3x}+c$

40. $\int x.\log dx$

(a) $\frac{x^2}{2}.\log x-\frac{x^2}{4}+c$

(b) $-\frac{x^2}{2}.\log x-\frac{x^2}{4}+c$

(c) $\frac{x^2}{2}.\log x+\frac{x^2}{4}+c$

(d) $-\frac{x^2}{2}.\log x+\frac{x^2}{4}+c$

41. Find the missing term of the number series 24, 60, 120, 210, ?

(a) 300

(b) 336

(c) 420

(d) 525

42. GO = 32, SHE = 49, then SOME will be equal to

(a) 56

(b) 58

(c) 62

(d) 64

43. in a certain Code DECEMBER is written as ERMBCEDE. Which word will be written as ERMBVENO in that code?

(a) AUGUST

(b) SEPTEMBER

(c) OCTOBER

(d) NOVEMBER

44. Find the missing term of the number series 48, 24, 96,48,192,?

(a) 76

(b) 90

(c) 96

(d) 98

45. Ramu walks 5 Kms starting from his house towards west then turns right and walks 3 km. Thereafter he takes left turn and walks 2 km. Further, he turn left and walks 3 km. Finally, he turns right and walks 3 kms. In what direction he is now from his house.

(a) West

(b) North

(c) South

(d) North

46. Six children A, B, C, D, E and F are sitting in a row. B is between F and D. E is between A and C. However, A does not stand next to F or D. C does not stand next to D. F is between which of the following pairs of children?

(a) B and E

(b) B and C

(c) B and D

(d) B and A

47. Five students are A,B,C,D and E are standing in arrow . D is on the right of E; B is on the left of E but on right of A. D is next to C on his left. The student in middle is

(a) B

(b) A

(c) E

(d) C

Q.No.48-50 Study the following information carefully to answer the given questions. Eight person's P to W are sitting in front of one another in two rows. Each row has four persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V.

48. Who is sitting in front of R?

(a) U

(b) Q

(c) V

(d) P

49. Who is to the immediate right of R?

(a) M

(b) U

(c) M or P

(d) T

50. In which of the following pairs, persons are sitting in front of each other?

(a) MV

(b) RV

(c) TV

(d) UR

(Q.NO. 51-53). In each of the of the following below are given two statements followed by two conclusion numbered I and II. You have to take the given two statements to be true even if they seem to be variance from commonly known facts. Read the conclusions logically follows from the two given statements. Disregarding commonly known facts.

Give Answer

(a) If Only concussion I follows

(b) If Only concussion II follows

(c) If either concussion I or II follows

(d) If neither concussion I nor II follows

51. Statements: I. Some rats are Cats

II. All Cats are bats.

Conclusions: No rats are cats

Some rats are bats.

52. Statements: I. No house is an apartment.

II. Some apartments are bungalows.

Conclusions: No house is a bungalow.

All bungalows being houses is a possibility.

53. Statements: I. All Pens are ink.

II. No ink is an eraser.

Conclusions: No pen is an eraser.

Some erasers are pens.

54. Statements: I. No toffee is Coffee

II. No Sweet is Toffee.

Conclusions: No coffee is sweet.

All sweets are coffee.

55. C is mother of A and B. If D is the husband of B, then what is C to D

(a) Mother

(b) Aunt

(c) Mother-in Law

(d) Sister

56. A is B's sister, C is B's mother, D is C's father of E is D's mother, then how is A related D?

(a) Granddaughter

(b) Daughter

(c) Aunt

(d) Father

57. A, Q, Y and Z are different persons. Z is the father of Q. A is the daughter of Y and Y is the son of Z. If P is the son of Y and B is the brother of P, then

(a) B and Y are brothers

(b) A is sister of B

(c) Z is the uncle of B

(d) Q and Y are brothers

58. A is father of C and D is son of B. E is brother of A. If C is sister of D how is B related to E?

(a) Sister-in-Law

(b) Sister

(c) Brother

(d) Brother-in-Law

59. A Driver left his village and drove North for 20 Km, after which he stopped for breakfast. Then he turned left and drove another 30 km, when he stopped for lunch. After some rest, he again turned left and drove 20 kms before stopping for evening tea. Once more he turned left and drove 30 kms to reach the town where he had supper. After evening tea in which direction did he drive?

(a) West

(b) East

(c) North

(d) South

60. A man is facing East, then he turns left and goes 10m then turns right and goes 5 m then goes 5 m to the South and from there 5 m to West. In which direction is be from his original place?

(a) East

(b) West

(c) North

(d) South

PART B: STATISTICS

61. Statistics is applied in

(a) Economics

(b) Business management

(c) Commerce and industry

(d) All these.

62. The primary data are collected by

(a) Interview method

(b) Observation method

(c) Questionnaire method

(d) All these.

63. The best method to collect data, in case of a natural calamity, is

(a) Personal interview

(b) Indirect interview

(c) Questionnaire method

(d) Direct observation method

64. 'Stub' of a table is the

(a) Left part of the table describing the columns

(b) Right part of the table describing the columns

(c) Right part of the table describing the rows

(d) Left part of the table describing the rows

65. Pie-diagram is used for

(a) Comparing different components and their relation to the total

(b) representing qualitative data in a circle

(c) Representing quantitative data in circle

(d) (b) or (c).

66. For open-end classification, which of the following is the best measure of central tendency?

(a) AM

(b) GM

(c) Median

(d) Mode

67. The presence of extreme observations does not affect

(a) AM

(b) Median

(c) Mode

(d) Any of these.

68. For a moderately skewed distribution, which of the following relationship holds?

(a) Mean – Mode = 3 (Mean – Median)

(b) Median – Mode = 3 (Mean – Median)

(c) Mean – Median = 3 (Mean – Mode)

(d) Mean – Median = 3 (Median – Mode)

69. Which of the following results hold for a set of distinct positive observations?

(a) AM ≥ GM ≥ HM

(b) HM ≥ GM ≥ AM

(c) AM > GM > HM

(d) GM > AM > HM

70. Quartiles are the values dividing a given set of observations into

(a) Two equal parts

(b) Four equal parts

(c) Five equal parts

(d) None of these

71. If x and y are related by x–y–10 = 0 and mode of x is known to be 23, then the mode of y is
    (a) 20
    (b) 13
    (c) 3
    (d) 23
72. What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16?
    (a) 17
    (b) 16
    (c) 12.75
    (d) 12
73. If the relationship between two variables u and v are given by 2u + v + 7 = 0 and if the AM of u is 10, then the AM of v is
    (a) 17
    (b) –17
    (c) –27
    (d) 27.
74. Which one is an absolute measure of dispersion?
    (a) Range
    (b) Mean Deviation
    (c) Standard Deviation
    (d) All these measures
75. The range of 15, 12, 10, 9, 17, 20 is
    (a) 5
    (b) 12
    (c) 13
    (d) 11.
76. The standard deviation of, 10, 16, 10, 16, 10, 10, 16, 16 is
    (a) 4
    (b) 6
    (c) 3
    (d) 0.
77. If all the observations are multiplied by 2, then
    (a) New SD would be also multiplied by 2
    (b) New SD would be half of the previous SD
    (c) New SD would be increased by 2
    (d) New SD would be decreased by 2.
78. The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is
    (a) 10
    (b) 20

(c) 25

(d) 8.30.

79. If $P(A \cap B) = 0$, then the two events A and B are

(a) Mutually exclusive

(b) Exhaustive

(c) Equally likely

(d) Independent.

80. If A, B and C are mutually exclusive and exhaustive events, then P(A) + P(B) + P(C) equals to

(a) $\frac{1}{3}$

(b) 1

(c) 0

(d) any value between 0 and 1.

81. Variance of a random variable x is given by

(a) $E(x - \mu)^2$

(b) $E[x - E(x)]^2$

(c) $E(x^2 - \mu)$

(d) (a) or (b)

82. If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace?

(a) 4/13

(b) 5/13

(c) 0.25

(d) 0.20

83. Given that P (A) = 1/2, P (B) = 1/3, P (AB) = 1/4, what is P (A'/B')

(a) 1/2

(b) 7/8

(c) 5/8

(d) 2/3

84. A binomial distribution is

(a) never symmetrical.

(b) never positively skewed.

(c) never negatively skewed.

(d) symmetrical when p = 0.5.

85. The maximum value of the variance of a binomial distribution with parameters n and p is

(a) n/2.

(b) n/4.

(c) np (1 – p).

(d) 2n.

86. The total area of the normal curve is
    (a) one.
    (b) 50 per cent.
    (c) 0.50.
    (d) any value between 0 and 1.
87. The interval $(\mu - 3\sigma, \mu + 3\sigma)$ covers
    (a) 95% area of a normal distribution.
    (b) 96% area of a normal distribution.
    (c) 99% area of a normal distribution.
    (d) all but 0.27% area of a normal distribution.
88. If the mean deviation of a normal variable is 16, what is its quartile deviation?
    (a) 10.00.
    (b) 13.50.
    (c) 15.00.
    (d) 12.05
89. If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is
    (a) 40
    (b) 45
    (c) 50
    (d) 60
90. For Poisson fitting to an observed frequency distribution
    (a) we equate the Poisson parameter to the mean of the frequency distribution.
    (b) we equate the Poisson parameter to the median of the distribution.
    (c) we equate the Poisson parameter to the mode of the distribution.
    (d) none of these.
91. What is spurious correlation?
    (a) It is a bad relation between two variables.
    (b) It is very low correlation between two variables.
    (c) It is the correlation between two variables having no causal relation.
    (d) It is a negative correlation
92. The covariance between two variables is
    (a) Strictly positive
    (b) Strictly negative
    (c) Always 0
    (d) Either positive or negative or zero.
93. If r = 0.6 then the coefficient of non-determination is
    (a) 0.4
    (b) –0.6
    (c) 0.36

(d) 0.64

94. If the sum of squares of difference of ranks, given by two judges A and B, of 8 students in 21, what is the value of rank correlation coefficient?

(a) 0.7

(b) 0.65

(c) 0.75

(d) 0.8

95. Weighted G.M. of relative formula satisfy _____test

(a) Time Reversal Test

(b) Circular test

(c) Factor Reversal Test

(d) none

96. Laspyre's method and Paasche's method do not satisfy

(a) Unit Test

(b) Time Reversal Test

(c) Factor Reversal Test

(d) a, b and (c)

97. Fisher's index number is based on

(a) The Arithmetic mean of Laspeyre's and Paasche's index numbers.

(b) The Median of Laspeyre's and Paasche's index numbers.

(c) The Mode of Laspeyre's and Paasche's index numbers.

(d) The GM of Laspeyre's and Paasche's index numbers.

98. Purchasing Power of Money is

(a) Reciprocal of price index number.

(b) Equal to price index number.

(c) Unequal to price index number.

(d) None of these.

99. Damages due to floods, droughts, strikes, fires and political disturbances are :

(a) Trend

(b) Seasonal

(c) Cyclical

(d) Irregular

100. The additive model of Time Series

(a) $Y = T + S + C + I$

(b) $Y = TSCI$

(c) $Y = a + b X$

(d) $Y = a + b X + c X^2$

Test Series: March, 2019

FOUNDATION COURSE

MOCK TEST PAPER

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

ANSWERS

Part A: Business Mathematics and Logical Reasoning

1	**(a)**	11	**(b)**	21	**(a)**	31	**(a)**	41	**(b)**	51	**(b)**
2	**(c)**	12	**(c)**	22	**(b)**	32	**(c)**	42	**(a)**	52	**(d)**
3	**(a)**	13	**(a)**	23	**(d)**	33	**(a)**	43	**(d)**	53	**(a)**
4	**(a)**	14	**(b)**	24	**(a)**	34	**(a)**	44	**(c)**	54	**(d)**
5	**(a)**	15	**(d)**	25	**(a)**	35	**(a)**	45	**(a)**	55	**(c)**
6	**(b)**	16	**(d)**	26	**(b)**	36	**(a)**	46	**(b)**	56	**(a)**
7	**(a)**	17	**(a)**	27	**(b)**	37	**(b)**	47	**(c)**	57	**(b)**
8	**(a)**	18	**(c)**	28	**(b)**	38	**(a)**	48	**(a)**	58	**(a)**
9	**(c)**	19	**(a)**	29	**(d)**	39	**(a)**	49	**(d)**	59	**(b)**
10	**(d)**	20	**(c)**	30	**(c)**	40	**(a)**	50	**(a)**	60	**(c)**

Part B: Statistics

61	**(d)**	71	**(d)**	81	**(d)**	91	**(c)**
62	**(d)**	72	**(c)**	82	**(a)**	92	**(d)**
63	**(a)**	73	**(c)**	83	**(c)**	93	**(d)**
64	**(d)**	74	**(d)**	84	**(d)**	94	**(c)**
65	**(a)**	75	**(d)**	85	**(b)**	95	**(a)**
66	**(c)**	76	**(c)**	86	**(a)**	96	**(d)**
67	**(b)**	77	**(d)**	87	**(d)**	97	**(d)**
68	**(a)**	78	**(a)**	88	**(b)**	98	**(a)**
69	**(c)**	79	**(a)**	89	**(a)**	99	**(d)**
70	**(a)**	80	**(b)**	90	**(a)**	100	**(a)**

Test Series: April, 2019

Mock Test Paper -2

Foundation Course

Paper 3: Business Mathematics, Logical Reasoning and Statistics

Time: 120 Minutes **Maximum Marks: 100**

Part A : Business Mathematics and Logical Reasoning

1. If x:y:z = 2: 3:5 if x+ y+ z = 60 ,then the value of z

   (a) 30

   (b) 15

   (c) 9

   (d) 12

2. The ratio of two numbers is 15: 19. If a certain number is added to each term of the ratio it become 8: 9. What is the number added to each of the ratio?

   (a) 6

   (b) 15

   (c) 17

   (d) 23

3. If $\frac{a}{3}=\frac{b}{4}=\frac{c}{5}$ then $\frac{2a+3b+2c}{4a-b+2c}$ is

   (a) $\frac{11}{19}$

   (b) $\frac{17}{9}$

   (c) $\frac{19}{9}$

   (d) $\frac{19}{7}$

4. Simplify $\frac{2^n+2^{n-1}}{2^{n+1}+2^n}$ =

   (a) 2^{n+2}

   (b) 2^n

   (c) 2

   (d) $\frac{1}{2}$

5. If. $2^a = 3^b = 12^c$ then $\frac{1}{a} + \frac{1}{b}$ =

   (a) $\frac{1}{c}$

(b) $\frac{1}{c} - \frac{1}{a}$

(c) $-\frac{1}{c}$

(d) 0

6. The value of $\log_{64}512$ is

(a) 9

(b) 9/2

(c) 9/4

(d) 3/2

7. The value of of $(\log_b a \log_c b \log_a c)^3$ =

(a) 1

(b) 3

(c) $(\log_b C)^3$

(d) $(\log_c b)^3$

8. If α and β be the roots of the equation $2x^2-4x-3=0$ the value of $\alpha^2+\beta^2$ is

(a) 5

(b) 7

(c) 3

(d) -4

9. If one root of the equation $x^2+ 7x+ p = 0$ be reciprocal of the other then the value of p is_____.

(a) 1

(b) -1

(c) 7

(d) -7

10. Let A = $\begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$; B=$\begin{pmatrix} 1 & 5 \\ 6 & 7 \end{pmatrix}$ then the value 3A-B

(a) $\begin{pmatrix} -4 & -14 \\ 9 & 11 \end{pmatrix}$

(b) $\begin{pmatrix} 4 & -14 \\ -9 & -11 \end{pmatrix}$

(c) $\begin{pmatrix} 4 & -14 \\ 9 & 11 \end{pmatrix}$

(d) $\begin{pmatrix} 5 & 4 \\ 6 & 8 \end{pmatrix}$

11. $\begin{pmatrix} a & -b \\ b & a \end{pmatrix} \times \begin{pmatrix} a & b \\ -b & a \end{pmatrix}$

(a) $\begin{pmatrix} a^2+b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

(b) $\begin{pmatrix} -a^2-b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

(c) $\begin{pmatrix} a^2-b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

(d) $\begin{pmatrix} a^2-b^2 & 0 \\ 0 & a^2-b^2 \end{pmatrix}$

12. Mr. A plans to invest up to Rs. 30,000 in two stocks X and Y. Stock X(x) is priced at Rs.175 and Stock Y(y) at Rs.95 per share. This can be shown by
    (a) 175x+95y < 30,000
    (b) 175x+95y > 30,000
    (c) 175x+95y = 30,000
    (d) None of these
13. A sum of money doubles itself at compounded interest in 10 years in how many years will it becomes eight times?
    (a) 20
    (b) 30
    (c) 40
    (d) 35
14. A machine costs Rs .1,00, 000. The depreciation rate is 10% per annum. The scrap value of the machine at the end of 5 years is
    (a) Rs.49490
    (b) Rs. 59049
    (c) Rs.61029
    (d) Rs.51049
15. Rs. 10,000 is invested at annual rate of interest of 10% p.a. The amount after two years at annual compounding is
    (a) Rs. 21100
    (b) Rs. 12100
    (c) Rs. 12110
    (d) None of these
16. The annual birth rate and death rate per 1000 are 39.4 and 19.4 respectively. The number of years in which population will be doubled assuming that there is no immigration or emigration is approximately
    (a) 40 years

(b) 30 years

(c) 36 years

(d) 25 years

17. If the effective rate of interest is 12% per annum and the interest is compounded quarterly, the nominal rate of interest per annum

(a) 11.78 %

(b) 11.21 %

(c) 11.89%

(d) 11.49 %

18. A machine can be purchased for Rs. 50, 000. Machine will be contributing Rs. 12, 000 per year for the next five years. Assuming borrowing cost is 10% per annum. Determine whether machine should be purchased or not

(a) Should be purchased

(b) Should not be purchased

(c) Can't say about purchase

(d) none of the above

19. X bought a TV costing 25,000 making down payment of Rs. 5000 and agreeing to make equal annual payment for four years. How much would be each payment if the interest on unpaid amount be 14% compounded annually? [P(4, 0.14) = 2.91371]

(a) Rs.6864.10

(b) Rs.6850.63

(c) Rs.6859

(d) Rs.6871

20. The future value of annuity on Rs. 5000 a year for 7 years at 14% per annum compound interest is given $(1.14)^7 = 2.5023$

(a) Rs.5300

(b) Rs.53653.57

(c) Rs.5480

(d) Rs.5465.23

21. Rs.5000 paid for ten years to off a loan. What is the loan amount if interest rate be 14% per annum compounded annually? (Given P (10, 0.14) = 5.21611

(a) Rs.26080.55

(b) Rs.26580.55

(c) Rs.26280.55

(d) Rs.27080.55

22. Suppope your friend decided gift to you Rs. 10000 every year starting from today for the next five years. Your deposit this amount in a bank as and when you receive and get 10% per annum interest compounded annually. What is the present value of this annuity?

(a) Rs.42698.70

(b) Rs.43698.70

(c) Rs.45698.70

(d) Rs.41698.70

23. Rs.1000 is invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of annuity after 10^{th} payment? (Given that $(1.005)^{10} = 1.0511$)

(a) Rs.10220

(b) Rs.1022

(c) Rs.20000

(d) Rs.1020

24. The difference between CI and SI on a certain money invested for three years at 6% per annum is Rs. 110.16. The sum is

(a) Rs. 3000

(b) Rs.3700

(c) Rs.12000

(d) Rs.10000

25. Simple interest on Rs.3500 for 3 years at 12% per annum is

(a) Rs.1200

(b) Rs.1260

(c) Rs.2260

(d) Rs. 2000

26. A function f(x) is an even function, if

(a) $-f(x) = f(x)$**)**

(b) $f(-x) = f(x)$

(c) $f(-x) = -f(x)$

(d) None of these

27. If A = {1, 2, 3, 4} and B = {5, 6, 7,6}, then cardinal number of the set A×B is _____

(a) 7

(b) 1

(c) 16

(d) None of these

28. Find the f o g for the functions $f(x) = x^3$, $g(x) = x + 1$

(a) $x^2 (x+1)$

(b) x^2

(c) $x+1$

(d) $(x+1)^3$

29. if $nP_4 = 12nP_2$ then n=

(a) 2

(b) 3

(c) 4

(d) 6

30. The number of sub sets of function {2, 3, 5, 6}
    (a) 3
    (b) 8
    (c) 16
    (d) none of these
31. A man has 5 friends'. In how many ways can be invite one or more of his friends to dinner?
    (a) 30
    (b) 31
    (c) 32
    (d) 10
32. The sum of the first two terms of a GP is 5/3 and the sum of infinity of the series is 3. The common ratio is
    (a) 1/3
    (b) 2/3
    (c) -1/3
    (d) none of these
33. The sum of the infinite series 1+2/3+4/9+……is
    (a) 1/3
    (b) 3
    (c) 2/3
    (d) none of these
34. Which term of the AP 64,60,56,52….is Zero
    (a) 16
    (b) 17
    (c) 15
    (d) 14
35. if $x=at^2$, $y=2at$ then $\left|\frac{dy}{dx}\right|_{t=2}$ is equal to
    (a) 1/2
    (b) -2
    (c) -1/2
    (d) none of these
36. The gradient of the curve $y = 4x^2 – 2x$ at $x = 1$ is
    (a) 4
    (b) 6
    (c) 8
    (d) None of these

37. $\int \frac{1}{a^2 - x^2} dx$

(a) $\frac{1}{2a} \log \left| \frac{a+x}{a-x} \right| + c$

(b) $\frac{-1}{2a} \log \left| \frac{a-x}{a+x} \right| + c$

(c) $\frac{1}{2a} \log \left| \frac{x-a}{x+a} \right| + c$

(d) None of these

38. $\int \left\{ \frac{1}{\log x} - \frac{1}{(\log x)^2} \right\} dx$

(a) $\frac{1}{\log x} + c$

(b) $\frac{x}{\log x} + c$

(c) $-\frac{x}{\log x} + c$

(d) None of these

39. $\int x^2 e^x dx$

(a) $e^x(x^2-2x+2) + c$

(b) $e^x(x^2-2) + c$

(c) $e^x(x^2+2x+2) + c$

(d) $e^x(x^2-2x) + c$

40. If $x = at^3$, $y = \frac{a}{t^3}$, $\frac{dy}{dx}$ at t = 1 is

(a) 1

(b) -1

(c) 3

(d) 2/3

41. Find odd one out of the series 7, 9, 11, 12, 14, 15

(a) 15

(b) 14

(c) 9

(d) 7

42. Find odd one out of the series 37, 45, 49, 65, 79

(a) 37

(b) 45

(c) 49

(d) 65

43. Find the missing number of the series 22, 24, 28, ? , 52, 84

(a) 36

(b) 38

(c) 42

(d) 46

44. Find the missing number of series 1, 5, 13, 25, 41, ?

(a) 51

(b) 57

(c) 61

(d) 63

45. If SUMMER is coded as RUNNER the code for WINTER will be

(a) SUITER

(b) VIOUER

(c) WALKER

(d) SUFFER

46. In a certain code KAVERI is written as VAKIRE. How is MYSORE written in that code?

(a) EROSYM

(b) SYMORE

(c) SMYERP

(d) SYMERO

47. A man is facing East, then he turns left and goes 10m then turns right and goes 5 m then goes 5 m to the South and from there 5 m to West. In which direction is be from his original place?

(a) East

(b) West

(c) North

(d) South

48. From her home Prerna wishes to go to school. From home she goes towards North and then turns left and then turns right, and finally she turns left and reaches school. In which direction her school is situated with respect to her home?

(a) North-East

(b) North-West

(c) South-East

(d) South-West

49. A child walks 25 feet towards North, turns right and walks 40 feet, turns right again and walks 45 feet. He then turns left and walks 20 feet. He turns left again walks 20 feet. Finally, he turns to his left to walks another 20 feet. In which direction is the child from his starting point?

(a) North

(b) South

(c) West

(d) East

50. In a college party, 5 girls are sitting in a row. F is to the left of M and to the right of O. R is sitting to the right of N but to the left of O. Who is sitting in the middle?

(a) O

(b) R

(c) P

(d) M

51. Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle?

(a) S

(b) T

(c) Q

(d) R

(52.-54) Study the following information carefully to answer the given questions. Eight person's P to W are sitting in front of one another in two rows. Each row has four persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V.

52. Who is sitting in front of R?

(a) U

(b) Q

(c) V

(d) P

53. Who is to the immediate right of R?

(a) M

(b) U

(c) M or T

(d) None of these

54. In which of the following pairs, persons are sitting in front of each other?

(a) MV

(b) RV

(c) TV

(d) UR

55. X is the husband of Y. W is the daughter of X. Z is husband of W. N is the daughter of Z. What is the relationship of N to Y?

(a) Cousin

(b) Niece

(c) Daughter

(d) Grand-daughter

56. 'A' reads a book and find the name of the author familiar. The author 'B' is the paternal uncle of 'C'. 'C' is the daughter of 'A'. How is 'B' related to 'A'?

(a) Brother

(b) Sister

(c) Father

(d) Uncle

57. 'A' s mother is sister of B and she has a daughter C who is 21 years old. How is B related to D?

(a) Uncle

(b) Maternal Uncle

(c) Niece

(d) Daughter

(58 -60) Each of the following questions contains two statements followed by two conclusions numbered I and II. You have to consider the two statements to be true, even if they seen to be at variance at the commonly known facts. You have to decide which of the given conclusions definitely follows from the given statements

Give answer ((a) if only I follows; ((b) if only conclusion II follows; ((c) if either I or II follows and ((d) if neither I nor II follows

58. Statements: I. All pots are cups.
II. All cups are bowls.
Conclusions: I. All pots are bowls.
II. All cups are pots.

59. Statements: I. All roads are poles
II. No poles are bungalows
Conclusions: I. Some roads are bungalows
II. Some bungalows are poles

60. Statements: I. Some cats are kittens.
II. All goats are kittens.
Conclusions: I. Some cats are goats
II. Some goats are cats.

Part B: Statistics

61. The best method to collect data, in case of a natural calamity, is

(a) Personal interview

(b) Indirect interview

(c) Questionnaire method

(d) Direct observation method.

62. The entire upper part of a table is known as

(a) Caption

(b) Stub

(c) Box head

(d) Body

63. A frequency distribution

(a) Arranges observations in an increasing order

(b) Arranges observation in terms of a number of groups

(c) Relaters to a measurable characteristic

(d) all these.

64. Mode of a distribution can be obtained from

(a) Histogram

(b) Less than type ogives

(c) More than type ogives

(d) Frequency polygon

65. The presence of extreme observations does not affect

(a) AM

(b) Median

(c) Mode

(d) Any of these

66. For a moderately skewed distribution, which of the following relationship holds?

(a) Mean – Mode = 3 (Mean – Median)

(b) Median – Mode = 3 (Mean – Median)

(c) Mean – Median = 3 (Mean – Mode)

(d) Mean – Median = 3 (Median – Mode)

67. Quartiles can be determined graphically using

(a) Histogram

(b) Frequency Polygon

(c) Ogive

(d) Pie chart

68. If there are 3 observations 15, 20, 25 then the sum of deviation of the observations from their AM is

(a) 0

(b) 5

(c) –5

(d) None of these.

69. The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is

(a) 13

(b) 10.70

(c) 11

(d) 11.50

70. Which measures of dispersions is not affected by the presence of extreme observations?
    (a) Range
    (b) Mean deviation
    (c) Standard deviation
    (d) Quartile deviation
71. Which measure is based on only the central fifty percent of the observations?
    (a) Standard deviation
    (b) Quartile deviation
    (c) Mean deviation
    (d) All these measures
72. If the profits of a company remain the same for the last ten months, then the standard deviation of profits for these ten months would be?
    (a) Positive
    (b) Negative
    (c) Zero
    (d) (a) or (c)
73. The range of 15, 12, 10, 9, 17, 30 is
    (a) 5
    (b) 12
    (c) 13
    (d) 21
74. If the range of x is 2, what would be the range of –3x +50 ?
    (a) 2
    (b) 6
    (c) –6
    (d) 44
75. If x and y are related by 2x+3y+4 = 0 and SD of x is 6, then SD of y is
    (a) 22
    (b) 4
    (c) 40
    (d) 9
76. If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation is
    (a) 25
    (b) 30
    (c) 40
    (d) 20

77. If for two events A and B, $P(A \cap B) = P(A) \times P(B)$, then the two events A and B are
    (a) Independent
    (b) Dependent
    (c) Not equally likely
    (d) Not exhaustive.
78. Addition Theorem of Probability states that for any two events A and B,
    (a) $P(A \cup B) = P(A) + P(B)$
    (b) $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
    (c) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
    (d) $P(A \cup B) = P(A)\ P(B)$
79. If a random variable x assumes the values x_1, x_2, x_3, x_4 with corresponding probabilities p_1, p_2, p_3, p_4 then the expected value of x is
    (a) $p_1 + p_2 + p_3 + p_4$
    (b) $x_1\ p_1 + x_2\ p_3 + x_3\ p_2 + x_4\ p_4$
    (c) $p_1\ x_1 + p_2\ x_2 + p_3\ x_3 + p_4\ x_4$
    (d) none of these.
80. If an unbiased die is rolled once, the odds in favour of getting a point which is a multiple of 3 is
    (a) 1:2
    (b) 2:1
    (c) 1:3
    (d) 3:1
81. A, B, C are three mutually independent with probabilities 0.3, 0.2 and 0.4 respectively. What is P (ABC)?
    (a) 0.400
    (b) 0.240
    (c) 0.024
    (d) 0.500
82. What is the chance of throwing at least 7 in a single cast with 2 dice?
    (a) 5/12
    (b) 7/12
    (c) 1/4
    (d) 17/36
83. A binomial distribution is
    (a) never symmetrical
    (b) never positively skewed
    (c) never negatively skewed
    (d) symmetrical when p = 0.5

84. The maximum value of the variance of a binomial distribution with parameters n and p is
    (a) n/2
    (b) n/4
    (c) np (1 – p)
    (d) 2n
85. Which one is uniparametric distribution?
    (a) Binomial
    (b) Poisson
    (c) Normal
    (d) Hyper geometric
86. The mean deviation about median of a standard normal variate is
    (a) 0.675 σ
    (b) 0.675
    (c) 0.80 σ
    (d) 0.80
87. If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is
    (a) 40
    (b) 45
    (c) 50
    (d) 60
88. What is the first quartile of X having the following probability density function?

    $f(x) = \frac{1}{\sqrt{72\pi}} e^{\frac{-(x-10)^2}{72}}$ for $-\infty < x < \infty$

    (a) 4.
    (b) 5.
    (c) 5.95.
    (d) 6.75.
89. Correlation analysis aims at
    (a) Predicting one variable for a given value of the other variable
    (b) Establishing relation between two variables
    (c) Measuring the extent of relation between two variables
    (d) Both (b) and (c).
90. The two lines of regression become identical when
    (a) r = 1
    (b) r = –1
    (c) r = 0
    (d) (a) or (b).

91. If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is

(a) 70%

(b) 30%

(c) 51%

(d) 49%

92. If the regression coefficient of y on x is 2.5, the correlation coefficient 0.6 and the SD is y of is 4, the SD of x is

(a) 0.64

(b) 0.24

(c) 0.96

(d) 1.44

93. If the regression coefficient of y on x is 1.5 and the variances of x and y is 4/9 then the correlation coefficient is

(a) 1

(b) -1

(c) 2.25

(d) 1

94. If the coefficient of determination is 0.64 and the regression coefficient of x on y is 4 then then the regression coefficient of y on x is

(a) 0.32

(b) 0.16

(c) 0.48

(d) 0.96

95. Chain index is equal to

(a) $\frac{\text{Link relative of current year} \times \text{chain index of the current year}}{100}$

(b) $\frac{\text{Link relative of previous year} \times \text{chain index of the current year}}{100}$

(c) $\frac{\text{Link relative of current year} \times \text{chain index of the previous year}}{100}$

(d) $\frac{\text{Link relative of previous year} \times \text{chain index of the previous year}}{100}$

96. The formula should be independent of the unit in which or for which price and quantities are quoted in

(a) Unit Test

(b) Time Reversal Test

(c) Factor Reversal Test

(d) none

97. The formula for conversion to current value

(a) Deflated value = $\frac{\text{Price Index of the current year}}{\text{previous value}}$

(b) Deflated value = $\frac{\text{Price Index of the current year}}{\text{current value}}$

(c) Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

(d) Deflated value = $\frac{\text{Price Index of the previous year}}{\text{previous value}}$

98. Damages due to floods, droughts, strikes fires and political disturbances are:

(a) Trend

(b) Seasonal

(c) Cyclical

(d) Irregular

99. The rise and fall of a time series over periods longer than one year is called:

(a) Secular trend

(b) Seasonal variation

(c) Cyclical Variation

(d) irregular variations

100. A time series has:

(a) Two components

(b) Three Components

(c) Four Components

(d) Five Components

Test Series: April, 2019

FOUNDATION COURSE

MOCK TEST PAPER 2

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

ANSWERS

PART A: BUSINESS MATHEMATICS

Part A : Business Mathematics , Logical Reasoning

1	**(a)**	11	**(a)**	21	**(b)**	31	**(b)**	41	**(b)**	51	**(a)**
2	**(c)**	12	**(a)**	22	**(d)**	32	**(d)**	42	**(c)**	52	**(d)**
3	**(c)**	13	**(b)**	23	**(a)**	33	**(b)**	43	**(a)**	53	**(d)**
4	**(d)**	14	**(b)**	24	**(d)**	34	**(b)**	44	**(c)**	54	**(a)**
5	**(b)**	15	**(b)**	25	**(b)**	35	**(a)**	45	**(b)**	55	**(d)**
6	**(d)**	16	**(c)**	26	**(b)**	36	**(b)**	46	**(a)**	56	**(a)**
7	**(a)**	17	**(d)**	27	**(c)**	37	**(a)**	47	**(c)**	57	**(b)**
8	**(b)**	18	**(b)**	28	**(d)**	38	**(b)**	48	**(b)**	58	**(a)**
9	**(a)**	19	**(a)**	29	**(d)**	39	**(a)**	49	**(d)**	59	**(d)**
10	**(d)**	20	**(b)**	30	**(c)**	40	**(b)**	50	**(a)**	60	**(d)**

Part B : Statistics

61	**(a)**	71	**(b)**	81	**(c)**	91	**(c)**
62	**(c)**	72	**(c)**	82	**(b)**	92	**(c)**
63	**(d)**	73	**(d)**	83	**(d)**	93	**(d)**
64	**(a)**	74	**(b)**	84	**(b)**	94	**(b)**
65	**(b)**	75	**(b)**	85	**(b)**	95	**(c)**
66	**(a)**	76	**(c)**	86	**(d)**	96	**(a)**
67	**(c)**	77	**(b)**	87	**(a)**	97	**(b)**
68	**(a)**	78	**(c)**	88	**(c)**	98	**(d)**
69	**(b)**	79	**(c)**	89	**(d)**	99	**(c)**
70	**(d)**	80	**(a)**	90	**(d)**	100	**(c)**

MOCK TEST PAPER 1

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 hours **Marks: 100**

Section A : Business Mathematics and Logical Reasoning

1. The ratio of the earnings of two persons 3:2. If each saves 1/5th of their earnings, the ratio of their savings.
   (a) 2:3
   (b) 3:2
   (c) 4:5
   (d) 5:4
2. The Third Proportional to 15 and 20 is
   (a) 80/3
   (b) 80
   (c) 80/7
   (d) 120
3. If $\log_9 x + \log_3 x = \frac{3}{2}$ then x is
   (a) 0
   (b) 1
   (c) $\frac{9}{4}$
   (d) 3
4. If x+y, y+z, z+x are in the ratio 6:7:8 and x + y + z =14 then the value of x is
   (a) 6
   (b) 7
   (c) 8
   (d) 10
5. If $2^x = 3^y = 6^z$ then $\frac{1}{x} + \frac{1}{y} =$
   (a) $\frac{1}{z}$
   (b) $\frac{1}{z} - \frac{1}{x}$
   (c) $\frac{1}{z} + \frac{1}{x}$

(d) 0

6. 5 chairs and 3 tables cost of Rs.350. and 3 Chairs and 5 tables cost Rs.370. What is the cost of the table and two chairs?

   (a) Rs.130

   (b) Rs. 120

   (c) Rs.150

   (d) Rs.140

7. If one root of the quadratic equation is $2+\sqrt{3}$, the equation is ____

   (a) $x^2-4x+1=0$

   (a) $x^2+4x+1=0$

   (c) $x^2-4x-1=0$

   (d) None of these

8. If thrice of A's age 6 years ago be subtracted from twice his present age, the result would be equal to his present age. Find A's Age

   (a) 9

   (b) 8

   (c) 10

   (d) 12

9. Let A = $\begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$; B=$\begin{pmatrix} 1 & 5 \\ 6 & 7 \end{pmatrix}$ then the value A-3B

   (a) $\begin{pmatrix} -1 & -12 \\ -14 & -16 \end{pmatrix}$

   (b) $\begin{pmatrix} 1 & -12 \\ -14 & 16 \end{pmatrix}$

   (c) $\begin{pmatrix} -1 & 12 \\ -14 & 16 \end{pmatrix}$

   (d) $\begin{pmatrix} 1 & 12 \\ 14 & 16 \end{pmatrix}$

10. $\begin{pmatrix} a & -b \\ b & a \end{pmatrix} \times \begin{pmatrix} -a & b \\ b & a \end{pmatrix}$

    (a) $\begin{pmatrix} a^2+b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

    (b) $\begin{pmatrix} -a^2-b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

(c) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(d) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 - b^2 \end{pmatrix}$

11. The solution set of the in equation $x + 2 > 0$ and $2x - 6 > 0$ is

    (a) $(-2, \infty)$

    (b) $(3, \infty)$

    (c) $(-\infty, 2)$

    (d) $(-\infty, -2)$

12. A company produces two products A and B, each of which requires processing in two machines. The first machine can be used at most for 60 hours, the second machine can be used at most for 40 hours. The product A requires 2 hours on machine one and one hour on machine two. The product B requires one hour on machine one and two hours on machine two. Express above situation using linear inequalities.

    (a) $2x + y \leq 60$ and $x + 2y \geq 40$.

    (b) $2x + y \geq 60$ and $x + 2y \geq 40$.

    (c) $2x + y \leq 60$ and $x + 2y \leq 40$.

    (d) $2x + y \geq 60$ and $x + 2y \leq 40$.

13. Rs. 1000 is invested at annual rate of interest of 10% p.a. The amount after two years if compounding is done annually is _____

    (a) Rs. 121

    (b) Rs. 1210

    (c) Rs. 2110

    (d) None of these

14. If A person invests Rs.3,000 in a three years' investment that pays you 12% per annum. Calculate the future value of the investment.

    (a) Rs.4214.78

    (b) Rs. 4124.78

    (c) Rs.4324.48

    (d) Rs.4526.48

15. A person deposited a sum of Rs. 10,000 in a bank. After 2 years, he withdrew Rs. 4,000 and at the end of 5 years, he received an amount of Rs. 7,900; then the rate of simple interest is:

    (a) 6%

    (b) 5%

    (c) 10%

    (d) None of these

16. A company is considering proposal of purchasing a machine either by making full payment of Rs.4000 or by leasing it for four years at an annual rate of Rs.1250. Which course of action is preferable if the company can borrow money at 14% compounded annually? [P (4,0.14) = 2.9137]

    (a) leasing is not preferable

(b) leasing is preferable

(c) cannot determined

(d) none of these

17. Anil bought a motor cycle costing Rs.1,30,000 by making a down payment of Rs.30, 000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amount be 10% compounded annually? [P (5, 0.10) = 3.7908]

(a) Rs.28379.70

(b) Rs.26300.70

(c) Rs.26500.70

(d) Rs.26379.70

18. Shoba borrows Rs.50,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance, what will be the equal annual instalment?

[Given : P(20,0.10) =8.51356]

(a) Rs.687298.4

(b) Rs.685298.4

(c) Rs.585298.4

(d) Rs.587298.4

19. A trust fund has invested Rs. 30,000 in two different types of bonds which pays 5% and 7% interest respectively. Determine how much amount is invested in each type of bond if trust obtains an annual total interest of Rs. 1600.

(a) Rs.5000

(b) Rs.6000

(c) Rs.7000

(d) Rs. 8000

20. An overdraft of Rs. 50,000 to be paid back in equal annual installments over a period of 20 years. Find the value of Installment, if interest is compounded annually at 14% per annum.

[Given $(1.14)^{20}$= 13.74349]

(a) Rs .550.50

(b) Rs .549.30

(c) Rs .559.50

(d) Rs .560.50

21. At six months' intervals A deposited of Rs. 1000 in a savings account which credit interest at 10% p.a., compounded semi-annually. The first deposit was made when A's son was 6 months old and last deposit was made when his son was 8 years old. The money remained in the account and was presented to the son on his 10^{th} birthday. How much did he receive? $(1.06)^{16}$ = 2.1829)

(a) Rs.25740

(b) Rs.23740

(c) Rs.25860

(d) Rs.25760

22. What is the effective rate of interest if the nominal rate 5 % p.a converted quarterly?
    (a) 6.09 %
    (b) 5.09 %
    (c) 5.55%
    (d) 5.60 %
23. A sum of money doubles itself at compound interest in 10 years. In how many years will it become eight times?
    (a) 20
    (b) 30
    (c) 40
    (d) 35
24. Certain sum of money borrowed at simple interest amount to Rs.2688 in three years and to Rs.2784 in four years at the rate per annum equal to
    (a) 7%
    (b) 6%
    (c) 5%
    (d) 4%
25. In how many ways can a committee of 3 ladies and four gents be chosen from 8 ladies and 7 gents?
    (a) 1950
    (b) 1920
    (c) 1940
    (d) 1960
26. In how many ways can the letters of the word 'STRANGE' be arranged so that the vowels never come together?
    (a) 3600
    (b) 3686
    (c) 5040
    (d) 4050
27. A box contains 7 red, 6 white and 4 blue balls. How many selections of three balls on of each colour?
    (a) 178
    (b) 158
    (c) 198
    (d) 168
28. The number of diagonals in a polygon of 6 sides
    (a) 9
    (b) 8
    (c) 6
    (d) 12

29. If A = {1, 2, 3, 4, 5} and B = {6, 7, 8}, then cardinal number of AXB is:

(a) 15

(b) 5

(c) 3

(d) 8

30. The number of subsets of the set A = {1, 2, 3, 4, 5, 6, 7, 8} is

(a) 36

(b) 128

(c) 256

(d) None of these

31. If $f(x) = \left(\frac{x^2-4}{x-2}\right)$, then f(2) is

(a) 0

(b) 2

(c) 4

(d) 1

32. The first term of an A.P. is 100 and the sum of whose first 6 terms is 5 times the sum of the next 6 terms, then the c.d. is –

(a) –10

(b) 10

(c) 5

(d) None of these

33. The sum of n terms of an A.P. is $3n^2+n$; then its p^{th} term is

(a) 6P+2

(b) 6P–2

(c) 6P–1

(d) None of these

34. if three AM's between 3 and 11, they are

(a) 4, 6, 8

(b) 3, 5, 7

(c) 5,7, 9

(d) 11/2, 15/2, 19/2

35. If $y^3 \cdot x^5 = (x+y)^8$, then $\frac{dy}{dx}$ is

(a) $\frac{y}{x}$

(b) $\frac{-y}{x}$

(c) $\frac{y^5}{x^3}$

(d) None of these

36. If $f'(x) = 3x^2 + 2$ & f(0) = 0 then find f(2).

(a) 8

(b) 10

(c) 12

(d) None of these

37. The gradient of the curve $x^3+y^3 = 9$ at the point (1,2) is

(a) -1/4

(b) ¼

(c) 4

(d) -4

38. If $x = \frac{2t}{1+t^2}$, $y = \frac{1-t^2}{1+t^2}$ then $\frac{dy}{dx} + \frac{x}{y}$ is

(a) 1

(b) 2

(c) 0

(d) $4t^2$

39. Evaluate $\int \frac{2x+1}{x(x+1)} dx$

(a) $\log (x^2 - x) + c$

(b) $\log \left(x^2 + x\right) + c$

(c) $\log \left(x^2 + 1\right) + c$

(d) None of these

40. Evaluate $\int_0^1 x.e^x dx$

(a) e

(b) e-1

(c) 2e

(d) 1

Logical Reasoning

41. Find the missing term of the series 17, 14, 15, 12, 13, ?, ?

(a) 10, 11

(b) 14, 11

(c) 11, 13

(d) 12, 13

42. Find out the odd man out of the series 5, 27, 61, 122, 213, 340, 509

(a) 27

(b) 61

(c) 122

(d) 509

43. a_c_ba_ca_cb

(a) abcc

(b) acba

(c) bcaa

(d) bcba

44. In a certain language TWINKLE is written as SVHOJKD, then how would FILTERS be written in the same code?

(a) EHKUDQR

(b) ITNFKD

(c) KVOHMF

(d) TIMFKD

45. C is mother of A and B. If D is husband of B, then what is C to D?

(a) Mother

(b) Aunt

(c) Mother-in-law

(d) Sister

46. Read the following information carefully to answer the questions that follow.

I. 'P + Q' means 'P is father of Q'

II. 'P - Q' means 'P is mother of Q'

III. 'P × Q' means 'P is brother of Q'

IV. 'P ÷ Q' means 'P is sister of Q'

Which of the following means 'M' is maternal uncle of T?

(a) M÷K-T

(b) M×K-T

(c) M×K+T

(d) M÷K+T

47. Pointing a man to photo graph, a man is said to a woman, "His mother is the only daughter of your father". How is the woman is related to the man in the photograph?

(a) Sister

(b) Mother

(c) Wife

(d) Daughter

48. Moni is daughter of Sheela. Sheela is wife of my wife's brother. How Moni is related to my wife?
    (a) Cousin
    (b) Niece
    (c) Sister
    (d) Sister-in-law

49. Four girls are A, B, C and D are sitting around a circle facing the centre. B and C are in front of each other, which of the following is definitely true?
    (a) A and D are in front of each other
    (b) A is not between B and C
    (c) D is to the left of C
    (d) A is to the left of C

50. Seven children A, B, C, D, E, F and G are sitting in a row. G is to be right of D and to the left of B. A is on the right of C, A and D have one child between them. E and B have two children between them. Who is exactly in the middle?
    (a) A
    (b) C
    (c) D
    (d) G

51. A man starts for his office in the North direction, he turns to his left, and then to his right and again to his right. In which direction he will be facing?
    (a) North
    (b) South
    (c) East
    (d) North

52. Pramila is going towards East. She turns left, moves on same distance and again turns to her left. After walking some distance, she turns to her right and moves on. In which direction she is going now?
    (a) North
    (b) South
    (c) North-West
    (d) West

53. Six friends A, B, C, D, E and F are sitting in row facing East. "C "is between 'A' and 'E'. 'B' is just to the right of 'E but left of D'. 'F' is not right end. How many persons are to the left of E ?
    (a) 1
    (b) 2
    (c) 3
    (d) 4

54. If 'MEAT' is written as 'TEAM', then 'BALE' is written as
    (a) ELAB
    (b) EABL

(c) EBLA

(d) EALB

55. Town D is 12 km towards the North of A. Town C is 15 km towards the West of town D. Town B is 15 km towards the west of town A, how far and which direction is town B from town C ?

(a) 15 Km towards North

(b) 12 Km towards North

(c) 3 km towards South

(d) 12 km towards South

56. Rajiv walks 10 m South from his house, turns left and walks 25 m, again turns left and walks 40 m, then turns right and walks 5 m to reach the college. In which direction is the college from his house

(a) North

(b) South-West

(c) North-East

(d) East

(57-60) Each of the following questions contains two statements followed by two conclusions numbered I and II. You have to consider the two statements to be true, even if they seen to be at variance at the commonly known facts. You have to decide which of the given conclusions definitely follows from the given statements

Give answer (a) if only I follows; (b) if only conclusion II follows; (c) both I and II follows and (d) if neither I nor II follows:

57. Statements: I. Some books are magazines.
II. Some magazines are novels

Conclusions: I. Some books are novels

II. Some novels are magazines.

58. Statements: I. Some scales are pencils.
II. Some erasers are pencils.

Conclusions: I. Some pencils are erasers.

II. Some pencils are scales.

59. Statements: I. Some bikes are vans.
II: All vans are trains.

Conclusions: I. Some bikes are trains.

II. No van is a bike.

60. Statements: I. No month is a year.
II. No year is second.

Conclusions: I. All months are second.

II. No Second is month.

Part B Statistics (40 Marks)

61. The number of times a particular item occurs in a given data is called its
    (a) Variation
    (b) Frequency
    (c) Cumulative frequency
    (d) None of these

62. Frequency density is used in the construction of
    (a) Histogram
    (b) Ogive
    (c) Frequency polygon
    (d) None of these

63. The width of each of ten classes in a frequency distribution is 2.5 and the lower class boundary of the lowest class is 10.6. Which one of the following is the upper class boundary of the highest class?
    (a) 35.6
    (b) 33.1
    (c) 30.6
    (d) None of these

64. Let L be the lower class boundary of a class in a frequency distribution and m be the mid point of the class. Which one of the following is the higher class boundary of the class?
    (a) $m + \frac{m+2}{2}$
    (b) $L + \frac{m+L}{2}$
    (c) 2m–L
    (d) m – 2L

65. The mean of the values of 1, 2, 3 ....., n with respective frequencies x, 2x, 3x, ... nx is
    (a) $\frac{n+1}{2}$
    (b) $\frac{n}{2}$
    (c) $\frac{2n+1}{3}$
    (d) $\frac{2n+1}{6}$

66. The mean of four observations is 10 and when a constant a is added to each observation, the mean becomes 13. The value of a is
    (a) 2
    (b) –3
    (c) 3

(d) None of these

67. A person travels from A to B at the rate of 20 km/hr and from B to A at the rate of 30km/hr. What is the average rate of whole journey ?

(a) 30 km/ hr.

(b) 24 km/hr.

(c) 35 km/hr.

(d) none of these

68. The average salary of a group of unskilled workers is Rs.10,000 and that of a group of skilled workers is Rs.15,000. If the combined salary is Rs.12,000, then what is the percentage of skilled workers?

(a) 40%

(b) 50%

(c) 60%

(d) none of these

69. The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is

(a) 13

(b) 10.70

(c) 11

(d) 11.50

70. If the SD of x is 3, what us the variance of (5–2x)?

(a) 36

(b) 6

(c) 1

(d) 9

71. If the values of all observations are equal then the Standard Deviation of the given observations is

(a) 0

(b) 2

(c) 1

(d) None of these

72. The Standard Deviation of a set of 50 items is 10. Find the Standard Deviation if every item is increased by 5.

(a) 15

(b) 5

(c) 10

(d) None of these

73. Find the coefficient of variation if the sum of squared deviations taken from mean 40 of 10 observations is 360.

(a) 15

(b) 20

(c) 40

(d) None of these

74. The average of n numbers is x. If each of the numbers is multiplied by (n+1); then the average of new set of numbers is

(a) x

(b) $\frac{x}{n+1}$

(c) (n + 1).x

(d) None of these

75. The average weight of 8 person increases by 1.5 kg, if a person weighing 65 kg replaced by a new person, what would be the weight of the new person?

(a) 76 kg

(b) 80 kg

(c) 77 kg

(d) None of these

76. For open-end classification, which of the following is the best measure of central tendency?

(a) AM

(b) GM

(c) Median

(d) Mode

77. The presence of extreme observations does not affect

(a) AM

(b) Median

(c) Mode

(d) Any of these.

78. Two variables x and y are given by y= 2x – 3. If the median of x is 20, what is the median of y?

(a) 20

(b) 40

(c) 37

(d) 35

79. If one card is drawn at random from a pack of playing cards; find the probability it is neither a hearts nor a club:

(a) ½

(b) ¼

(c) 1/8

(d) None of these

80. Three balls are drawn at random from a bag containing 6 blue and 4 red balls. What is the chance that 2 balls are blue and 1 is red?

(a) ¼

(b) ¾

(c) ½

(d) None of these

81. The probability that a person travels by a plane is $\frac{1}{5}$ and that he travels by train is $\frac{2}{3}$. Find the probability of his traveling neither by plane nor by train?

(a) $\frac{13}{15}$

(b) $\frac{2}{15}$

(c) $\frac{1}{15}$

(d) None of these

82. Find the probability that at least 5 defective bolts will be found in a box of 200 bolts. If it is known that 2% of such bolts are expected to be defective (Given: $e^{-4} = 0.0183$)

(a) 0.4717

(b) 0.3717

(c) 0.3017

(d) None of these

83. Let X be a random variable with the following distribution

X	-2	4	8
P(x)	1/6	1/3	1/2

Find expected value of the random variable

(a) 5

(b) 6

(c) 7

(d) 8

84. If x & y are two independent variables such that x ~ B(n_1, P) and y ~ B(n_2,p) then the parameter of Z = x+y is

(a) (n_1+n_2), P

(b) (n_1–n_2), P

(c) (n_1+n_2), 2P

(d) None of these

85. Five coins tossed 3200 times. The number of times 5 heads appeared is

(a) 500

(b) 1200

(c) 200

(d) 100

86. For the normal distribution density function f(x) = $k.e^{\frac{(x^2-6x+9)}{8}}$, the mean and variance are

(a) (2,3)

(b) (3,2)

(c) (4,3)

(d) (3,4)

87. The mean deviation of normal distribution is 16. The Quartile Deviation is

(a) 40/3

(b) 20/3

(c) 100/3

(d) 50/3

88. The Quartile Deviation of the normal distribution f(x) = $\frac{1}{\sqrt{18\pi}} e^{\frac{-(x-10)^2}{18}}$, $-\infty<x<\infty$ is

(a) 3

(b) 4/3

(c) 2

(d) ¾

89. If x and y are two independent normal random distributions with mean and SD's are (10, 5) and (15, 12) these mean and SD of (x+y) is

(a) (27, 15)

(b) (10, 27)

(c) (25,13)

(d) (12,25)

90. If two variables are independent their covariance is

(a) 1

(b) -1

(c) 0

(d) None of these

91. If two regression coefficients are 4 and 16, the percentage of unexplained variation is

    (a) 64

    (b) 36

    (c) 54

    (d) 46

92. The covariance between two variables x and y is 72. The variances of x and y are 144 and 84. The coefficient of correlation is

    (a) 1/3

    (b) 4/5

    (c) 2/3

    (d) 3/5

93. If the coefficient of determination is 0.64 and the regression coefficient of x on y is 4 then the regression coefficient y on x is

    (a) 0.32

    (b) 0.16

    (c) 0.48

    (d) 0.96

94. Circular test is the extension of

    (a) Unit test

    (b) Factor reversal test

    (c) Time reversal test

    (d) None of these

95. Unit test is satisfied by by

    (a) Fischers Index number

    (b) Laspyers Index number

    (c) Simple GM of price relatives

    (d) Bowleys Index number

96. The best average construction of Index number is

    (a) AM

    (b) GM

    (c) HM

    (d) none of these

97. The Paasches and Fishers index numbers are 169 and 156 respectively, then Laspyre's Index number is

    (a) 144

(b) 152

(c) 148

(d) 151.5

98. The rise and fall of a time series over periods longer than one year is called:

(a) Secular trend

(b) Seasonal variation

(c) Cyclical Variation

(d) irregular variations

99. A time series has

(a) Two Components

(b) Three Components

(c) Four Components

(d) Five Components

100. What is Spurious correlation?

(a) It is bad relation between two variables

(b) It is low correlation between two variables

(c) It is the correlation between two variables having no casual relation

(d) It is negative correlation

Test Series: October, 2019

MOCK TEST PAPER 1

FOUNDATION COURSE

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

ANSWERS

Section A: Business Mathematics, Logical Reasoning (60 Marks)

1	**(b)**	11	**(b)**	21	**(b)**	31	**(c)**	41	**(a)**	**51**	**(c)**
2	**(a)**	12	**(c)**	22	**(b)**	32	**(a)**	42	**(a)**	**52**	**(a)**
3	**(b)**	13	**(b)**	23	**(b)**	33	**(c)**	43	**(d)**	**53**	**(c)**
4	**(b)**	14	**(a)**	24	**(d)**	34	**(c)**	44	**(a)**	**54**	**(d)**
5	**(a)**	15	**(b)**	25	**(d)**	35	**(a)**	45	**(c)**	**55**	**(d)**
6	**(a)**	16	**(b)**	26	**(a)**	36	**(c)**	46	**(b)**	**56**	**(c)**
7	**(a)**	17	**(d)**	27	**(d)**	37	**(b)**	47	**(b)**	**57**	**(b)**
8	**(a)**	18	**(d)**	28	**(a)**	38	**(c)**	48	**(b)**	**58**	**(c)**
9	**(a)**	19	**(a)**	29	**(a)**	39	**(b)**	49	**(a)**	**59**	**(a)**
10	**(b)**	20	**(b)**	30	**(c)**	40	**(d)**	50	**(c)**	**60**	**(d)**

Section B: Statistics (40 Marks)

61	**(b)**	71	**(a)**	81	**(b)**	91	**(b)**
62	**(a)**	72	**(c)**	82	**(b)**	92	**(c)**
63	**(b)**	73	**(a)**	83	**(a)**	93	**(b)**
64	**(c)**	74	**(c)**	84	**(a)**	94	**(c)**
65	**(c)**	75	**(c)**	85	**(d)**	95	**(c)**
66	**(c)**	76	**(c)**	86	**(b)**	96	**(b)**
67	**(b)**	77	**(b)**	87	**(a)**	97	**(a)**
68	**(a)**	78	**(c)**	88	**(c)**	98	**(c)**
69	**(b)**	79	**(a)**	89	**(c)**	99	**(c)**
70	**(a)**	80	**(c)**	90	**(c)**	100	**(c)**

MOCK TEST PAPER -1

FOUNDATION COURSE

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 hours **Marks: 100**

Section A: Business Mathematics, Logical Reasoning (60 Marks)

1. The ratio of the prices of two houses was 16: 23. Two years later when the price of the first has increased by 10% and that of the second by Rs. 477, the ratio of the prices becomes 11: 20. Find the original prices of the two houses.

   (a) Rs. 848, Rs. 1,219.

   (b) Rs. 838, Rs. 1,119.

   (c) Rs. 828, Rs. 1,219.

   (d) Rs. 848 Rs. 1,229.

2. If a: b = 3: 4, the value of (2a+3b): (3a+4b) is

   (a) 54: 25

   (b) 8: 25

   (c) 17: 24

   (d) 18: 25

3. $5^{16}+ 125^{5}$ is divisible by which of the following

   (a) 5

   (b) 6

   (c) 8

   (d) 9

4. Given that $\log_{10}2 = x$ and $\log_{10}3 = y$, the value of $\log_{10}60$ is expressed as

   (a) x – y + 1

   (b) x + y + 1

   (c) x – y – 1

   (d) none of these

5. If $pqr = a^{x}$,$qrs= a^{y}$ and $rsp= a^{z}$, then find the value of $(pqrs)^{1/2}$

   (a) a^{x+y+z}

   (b) $a^{\sqrt{x+y+z}}$

   (c) $a^{\sqrt[4]{x+y+z}}$

   (d) $(a^{x+y+z})^{1/4}$

6. The sum of two numbers is 62 and their product is 960. The sum of their reciprocals is

   (a) $\frac{31}{480}$

   (b) $\frac{29}{480}$

   (c) $\frac{61}{960}$

   (d) $\frac{41}{960}$

7. Three persons Mr. Roy, Mr. Paul and Mr. Singh together have Rs. 51. Mr. Paul has Rs. 4less than Mr. Roy and Mr. Singh has got Rs. 5 less than Mr. Roy. They have the money as.

   (a) (Rs. 20, Rs. 16, Rs. 15)

   (b) (Rs. 15, Rs. 20, Rs. 16)

   (c) (Rs. 25, Rs. 11, Rs. 15)

   (d) none of these

8. The roots of the quadratic equation $x^2-4x+k = 0$ are coincident if

   (a) k = 4

   (b) k = 3

   (c) k = 2

   (d) k = 1

9. If the order of matrix A is m×p. And the order of B is p×n. Then the order of matrix AB is ?

   (a) m×n

   (b) n×m

   (c) n×p

   (d) m×p

10. if $A=\begin{pmatrix} 2i & 3i \\ 2i & -i \end{pmatrix}$, ($i^2=-1$) then $|A|$ = ?

    (a) 2

    (b) 8

    (c) 4

    (d) 5

11. The wages of 8 men and 6 boys amount to Rs. 33. If 4 men earn Rs. 4.50 more than 5 boys determine the wages of each man and boy.

    (a) (Rs. 1.50, Rs. 3)

    (b) (Rs. 3, Rs. 1.50)

(c) (Rs. 2.50, Rs. 2)

(d) (Rs. 2, Rs. 2.50)

12. The roots of the equation $x^2 + (2p-1)x + p = 0$ are real if.

(a) $p \geq 1$

(b) $p \leq 4$

(c) $p \geq 1/4$

(d) $p \leq ¼$

13. On solving the inequalities $2x + 5y \leq 20, 3x + 2y \leq 12$, $x \leq 0$, $y \leq 0$, we get the following situation

(a) (0, 0), (0, 4), (4, 0) and (20/11, 36/11)

(b) (0, 0), (10, 0), (0, 6) and (20/11,36/11)

(c) (0, 0), (0, 4), (4, 0) and (2, 3)

(d) (0, 0), (10, 0), (0, 6) and (2, 3)

14. On the average experienced person does 5 units of work while a fresh one 3 units of work daily but the employer has to maintain an output of at least 30 units of work per day. This situation can be expressed as,

(a) $5x + 3y \leq 30$

(b) $5x + 3y > 30$

(c) $5x+3y \geq 30$ $x \geq 0$, $y \geq 0$

(d) none of these

15. A sum of Rs. 46,875 was lent out at simple interest and at the end of 1 year 8months the total amount was Rs. 50,000. Find the rate of interest percent per annum.

(a) 5%

(b) 6%

(c) 4%

(d) 8%

16. A = Rs. 5,200, R = 5% p.a., T = 6 years, P will be

(a) Rs. 2,000

(b) Rs. 3,880

(c) Rs. 3,000

(d) none of these

17. The time by which a sum of money would treble itself at 8% p. a C. I is

(a) 14.28 years

(b) 14 years

(c) 12 years

(d) none of these.

18. The present value of an annuity of Rs. 80 for 20 years at 5% p.a is [Given $(1.05)^{20}$= 2.6533]

    (a) Rs. 997 (appx.)

    (b) Rs. 900

    (c) Rs. 1,000

    (d) none of these

19. A person bought a house paying Rs. 20,000 cash down and Rs. 4,000 at the end of each year for 25 yrs. at 5% p.a. C.I. The cash down price is[Given $(1.05)^{25}$= 3.386355]

    (a) Rs. 75,000

    (b) Rs. 76,000

    (c) Rs. 76,375.80

    (d) none of these.

20. A man purchased a house valued at Rs. 3,00,000. He paid Rs. 2,00,000 at the time of purchase and agreed to pay the balance with interest at 12% per annum compounded half yearly in 20 equal half yearly instalments. If the first instalment is paid after six months from the date of purchase then the amount of each instalment is.

    (a) Rs. 8,718.45

    (b) Rs. 8,769.21

    (c) Rs. 7,893.13

    (d) none of these

21. A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of Rs. 300 every year. Using V = a/I find V and V will be

    (a) Rs. 2,000

    (b) Rs. 2,500

    (c) Rs. 3,000

    (d) none of these.

22. A person invests Rs. 500 at the end of each year with a bank which pays interest at 10% p.a C.I. annually. The amount standing to his credit one year after he has made his yearly investment for the 12^{th} time is.[Given $(1.1)^{12}$= 3.1384]

    (a) Rs. 11,761.36

    (b) Rs. 10,000

    (c) Rs. 12,000

    (d) none of these

23. A machine depreciates at 10% of its value at the beginning of a year. The cost and scrap value realized at the time of sale being Rs. 23,240 and Rs. 9,000 respectively. For how many years the machine was put to use?

    (a) 7 years

    (b) 8 years

(c) 9 years

(d) 10 years

24. The compound interest on half-yearly rests on Rs. 10,000 the rate for the first and second years being 6% and for the third year 9% p.a. is

(a) Rs.2,200

(b) Rs.2,287

(c) Rs. 2,285

(d) Rs.2290.84

25. The present value of Rs. 10,000 due in 2 years at 5% p.a. compound interest when the interest is paid on half-yearly basis is

(a) Rs. 9,070

(b) Rs. 9,069

(c) Rs. 9,060

(d) None

26. The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is

(a) 3.2% p.a

(b) 3.25% p.a

(c) 3.0225% p.a

(d) none of these

27. The number of ways the letters of the word 'COMPUTER' can be rearranged is

(a) 40,320

(b) 40,319

(c) 40,318

(d) none of these

28. 5 persons are sitting in a round table in such way that Tallest Person is always on the right-side of the shortest person; the number of such arrangements is

(a) 6

(b) 8

(c) 24

(d) none of these

29. An examination paper with 10 questions consists of 6 questions in Algebra and 4questions in Geometry. At least one question from each section is to be attempted. In how many ways can this be done?

(a) 945

(b) 100

(c) 1000

(d) none of these

30. If 12 school teams are participating in a quiz contest, then the number of ways the first, second and third positions may be won is

(a) 1,230

(b) 1,320

(c) 3,210

(d) none of these

31. Three numbers are in AP and their sum is 21. If 1, 5, 15 are added to them respectively, they form a G. P. The numbers are

(a) 5, 7, 9

(b) 9, 5, 7

(c) 7, 5, 9

(d) none of these.

32. The sum of three numbers in G.P. is 70. If the two extremes by multiplied each by 4 and the mean by 5, the products are in AP. The numbers are

(a) 12, 18, 40

(b) 10, 20, 40

(c) 40, 20, 15

(d) none of these

33. The first and the last term of an AP are –4 and 146. The sum of the terms is 7171. The number of terms is

(a) 101

(b) 100

(c) 99

(d) none of these

34. (AUB)' is equal to

(a) (A' UB)'

(b) A' $\cap$ B'

(c) A'U B'

(d) none of these

35. If f(x) = $\frac{x}{1-x}$ and g(x) = $\frac{x-1}{x}$, then g of(x) is

(a) x–1

(b) x

(c) 1/x

(d) none of these

36. A town has a total population of 50,000. Out of it 28,000 read the newspaper X and 23,000 read Y while 4,000 read both the papers. The number of persons not reading X and Y both is

(a) 2,000

(b) 3,000

(c) 2,500

(d) none of these

37. $\int e^{ax}\, dx$

(a) $e^x + c$

(b) $\frac{e^{ax}}{a} + c$

(c) $\log x + c$

(d) $e^{ax} + c$

38. The gradient of the curve $y = 2x^3 - 5x^2 - 3x$ at $x = 0$ is

(a) 3

(b) –3

(c) 1/3

(d) none of these

39. Evaluate $\int_1^4 (2x + 5)\, dx$ and the value is

(a) 3

(b) 10

(c) 30

(d) None of these.

40. If $f(x) = x^2 - 6x + 8$ then $f'(5) - f'(8)$ is equal to

(a) $f'(2)$

(b) $3.\ f'(2)$

(c) $2.\ f'(2)$

(d) none of these.

41. Find the wrong term of the series 121, 143, 165, 186, 209

(a) 143

(b) 165

(c) 186

(d) 209

42. Find missing term 7, 26, 63, 124, 215, 342?

    (a) 391

    (b) 421

    (c) 481

    (d) 511

43. Find odd man out of the series 145, 197, 257, 325,399

    (a) 145

    (b) 399

    (c) 257

    (d) 325

44. Find missing term of the alphabet series ABD, DGK, HMS, MTB, SBL?

    (a) XKW

    (b) ZAB

    (c) ZKU

    (d) ZKW

45. In a certain language, FLOWER is coded UOLDVI, then how is TERMINAL coded in that language?

    (a) FLKPMROZ

    (b) GVINRMZO

    (c) RVNIGLKA

    (d) MNIVGYEO

46. Pointing to a lady, a man said, “The son of her only brother is the brother of my wife”. How is lady is related to man?

    (a) Mother’s sister

    (b) Grandmother

    (c) Sister of father-in-law

    (d) Maternal Aunt

47. A family has a man, his wife, their four sons and their wives. The family of every son also 3 sons and one daughter. Find out the total number of male members in the whole family?

    (a) 4

    (b) 8

    (c) 12

    (d) 17

48. Given that

    1. A is mother of B.

    2. C is son of A.

3. D is brother of E.

4. E is daughter of B.

The grandmother of D is

(a) A

(b) B

(c) C

(d) E

49. Read the following information and answer the question

'A+B' means 'A is the daughter of B'.

'A ×B' means 'A is the son of B'.

'A – B' means 'A is the wife of B'.

If P × Q-S, which of the following is true

(a) S is wife of B

(b) S is father of P

(c) P is daughter of Q

(d) Q is father of P

50. Statements: I. Some dogs are cats. II. All cats are pigs.

Conclusions: I. Some cats are dogs. II. some dogs are pigs.

Given answer:

(a) If only conclusion I follows

(b) If only conclusion II follows

(c) If either conclusion I or II follows

(d) If both I and II follow

51. Statements: I. Some cats are dogs. II. Some dogs are stones.

Conclusions:

I. No cat is stone.

II. All dogs are stones.

III. Some stones are cats.

IV. No dog is cat.

Given answer:

(a) only conclusion I and III follow

(b) only conclusion II and III follow.

(c) only I , III and IV follow

(d) none follows

52. Statements: I. All men are women. II. All women are crazy.

Conclusions:

I. All men are crazy.

II. All the crazy are men.

III. Some of the crazy are men.

IV. Some of the crazy are women.

(a) None of the conclusions follows

(b) All the conclusions follow

(c) Only I, III, and IV follow

(d) Only II and III follow

52. Statements: I: All aeroplanes are trains.

II: Some trains are chairs.

Conclusions: I: Some aeroplanes are chairs.

II: Some chairs are aeroplanes.

III: Some chairs are trains.

IV: Some trains are aeroplanes.

(a) None follows

(b) Only I and II follow

(c) Only II and III follow

(d) only III and Iv follows

53-55. Read the following information carefully and then answer the questions 53,54 and 55

Six friends A, B, C, D, E and F are sitting on a bench, facing towards North.

I. A is sitting next to B.

II. C is sitting left to D.

III. D is not sitting with E.

IV. E is on the left end of the bench.

V. C is third position from right.

VI. A is on the right side of B and to the right side of E.

VII. A and C are sitting together.

VIII. F is sitting Right of D.

53. At what position A is sitting?

(a) Between B and C

(b) Between D and C

(c) Between E and D

(d) Between C and E

54 What is position of B?

(a) Second from right

(b) Centre

(c) Extreme left

(d) Second from left

55. What is position of D?

(a) Extreme from left

(b) Extreme right

(c) Third from left

(d) Second from right.

56. Six Children A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E, D is not at the end. B is sitting immediate right of E, F is not at the right of end, but D is sitting 3rd left of E. Which of the following is right of D.

(a) A

(b) F

(c) E

(d) C

57. A man is facing towards East and turns through 45° clockwise again 180° clock wise and then turns through 270° anti-clock wise. In which direction is he facing now?

(a) West

(b) North- East

(c) South

(d) South-West

58. Facing towards North, Ravi walks 35 m. He then turns left and walks 55 m. He again turns left and walks 35 m. How far is from original position and towards which direction.

(a) 30 m, North

(b) 20 m, East

(c) 55 m, West

(d) 20 m, South

59. Ram start moving from a point, facing in East direction. After walking 15 m, he turned to his left and walked 25m, before turning to his right. Then, he walked a distance of 35 m, then turned to his right and stop after walking further a distance of 25 m. Find how far Ram is from his starting point.

(a) 20 m

(b) 50 m

(c) 15 m

(d) 25 m

60. Five Friends are sitting on a bench. A is to the left of B but on the right of C, D is to the right ofB but one the left of E. Who are at the extremes?

(a) A, B

(b) A, D

(c) C, E

(d) B, D

Section B: Statistics (40 Marks)

61. Find the number of observations between 250 and 300 from the following data:

Value:	More than 200	More than 250	More than 300	More than 350
No. of observations:	56	38	15	0

(a) 56

(b) 23

(c) 15

(d) 8

62. The difference between Upper limit and lower limit of a class is called

(a) Class Interval

(b) Class boundaries

(c) Mid-Value

(d) Frequency

63. The following data relate to the marks of a group of students:

Marks:	Below 10	Below 20	Below 30	Below 40	Below 50
No. of students:	15	38	65	84	100

How many students got marks more than 30?

(a) 65

(b) 50

(c) 35

(d) 43

64. Median of a distribution can be obtained from

(a) Frequency polygon

(b) Histogram

(c) Less than type ogives

(d) None of these.

65. For open-end classification, which of the following is the best measure of central tendency?

(a) AM

(b) GM

(c) Median

(d) Mode

66. In case of an even number of observations which of the following is median?

(a) Any of the two middle-most value

(b) The simple average of these two middle values

(c) The weighted average of these two middle values

(d) Any of these

67. For a moderately skewed distribution, which of the following relationship holds?

(a) Mean – Mode = 3 (Mean – Median)

(b) Median – Mode = 3 (Mean – Median)

(c) Mean – Median = 3 (Mean – Mode)

(d) Mean – Median = 3 (Median – Mode)

68. Two variables x and y are given by y= 2x – 3. If the median of x is 20, what is the median of y?

(a) 20

(b) 40

(c) 37

(d) 35

69. If the relationship between two variables u and v are given by 2u + v + 7 = 0 and if the AM of u is 10, then the AM of v is

(a) 17

(b) –17

(c) –27

(d) 27

70. The appropriate measure of dispersion for open-end classification is

(a) Standard deviation

(b) Mean deviation

(c) Quartile deviation

(d) All these measures

71. If R_x and R_y denote ranges of x and y respectively where x and y are related by 3x+2y+10=0, what would be the relation between x and y?

(a) Rx = Ry

(b) 2 Rx= 3 Ry

(c) 3 Rx= 2 Ry

(d) Rx= 2 Ry

72. If x and y are related by 2x+3y+4 = 0 and SD of x is 9, then SD of y is

(a) 22

(b) 6

(c) 5

(d) 24

73. The quartiles of a variable are 45, 52 and 75 respectively. Its quartile deviation is

(a) 15

(b) 20

(c) 25

(d) 8.30

74. If x and y are related as 3x+4y = 20 and the quartile deviation of x is 16, then the quartile deviation of y is

(a) 16

(b) 14

(c) 10

(d) 12

75. If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10respectively, then the coefficient of variation of y is

(a) 25

(b) 30

(c) 40

(d) 20

76. What is spurious correlation?

(a) It is a bad relation between two variables.

(b) It is very low correlation between two variables.

(c) It is the correlation between two variables having no causal relation.

(d) It is a negative correlation.

77. When r = 1, all the points in a scatter diagram would lie

(a) On a straight line directed from lower left to upper right

(b) On a straight line directed from upper left to lower right

(c) On a straight line

(d) Both (a) and (b).

78. If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is

(a) 70%

(b) 30%

(c) 51%

(d) 36%

79. If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient?

(a) 0.01

(b) 0.625

(c) 0.4

(d) 0.5

80. If the relation between x and u is $3x + 4u + 7 = 0$ and the correlation coefficient between x and y is –0.6, then what is the correlation coefficient between u and y?

(a) –0.6

(b) 0.8

(c) 0.6

(d) –0.8

81. Three events A, B and C are mutually exclusive, exhaustive and equally likely.

What is the probably of the complementary event of A?

(a) 1/3

(b) 2/3

(c) 3/7

(d) 1

82. What is the chance of picking a spade or an ace not of spade from a pack of 52cards?

(a) 4/13

(b) 2/13

(c) 3/26

(d) 3/18

83. Find the probability that a four-digit number comprising the digits 2, 5, 6 and 7 would be divisible by 4.

(a) 1/4

(b) 1/3

(c) 1/2

(d) 1

84. The probability that an Accountant's job applicant has a B. Com. Degree is0.85, that he is a CA is 0.30 and that he is both B. Com. and CA is 0.25 out of 500 applicants, how many would be B. Com. or CA?

(a) 0.25

(b) 0.30

(c) 0.10

(d) 0.90

85. Rupesh is known to hit a target in 5 out of 9 shots whereas David is known to hit the same target in 6 out of 11 shots. What is the probability that the target would be hit once they both try?

(a) 79/99

(b) 10/13

(c) 14/26

(d) 13/18

86. In connection with a random experiment, it is found that

P(A) = 2/3, P(B) =3/5 and P(AUB) = 5/6, find P(A/B)

(a) 7/18

(b) 1/13

(c) 5/18

(d) 13/18

87. In a business venture, a man can make a profit of Rs. 50,000 or incur a loss of Rs. 20,000. The probabilities of making profit or incurring loss, from the past experience, areknown to be 0.75 and 0.25 respectively. What is his expected profit?

(a) Rs. 33,500

(b) Rs. 34,500

(c) Rs. 35,500

(d) Rs. 32,500

88. Find the probability of a success for the binomial distribution satisfying thefollowing relation

4 P (x = 4) = P (x = 2) and having the parameter n as six.

(a) 1/3

(b) 1/2

(c) 1/5

(d) 1/8

89. An experiment succeeds thrice as after it fails. If the experiment is repeated 5times, what is the probability of having no success at all?

(a) 1/1023

(b) 1/1024

(c) 1/1005

(d) 1/1008

90. If the two quartiles of a normal distribution are 47.30 and 52.70 respectively, what is the mode of the distribution? Also find the mean deviation about median of thisdistribution.

(a) 3.80

(b) 3.40

(c) 3.20

(d) 4.20

91. X follows normal distribution with mean as 50 and variance as 100. What is

P(x≥ 60)? [Givenφ(1) = 0.8413]

(a) 0.20

(b) 0.40

(c) 0.16

(d) 0.30

92. Number of misprints per page of a thick book follows

(a) Normal distribution

(b) Poisson distribution

(c) Binomial distribution

(d) Standard normal distribution

93. If for a Poisson variable X, f(2) = 3 f(4), what is the variance of X?

(a) 2

(b) 4

(c) $\sqrt{2}$

(d) 3

94. If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

(a) 40

(b) 45

(c) 50

(d) 60

95. Fisher's index number satisfies the _____ tests

(a) Time Reversal Test

(b) Factor Reversal Test

(c) both

(d) none

96. Fisher's ideal index number is

    (a) The Median of Laspeyre's and Paasche's index numbers

    (b) The Arithmetic Mean of Laspeyre's and Paasche's index numbers

    (c) The Geometric Mean of Laspeyre's and Paasche's index numbers

    (d) None of these

97. A time series has

    (a) Two Components

    (b) Three Components

    (c) Four Components

    (d) Five Components

98. The additive model of Time Series

    (a) $Y = T + S + C + I$

    (b) $Y = TSCI$

    (c) $Y = a + bx$

    (d) $y = a + bx + C x^2$

99. The Paasches and Fishers index numbers are 169 and 156 respectively, then Laspyre's Index number is

    (a) 144

    (b) 152

    (c) 148

    (d) 151.5

100. The whole sale price index number or agricultural commodities in a given region at a given date is 280. The percentage increase in prices of agricultural commodities over the base year is :

    (a) 380

    (b) 280

    (c) 180

    (d) 80

Test Series: May, 2020

MOCK TEST PAPER -1

FOUNDATION COURSE

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

ANSWERS

Section A: Business Mathematics, Logical Reasoning (60 Marks)

1	**(a)**	11	**(b)**	21	**(c)**	31	**(a)**	41	**(c)**	**51**	**(d)**
2	**(d)**	12	**(d)**	22	**(a)**	32	**(b)**	42	**(d)**	**52**	**(c)**
3	**(b)**	13	**(a)**	23	**(c)**	33	**(a)**	43	**(b)**	**53**	**(a)**
4	**(b)**	14	**(c)**	24	**(d)**	34	**(b)**	44	**(d)**	**54**	**(d)**
5	**(d)**	15	**(c)**	25	**(c)**	35	**(b)**	45	**(b)**	**55**	**(d)**
6	**(a)**	16	**(b)**	26	**(c)**	36	**(b)**	46	**(c)**	**56**	**(a)**
7	**(a)**	17	**(a)**	27	**(b)**	37	**(b)**	47	**(d)**	**57**	**(b)**
8	**(a)**	18	**(a)**	28	**(a)**	38	**(b)**	48	**(a)**	**58**	**(c)**
9	**(a)**	19	**(c)**	29	**(a)**	39	**(c)**	49	**(b)**	**59**	**(b)**
10	**(b)**	20	**(a)**	30	**(b)**	40	**(b)**	50	**(d)**	**60**	**(c)**

Section B: Statistics (40 Marks)

61	**(b)**	71	**(c)**	81	**(b)**	91	**(c)**
62	**(a)**	72	**(b)**	82	**(a)**	92	**(b)**
63	**(c)**	73	**(a)**	83	**(b)**	93	**(a)**
64	**(c)**	74	**(d)**	84	**(d)**	94	**(a)**
65	**(c)**	75	**(c)**	85	**(a)**	95	**(c)**
66	**(b)**	76	**(c)**	86	**(d)**	96	**(c)**
67	**(a)**	77	**(a)**	87	**(d)**	97	**(c)**
68	**(c)**	78	**(d)**	88	**(a)**	98	**(a)**
69	**(c)**	79	**(b)**	89	**(b)**	99	**(a)**
70	**(c)**	80	**(c)**	90	**(c)**	100	**(c)**

Test Series: October, 2020

MOCK TEST PAPER

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 120 Minutes **Maximum Marks: 100**

Section A: Business Mathematics and Logical Reasoning

1. If x: y = 2: 3, then find (5x+2y): (3x-y)
   (a) 13/3
   (b) 16/3
   (c) 19/3
   (d) 7/3
2. A bag contains ₹187 in the form 1 rupee, 50 paise and 10 paise coins in the ratio 3:4:5. Find the number of each type of coins.
   (a) 102, 136, 170
   (b) 136,102, 170
   (c) 170, 102, 136
   (d) none
3. $\log_e x + \log(1+x) = 0$ is equivalent to
   (a) $x^2+x+e = 0$
   (b) $x^2+x- e = 0$
   (c) $x^2+x+1 = 0$
   (d) $x^2+x-1 = 0$
4. The ratio of the speed of the two trains is 2: 5. If the distances they travel are in the ratio 5: 9, find the ratio of times taken by them.
   (a) 2: 9
   (b) 18: 25
   (c) 25: 18
   (d) 10: 45
5. If $x = 3^{1/4} + 3^{-1/4}$ and $y = 3^{1/4} - 3^{-1/4}$, then the value of $3\left(x^2 + y^2\right)^2$ will be
   (a) 12
   (b) 18
   (c) 46
   (d) 64

6. Find the value of (x + y) , if $\left(x+\frac{y^3}{x^2}\right)^{-1}-\left(\frac{x^2}{y}+\frac{y^2}{x}\right)^{-1}+\left(\frac{x^3}{y^2}+y\right)^{-1}=\frac{1}{3}$

   (a) 1/3

   (b) 3

   (c) ½

   (d) 2

7. If 2x -3y = 1 and 5x +2y = 50, then what is the value of (x-2y)?

   (a) -2

   (b) 6

   (c) 7

   (d) 10

8. The cost of 5 mangoes is equal to the cost of 20 oranges. If the total cost 2 mangoes and 10 oranges is ₹ 22.50, find the cost of two oranges.

   (a) ₹ 1.25

   (b) ₹ 2.50

   (c) ₹ 3

   (d) ₹ 3.50

9. The roots of the quadratic equation $9x^2+ 3kx + 4 = 0$ are equal if

   (a) $k = \pm 2$

   (b) $k = \pm 3$

   (c) $k = \pm 4$

   (d) $k = \pm 5$

10. If one root of a equation is $2+\sqrt{5}$, then the quadratic equation is

    (a) $x^2+ 4x- 1 = 0$

    (b) $x^2- 4x- 1 = 0$

    (c) $x^2 + 4x + 1 = 0$

    (d) $x^2 -4x + 1 = 0$

11. A man sells 6 radios and 4 televisions for ₹ 18,480. If 14 radios and 2 televisions are sold for the same amount. What is the price of radio?

    (a) ₹ 1848

    (b) ₹ 840

    (c) ₹ 1680

    (d) ₹ 3360

12. if $\begin{pmatrix} x+y & 1 \\ 1 & x-y \end{pmatrix} + \begin{pmatrix} 2 & 3 \\ 2 & -4 \end{pmatrix} = \begin{pmatrix} 12 & 4 \\ 3 & 0 \end{pmatrix}$ then

(a) x = 7, y = -3

(b) x = -7, y = -3

(c) x =- 7, y = 3

(d) x = 7, y = 3

13. What is the value of x, if A = $\begin{pmatrix} 1 & 4 \\ 2 & x \end{pmatrix}$ is a singular matrix

(a) 5

(b) 6

(c) 7

(d) 8

14. The transpose of a square matrix is a ___

(a) null matrix

(b) row matrix

(c) Square matrix

(d) Column matrix

15. The solution set of the equations x+2 > 0 and 2x -6 > 0 is

(a) (-2, ∞)

(b) (3, ∞)

(c) (-∞ , -2)

(d) (-∞ , -3)

16. The solution space of the inequalities 2x +y ≤10 and x-y ≤5 :

(i) includes origin

(ii) includes the point (4,3)

Which one is correct?

(a) Only (i)

(b) only (ii)

(c) Both (I) and (ii)

(d) None of these

17. A sum of money triples itself in 18 years under simple interest. what is the rate of interest per annum?

(a) 9 %

(b) 9.09 %

(c) 11.11 %

(d) 13%

18. What time will be required for a sum of money to double itself at 8 % Simple interest?

    (a) 8 Years

    (b) 8.5 Years

    (c) 12.5 Years

    (d) 12 Years

19. The difference between simple interest and compound interest on a sum of ₹ 6,00,000 for two years is ₹ 6000. What is the annual rate of interest?

    (a) 8 %

    (b) 10 %

    (c) 6 %

    (d) 12 %

20. What is the sum of money will amount to ₹ 11035.50 in four years at compound interest for 1^{st} , 2^{nd} , 3^{rd} and 4^{th} years being 4% , 3% , 2% and 1% respectively.

    (a) ₹ 10,000

    (b) ₹ 11,000

    (c) ₹ 1035

    (d) ₹ 11,305

21. Find the present value of ₹ 10,000 to be required after 5 years, if the interest rate be 9 per cent compounded annually (Given: $(1.09)^{-5} = 0.65$)

    (a) ₹ 5500

    (b) ₹ 5600

    (c) ₹ 6000

    (d) ₹ 6500

22. A Machine was purchased for ₹ 10,000. Its rate of depreciation is 10% in the first year and 5 % per annum afterwards. Find the depreciated value of Machine after 7 years of purchase (Given $(0.95)^6 = 0.7351$)

    (a) ₹ 6606

    (b) ₹ 6616

    (c) ₹ 6660

    (d) ₹ 6661

23. A company is considering proposal of purchasing a machine either by making full payment of ₹4,000 or by leasing it for 4 years at an annual rent of ₹1250. Which course of action is preferable? if the company can borrow money at 14 % per annum? [Given: $(1.14)^4 = 1.6870$]

    (a) Leasing preferable

    (b) Leasing is not preferable

    (c) can't say

    (d) none of these

24. A man borrows ₹4000 from a bank at 10% compound interest. At the end of every year ₹ 1,500 as part of repayment of loan and interest. How much is still owe to the bank after three such instalments [Given: $(1.1)^3 = 1.331$]

    (a) ₹ 359

    (b) ₹ 820

    (c) ₹ 724

    (d) ₹ 720.

25. The effective rate of interest for one-year deposit corresponding to a nominal 7 % rate of interest per annum convertible quarterly. is

    (a) 7 %

    (b) 7.5

    (c) 7.4 %

    (d) 7.18 %

26. The future value of annuity of ₹1,000, made annually for 5 years at the interest of 14% compounded annually is (Given $(1.14)^5 = 1.925410$)

    (a) ₹ 5610

    (b) ₹ 6610

    (c) ₹ 6160

    (d) ₹ 6160

27. What will be the population after three years when present population is ₹25,000 and population increases at the rate of 3 % in first year, 4 % in second year and 5 % in third year?

    (a) 28119

    (b) 29118

    (c) 27000

    (d) 30000

28. SI = 0.125 P at 10% p.a find the time

    (a) 1.25 years

    (b) 25 Years

    (c) 0.25 Years

    (d) none

29. The number of triangles that can be formed by choosing the vertices from set of 12 points, seven of which lie on the same straight line is

    (a) 185

    (b) 175

    (c) 115

    (d) 105

30. How many ways can be letters of the word “FAILURE’ be arranged so that the consonants may occupy only odd places?

    (a) 576

    (b) 476

    (c) 376

    (d) 276

31. In an examination a candidate has to pass in each of the 4 papers. In how many different ways can be failed?

    (a) 14

    (b) 16

    (c) 15

    (d) None of these

32. In an election the number of candidates is one more than the number of members to be elected. If a voter can vote in 254 different ways; find the number of candidates.

    (a) 8

    (b) 10

    (c) 7

    (d) None of these

33. If a, b, c are in AP and x, y, z are in GP , then the value of $x^{(b-c)} .y^{(c-a)} .z^{(a-b)}$ is

    (a) 1

    (b) 0

    (c) b (c-a)

    (d) none

34. The sum of the first two terms of an infinite geometric series is 15 and each term is equal to the sum of all the terms following it; then the sum of the series is

    (a) 20

    (b) 15

    (c) 25

    (d) None of these

35. Let f: R→R be such that $f(x) = 2^x$, then f(x+y) equals

    (a) f(x) + f(y)

    (b) f(x). f(y)

    (c) f(x) ÷f(y)

    (d) none of these

36. If A = { p, q, r, s } , B = { q, s , t} and C= { m , q, n} find C-(A∩B)

    (a) {m, n}

    (b) {p, q}

(c) {r, s}

(d) {p, r}

37. The set having no element is called

(a) Singleton set

(b) null set

(c) finite set

(d) Infinite set

38. If $x\sqrt{1+y}+y\sqrt{1+x}=0, then\,(1+x)^2\,\frac{dy}{dx}=$

(a) 0

(b) 1

(c) -1

(d) 2

39. Find $\frac{dy}{dx}$ at $t=1$ when $x=t\log t$ and $y=\frac{(\log t)}{t}$

(a) 1

(b) -1

(c) -1/2

(d) 0

40. If $f'(x) = 3x^2+2$ and $f(0) = 0$, find $f(2)$

(a) 5

(b) 8

(c) 10

(d) 12

41. Find next number in the following series 7, 11, 13, 17, 19, 23, 25, 29?

(a) 30

(b) 31

(c) 32

(d) 33

42. Find odd man out of the following series 41, 43, 47, 53, 61, 71, 73, 81

(a) 41

(b) 47

(c) 61

(d) 81

43. If PLAY is coded as 8123 and RHYME is coded as 49367. What will be code of MALE?

(a) 6217

(b) 6198

(c) 6395

(d) 6285

44. Find the alphabet missing series ac_cab_baca_a_ab

(a) aabc

(b) aacb

(c) babb

(d) bcbb

45. If East is replaced by South-East, then West will be replaced by which replaced by which of the following directions?

(a) North-East

(b) North

(c) East

(d) North- West

46. Raju is facing East, he turns 100^0 in the clockwise direction and 145^0in the anti-clock wise direction. Which direction is he facing now?

(a) West

(b) North-East

(c) North

(d) South-West

47. If a man on motor bike starts from a point and rides 4 km South then turns left and rides 2 km and turn again to the right to ride in which direction is he moving?

(a) North

(b) West

(c) South

(d) North

48. Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs.

I. C is seated next to A

II. A is seated two seats from D.

III. B is not seated next to A.

Which of the following must be true?

(I) D is seated next to B.

II E is seated next to A.

Select the correct answer from the codes given below:

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

49. Six friends A, B, C, D, E and F are sitting in a row facing East. 'C' is between 'A 'and 'E'. 'B' is just to the right of É' but left of 'D'. 'F' is not the right end . How many persons are Left of 'E' ?

(a) 1

(b) 2

(c) 3

(d) 4

50. In a straight line there are six persons sitting in a row? B is between F and D. E is between A and C. A does not stand next to F or D, C does not stand next to D. F is between which of the following?

(a) B and E

(b) B and C

(c) B and D

(d) B and A

51. Hema walks 30 km North. Then, she turns right and walks 30 m then she turns right and walks 55 m. Then she turns left and walks 20 m. Then she again turns left and walks 25 m. How many meters away is she from her original position.

(a) 45 m

(b) 50 m

(c) 66 m

(d) 55 m

52. Directions to solve

(a) P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre

(b) P is second to the right of T who is the neighbor of R and V.

(c) S is not neighbour of P

(d) V is neighbour of U

(e) Q is not between S and W, W is not between U and S

Who is two of the following are not neighbour

(a) RV

(b) UV

(c) RP

(d) QW

53. Pointing to a photograph of a boy, Ravi said, “He is son of the only son of my mother”. How is Ravi related to that boy ?

(a) Brother

(b) Uncle

(c) Cousin

(d) Father

54. If A +B means A is brother of B, A-B means A is sister of B, and A × B means A is the father of B . Which of the following means that C is the son of M?

(a) M-N×C+F

(b) F-C+ N×M

(c) N+M-F×C

(d) M×N-C+F

55. If D is brother of B and B is related C. To answer this question which of the following statements are necessary?

I. The son of D is the grandson of C.

II. B is the sister of D.

(a) Only 1

(b) Only II

(c) Either I or II

(d) I and II

56. There are two couple in a family. K has two children. M is wife of O, who is the brother of B. F is daughter K. U is sister of S, who is son of O. T is the son of B, who is the male. How U is related to T?

(a) Mother

(b) Brother

(c) Sister

(d) Cousin

57. Statements I: Seetha is a girl.

II: All girls are nice.

Conclusions I: All girls are Seetha.

II: Seetha is not a nice girl.

(a) If only I follow.

(b) If only II follow.

(c) If both I and II follow.

(d) If neither I nor II follow.

58. Statements: I: Some fruits are flowers.

II: No flower is a boat.

III: All boats are rivers.

Conclusions: I: Some fruits are rivers.

II: Some rivers are boats.

III: Some rivers are fruits

IV: Some flowers are fruits

(a) Only I and III follows.

(b) Only II and III follows.

(c) Only II and IV follows

(d) All follows.

59. Statement I : Some chairs are caps . II: No cap is red.

Conclusion: I : Some caps are Chairs

II : No Chair is red

(a) If only Conclusion I follow

(b) If only conclusion II follow

(c) If either I or II follow.

(d) If neither I nor II follow.

60. Statement I: Some tigers are bats

II: Some bats are cats

Conclusion: I: Some tigers are cats

II: Some cats are tigers

(a) If only Conclusion I follow

(b) If only conclusion II follow

(c) If either I or II follow.

(d) If neither I nor II follow.

Section B: Statistics

61. The following data relates to the incomes of 90 persons:

Income in ₹	1500-1999	2000-2499	2500-2999	3000-3499
No.of Persons	13	32	20	25

Which is the percentage of persons earning more than ₹ 2,000?

(a) 45

(b) 85.56

(c) 52

(d) 55

62. The most appropriate diagram to represent the data relating to the monthly expenditure on different items by a family is ?

(a) Histogram

(b) Pie-diagram

(c) Frequency polygon

(d) Line graph

63. The distribution of income is an example of frequency distribution of

(a) Continuous variable

(b) A discrete variable

(c) An attribute

(d) (b) or (c)

64. The number of accidents for seven days in a locality are given below :

No. of accidents :	0	1	2	3	4	5	6
Frequency :	12	15	23	30	9	3	2

What is the number of cases when 3 or less accidents occurred?

(a) 56

(b) 6

(c) 80

(d) 87

65. Two variables assume the values 1,2, 3,.. 5 with frequencies as 1, 2, 3, ..5 , then what is the AM ?

(a) 11/3

(b) 15/8

(c) 4.86

(d) 10

66. If there are two groups with 75 and 65 as harmonic means containing 15 and 13 observation then combined HM is given by

(a) 70

(b) 72.25

(c) 78

(d) 76

67. Quartile can be determined graphically using

(a) ogive

(b) Histogram

(c) Pie Chart

(d) Frequency Polygon

68. The mean deviation about Mode for the numbers 4/11, 6/11, 8/11, 9/11, 12/11, 8/11 is

(a) 9/15

(b) 12

(c) 6/11

(d) 1/6

69. The range of 28, 22, 40, 20, 15, 50 is
    (a) 40
    (b) 22
    (c) 35
    (d) none of these
70. A shift of origin has no impact on
    (a) Mean Deviation
    (b) Standard Deviation
    (c) Quartile Deviation
    (d) All of these
71. What is the coefficient of variation of the following numbers 53, 52, 61, 60, 64
    (a) 18.09
    (b) 8.09
    (c) 12.23
    (d) 15.45
72. The quartiles of the variables are 45, 52, and 65 respectively, its Quartile Deviation is
    (a) 5
    (b) 10.
    (c) 25
    (d) 8.30
73. The mean and SD for a, b, and 2 are 3 and 1 respectively, the value of ab would be
    (a) 3
    (b) 5
    (c) 12
    (d) 13
74. If the relation between x and y is 5y -3x = 10 and the mean deviation about mean for x is 12, then the mean deviation of y about mean is
    (a) 9.20
    (b) 6.80
    (c) 7.20
    (d) 15.80
75. Which measure of dispersion is based on all the observations
    (a) Standard Deviation
    (b) Mean Deviation
    (c) Quartile Deviation
    (d) Both (a) and (b)

76. An investment consultant predicts that the odds against the price of a certain stock going up are 2:1 and odd are in favor of the price remaining the same are 1:3 .what is the probability that the price of stock will go down ?

    (a) 5/12

    (b) 7/12

    (c) 1/3

    (d) ¼

77. A pair of dice rolled. If the sum of the two dice is 9, find the probability that one of the dice showed is 3

    (a) 1/3

    (b) ¼

    (c) ½

    (d) 1/8

78. The overall percentage of failures in a certain examination was 30. What is the probability that out of a group f 6 candidates at least four passed the examination?

    (a) 0.747331

    (b) 0.757331

    (c) 0.76991

    (d) 0.72339

79. What is the probability of getting neither total of 7 nor 11 when the pair of dice is tossed?

    (a) 7/9

    (b) 2/9

    (c) 3/9

    (d) 4/9

80. What is the probability that a leap year selected at random contains either 53 Sundays or 53 Mondays

    (a) 2/7

    (b) 3/7

    (c) 4/7

    (d) 1/7

81. if A and B are two events, such that P(A) = ¼, P(B) = 1/3 and P(AUB)=1/2, then P(B/A) is equal to

    (a) ¾

    (b) ½

    (c) ¼

    (d) 1/3

82. What is the probability of getting exactly 2 head in 7 tosses of a fair coin?

    (a) 5/64

    (b) 7/64

    (c) 7/128

(d) 21/128

83. The Binomial Distribution for which mean = 15 and variance = 6.0 is

(a) ${}^{25}C_x (3/5)^x (2/5)^{25-x}$

(b) ${}^{25}C_x (2/5)^x (3/5)^{25-x}$

(c) ${}^{25}C_x (2/5)^x (3/5)^{1-x}$

(d) ${}^{25}C_x (3/5)^x (2/5)^{1-x}$

84. The SD of a binomial distribution with parameter n and p is

(a) n (1– p).

(b) np (1 – p).

(c) np.

(d) $\sqrt{np(1-p)}$.

85. If P(X=2) = P(X=3) for a Poisson Variate X, then E(x) is

(a) 2

(b) 3

(c) 1

(d) none of these

86. The total area of the normal curve is

(a) One.

(b) 50 per cent.

(c) 0.50.

(d) Any value between 0 and 1

87. The mean and mode of the normal distribution

(a) may be equal

(b) may be different

(c) are always equal

(d) (a) or (b)

88. Bivariate Data are the data collected for

(a) Two variables.

(b) More than two variables.

(c) Two variables at the same point of time.

(d) Two variables at different points of time.

89. The two lines of regression become identical when

(a) r = 1

(b) r = –1

(c) r = 0

(d) (a) or (b)

90. The regression coefficients remain unchanged due to a

(a) Shift of origin

(b) Shift of scale

(c) Both (a) and (b)

(d) (a) or (b).

91. If the coefficient of correlation between two variables is –0 .9, then the coefficient of determination is

(a) 0.9

(b) 0.81

(c) 0.1

(d) 0.19

92. When r = 0 then cov (x,y) is equal to

(a) + 1

(b) – 1

(c) 0

(d) none

93. Purchasing Power of Money is

(a) Reciprocal of price index number.

(b) Equal to price index number.

(c) Unequal to price index number.

(d) None of these.

94. Factor Reversal test is satisfied by

(a) Fisher's Ideal Index Number

(b) Laspeyre's Index Number

(c) Paasche's Index Number

(d) All of the above

95. During the certain period the C.L.I. goes up from 110 to 200 and the Salary of a worker is also raised from 330 to 500, then the real terms is

(a) Loss by ₹ 50

(b) Loss by ₹ 75

(c) Loss by ₹ 90

(d) None of these.

96. The number of tests adequacy is

(a) 2

(b) 5

(c) 3

(d) 4

97. In year 2005, the whole sale price index number is 286 with 1985 as base year, then how much the prices have increased in 2005 in comparison to 1995 ?

(a) 286%

(b) 386%

(c) 86%

(d) 186%

98. When the sale of cold drink increase in summer and decreases in winters is an example of ?

(a) Seasonal Variations

(b) Cyclic Variations

(c) Secular trend

(d) None

99. Seasonal Variations take place within

(a) One year

(b) Two year

(c) half Year

(d) five years

100. The fire in a factory is an example.

(a) Secular trend

(b) Seasonal Variations

(c) Irregular variations

(d) Cyclical Variations

Test Series : October, 2020

MOCK TEST PAPER

FOUNDATION COURSE

PAPER – 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

ANSWERS

Section A: Business Mathematics, Logical Reasoning (60 Marks)

1	**(b)**	11	**(b)**	21	**(d)**	31	**(c)**	41	**(b)**	**51**	**(b)**
2	**(a)**	12	**(d)**	22	**(b)**	32	**(a)**	42	**(d)**	**52**	**(a)**
3	**(d)**	13	**(d)**	23	**(a)**	33	**(a)**	43	**(a)**	**53**	**(d)**
4	**(c)**	14	**(c)**	24	**(a)**	34	**(a)**	44	**(b)**	**54**	**(d)**
5	**(d)**	15	**(b)**	25	**(d)**	35	**(b)**	45	**(d)**	**55**	**(d)**
6	**(b)**	16	**(a)**	26	**(b)**	36	**(a)**	46	**(b)**	**56**	**(d)**
7	**(a)**	17	**(c)**	27	**(a)**	37	**(b)**	47	**(c)**	**57**	**(d)**
8	**(b)**	18	**(c)**	28	**(a)**	38	**(c)**	48	**(c)**	**58**	**(c)**
9	**(c)**	19	**(b)**	29	**(a)**	39	**(a)**	49	**(c)**	**59**	**(a)**
10	**(b)**	20	**(a)**	30	**(a)**	40	**(d)**	50	**(b)**	**60**	**(d)**

Section B: Statistics (40 Marks)

61	**(b)**	71	**(b)**	81	**(d)**	91	**(b)**
62	**(b)**	72	**(b)**	82	**(d)**	92	**(c)**
63	**(a)**	73	**(b)**	83	**(a)**	93	**(a)**
64	**(c)**	74	**(c)**	84	**(d)**	94	**(a)**
65	**(a)**	75	**(d)**	85	**(b)**	95	**(a)**
66	**(a)**	76	**(a)**	86	**(a)**	96	**(d)**
67	**(a)**	77	**(c)**	87	**(c)**	97	**(d)**
68	**(d)**	78	**(a)**	88	**(c)**	98	**(a)**
69	**(c)**	79	**(a)**	89	**(d)**	99	**(a)**
70	**(d)**	80	**(b)**	90	**(a)**	100	**(c)**

Test Series: March, 2021

MOCK TEST PAPER SERIES -1

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 hours **Marks: 100**

Section A: Business Mathematics and Logical Reasoning

1. Two numbers are in the ratio 7: 8 if 3 is added to each of them, their ratio becomes 8:9, the numbers are

   (a) 14, 16

   (b) 24, 27

   (c) 21, 24

   (d) 16, 18

2. Which of the numbers are not in proportions?

   (a) 6,8,5,7

   (b) 7.3,14,6

   (c) 18,27,12,18

   (d) 8,6,12, 9

3. If $x^2 + y^2 = 7xy$, then $\log \frac{1}{3}(x + y) =$ then x is

   (a) (logx+logy)

   (b) ½(logx+logy)

   (c) 1/3(logx+logy)

   (d) 3(logx/logy)

4. The value of $\frac{2^n + 2^{n-1}}{2^{n+1} - 2^n}$ is

   (a) 1/2

   (b) 3/2

   (c) 2/3

   (d) 2

5. If $3^x = 5^y = 75^z$ then

   (a) x+y-z= 0

   (b) $\frac{2}{x} + \frac{1}{y} = \frac{1}{z}$

   (c) $\frac{1}{x} + \frac{2}{y} = \frac{1}{z}$

(d) $\frac{2}{x}+\frac{1}{z}=\frac{1}{y}$

6. The value of $\sqrt{6+\sqrt{6+\sqrt{6+.....\infty}}}$ is

(a) -3

(b) 2

(c) 3

(d) 4

7. If one root of the equation $x^2 - 3x + k = 0$ is 2, then value of k will be

(a) -10

(b) 0

(c) 2

(d) 10

8. If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is _____

(a) $x^2 - 16x - 25 = 0$

(b) $x^2 - 16x + 25 = 0$

(c) $x^2 + 16x + 25 = 0$

(d) None of these

9. The transpose of a column matrix is a

(a) null matrix

(b) row matrix

(c) scalar matrix

(d) column matrix

10. $\begin{pmatrix} a & -b \\ b & a \end{pmatrix} \times \begin{pmatrix} -a & b \\ b & a \end{pmatrix}$

(a) $\begin{pmatrix} a^2+b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

(b) $\begin{pmatrix} -a^2-b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

(c) $\begin{pmatrix} a^2-b^2 & 0 \\ 0 & a^2+b^2 \end{pmatrix}$

(d) $\begin{pmatrix} a^2-b^2 & 0 \\ 0 & a^2-b^2 \end{pmatrix}$

11. The solution of the inequality $\frac{(5-2x)}{3} \leq \frac{x}{6} - 5$ is

    (a) $x \geq 8$

    (b) $x \leq 8$

    (c) $x = 8$

    (d) None of these

12. On the average, experienced person does 5 units of work while a fresh one 3 units work daily but the employer have to maintain the output of atleast 30 units of work per day. The situation can be expressed as.

    (a) $5x + 3y \leq 30$

    (b) $5x + 3y \geq 30$

    (c) $5x + 3y = 30$

    (d) None of these

13. Rs. 8,000 becomes Rs. 10,000 in two years at simple interest. The amount that will become Rs. 6,875 in 3 years at the same rate of interest is:

    (a) Rs. 4,850

    (b) Rs. 5,000

    (c) Rs. 5,500

    (d) Rs. 5,275

14. The difference between the simple and compound interest on a certain sum for 3 year at 5% p.a. is Rs. 228.75. The compound interest on the sum for 2 years at 5% p.a. is:

    (a) Rs. 3,175

    (b) Rs. 3,075

    (c) Rs. 3,275

    (d) Rs. 2,975

15. A sum of money doubles itself in 10 years. The number of years it would treble itself is:

    (a) 25 years

    (b) 15 years

    (c) 20 years

    (d) None

16. The effective rate equivalent to nominal rate of 6% compounded monthly is:

    (a) 6.05

    (b) 6.17

    (c) 6.26

    (d) 6.07

17. A person borrows Rs. 5,000 for 2 years at 4% p.a. simple interest. He immediately lends to another person at $6\frac{1}{4}$% p.a. for 2 years. Find his gain in the transaction per year:

    (a) Rs. 112.50

    (b) Rs. 125

    (c) Rs. 225

    (d) Rs. 167.50

18. Future value of an ordinary annuity

    (a) $A\ (n,i) = A\left[\frac{(1+i)^n - 1}{i}\right]$

    (b) $A\ (n,i) = A\left[\frac{(1+i)^n + 1}{i}\right]$

    (c) $A\ (n,i) = A\left[\frac{1-(1+i)^n}{i}\right]$

    (d) $A\ (n,i) = A\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$

19. The cost of machinery is Rs. 1,25,000/- if its useful life is estimated to be 20 years and the rate of depreciation of its cost is 10% p.a., then the scrap value of the Machinery is [given that $(0.9)^{20} = 0.12158$]

    (a) 15,197

    (b) 15,400

    (c) 15,300

    (d) 15,250

20. If A person invests Rs.5,000 in a three years' investment that pays you 12% per annum. Calculate the future value of the investment.

    (a) Rs.7024.64

    (b) Rs. 7124.78

    (c) Rs.7324.48

    (d) Rs.7526.48

21. A company is considering proposal of purchasing a machine either by making full payment of Rs.4000 or by leasing it for four years at an annual rate of Rs.1250. Which course of action is preferable if the company can borrow money at 14% compounded annually? [P (4,0.14) = 2.9137]

    (a) leasing is not preferable

    (b) leasing is preferable

    (c) Cannot determined

    (d) none of these

22. Anil bought a motor cycle costing Rs.1,50,000 by making a down payment of Rs.50, 000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amount be 10% compounded annually? [P (5, 0.10) = 3.7908]

    (a) Rs.26379.66

    (b) Rs.26300.70

    (c) Rs.26500.70

    (d) Rs.26370.70

23. Shoba borrows Rs.50,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance, what will be the equal annual instalment?

    [Given : P(20,0.10) =8.51356]

    (a) Rs.687298.4

    (b) Rs.685298.4

    (c) Rs.585298.4

    (d) Rs.587298.4

24. How much money is to be invested every year so to accumulate Rs. 3,00,000 at the end of 10 years if interest is compounded annually at 10% [A (10,0.1) = 15.9374)

    (a) Rs.18823.65

    (b) Rs.18833.64

    (c) Rs.18223.60

    (d) Rs.16823.65

25. The number of triangles that can be formed by choosing the vertices from a set of 12 points, seven of which lie on the same straight line, is:

    (a) 185

    (b) 175

    (c) 115

    (d) 105

26. An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and Part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part, in how many maximum ways can the candidate select the questions?

    (a) 35

    (b) 175

    (c) 210

    (d) 420

27. In how many ways can the letters of the word FAILURE be arranged so that the consonants may occupy only odd positions?

    (a) 576

    (b) 476

    (c) 376

    (d) 276

28. Find the number of combinations of the letters of the word COLLEGE taken four together:

(a) 18

(b) 16

(c) 20

(d) 26

29. If A = {1, 2, 3, 4, 5} and B = {6, 7, 8,9}, then cardinal number of AXB is:

(a) 20

(b) 5

(c) 3

(d) 8

30. The number of subsets of the set A = {1, 2, 3, 4, 5, 6, 7, 8} is

(a) 36

(b) 128

(c) 256

(d) None of these

31. If f(x) = $\left(\frac{x^2-4}{x-2}\right)$, then f(2) is

(a) 0

(b) 2

(c) 4

(d) 1

32. Find the sum to n terms of the series : 7+77+777+…….. to n terms:

(a) $\frac{7}{9}\left(10^{n+1}-10\right)-\frac{7n}{9}$

(b) $\frac{7}{9}\left(10^{n+1}-10\right)+\frac{7n}{9}$

(c) $\frac{7}{81}\left(10^{n+1}-10\right)-\frac{7n}{9}$

(d) $\frac{7}{81}\left(10^{n+1}-10\right)+\frac{7n}{9}$

33. If the sum of n terms of an A.P. is ($3n^2 - n$) and its common difference is 6, then its third term is:

(a) 10

(b) 12

(c) 14

(d) 16

34. Insert 4 A.M.'s between 3 and 18:

(a) 12,15,9,6

(b) 6,9,12,15

(c) 9,6,12,15

(d) 15,12,9,6

35. $\sum n^2$ defines:

(a) $\frac{n(n+1)(2n+1)}{6}$

(b) $\frac{n(n+1)}{2}$

(c) $\left[\frac{n(n+1)}{2}\right]^2$

(d) None of these

36. If A = (1,2,3,4,5) B = (2,4) and C = (1,3,5) then (A-C)×B is

(a) {(2,2,), (2,4), (4,2), (4,4), (5,2), (5,4)}

(b) {(1,2), (1,4), (3,2), (3,4), (5,2), (5,4)}

(c) {(2,2), (4,2), (4,4), (4,5)}

(d) {(2,2), (2,4), (4,2), (4,4)}

37. If $f(x) = x^k$ and f ` (1) = 10 then the value of k is

(a) 10

(b) - 10

(c) 1/10

(d) None

38. Given $x = 2t + 5$; $y = t^2-2$, then $\frac{dy}{dx}$ is calculated as:

(a) t

(b) 1/t

(c) -1/t

(d) None

39. Evaluate $\int \frac{2x+1}{x(x+1)} dx$

(a) $\log(x^2 - x) + c$

(b) $\log\left(x^2 + x\right) + c$

(c) $\log\left(x^2 + 1\right) + c$

(d) None of these

40. Evaluate $\int_0^2 x^5 dx$

(a) 32/3

(b) 1/3

(c) 1/2

(d) 1

41. Find the missing term of the series 27,32,30,35, 33, ?

(a) 28

(b) 31

(c) 36

(d) 38

42. Find out the letter series AZY, EXW, IVU, ?

(a) MTS

(b) MQR

(c) NRQ

(d) LST

43. Find wrong number of the series 22,37, 52,67, 84, 97

(a) 52

(b) 84

(c) 97

(d) 67

44. If TWENTY is written as 863985 and ELEVEN is written as 323039 , then TWELVE can be coded

(a) 863203

(b) 863302

(c) 863320

(c) 683302

45. If 'LOSE' is coded 1357 and 'GAIN' is coded as 2468 What do the figure 82146 for

(a) NGLAI

(b) NGLIA

(c) GNLIA

(d) GNLAI

46. If B = 2 and BAG = 10, then BOX = ?

(a) 36

(b) 39

(c) 41

(d) 52

47. A man stands on a point and starts walking towards north then turns left then turns right and then left in which direction he is moving.

(a) West

(b) North

(c) East

(d) South

48. One evening before sunset, two friends Ravi and Raj were talking to each other face to face. If Ravi's shadow was exactly to his left side, which direction was Raj facing ?

(a) West

(b) East

(c) North

(d) South

49. If South-West becomes North, then what will be the North-East be ?

(a) North

(b) South-East

(c) South

(d) East

50. Six children A, B, C, D, E and F are sitting in a row facing north. B is between F and D. E is between A and C. A does Not Stand next to F and D. C does not stand next to D. F is between which of the following pairs of children?

(a) B and E

(b) B and C

(c) B and D

(d) B and A

51. Five boys A, B, C, D and E are sitting in a row facing north. A is to the immediate right of B and E is on the immediate left of B but on the right of C and A is on the left of D. Who is second from the left end?

(a) D

(b) A

(c) E

(d) B

(Q. No 52-53) Read the following information carefully and answer the questions that follow.

Eight friends A, B, C, D, E, F, G and H are sitting in circle facing the center . B is sitting G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other ?

52. who is third to left of D ?

(a) F

(b) E

(c) A

(d) Cannot be determined.

53. Who is sitting between H and D

(a) F

(b) E

(c) A

(d) Cannot be determined.

54. If A+B means A is the sister of B, A x B means A is the wife of B, A % B means A is the father of B and A – B means A is the brother of B. Which of the following means T is the daughter of P?

(a) P x Q % R + S – T

(b) P x Q % R – T + S

(c) P x Q % R + T – S

(d) P x Q % R – T + S

55. Anil said "This girl is the wife of the grandson of my mother". How is Anil related to the girl?

(a) Brother

(b) Grandfather

(c) Husband

(d) Father-in-law

56. P is the mother of K, K is the sister of D. D is the father of J. How is P related to j?

(a) Mother

(b) Grandmother

(c) Aunt

(d) Data is inadequate.

57. In a family, there are six members A, B, C, D, E and F. A and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, whose husband has died. How is E related to C ?

(a) Sister

(b) Daughter

(c) Cousin

(d) Mother

(58-60) Each of the following questions contains two statements followed by two conclusions numbered I and II. You have to consider the two statements to be true, even if they seen to be at variance at the commonly known facts. You have to decide which of the given conclusions definitely follows from the given statements.

58. Statements: I. Some banks are colleges.

II: All colleges are schools.

Conclusions: I. Atleast some banks are schools.

II. All schools are colleges

(a) only conclusion I follows

(b) only conclusion II follows

(c) either I or II follows

(d) neither I and II follows.

59. Statements: I. All bottles are glasses.

II: No cup is a glass.

Conclusions: I. No bottle is a cup.

II. Atleast some glasses are bottles.

(a) only conclusion I follows

(b) only conclusion II follows

(c) either I or II follows

(d) Both I and II follows.

60. Statements: I. Some cities are towns.

II: Some villagers are cities.

Conclusions: I. Aleast some villagers are towns.

II. No village is a town.

(a) only conclusion I follows

(b) only conclusion II follows

(c) either I or II follows

(d) Both I and II follows.

Part B Statistics (40 Marks)

61. Histogram is used for presentation of the following type of series

(a) Time Service

(b) Continuous Frequency Series

(c) Discrete Series

(d) Individual Series

62. The graphical representation of cumulative frequency distribution is called–

(a) Histogram

(b) Pie Chart

(c) Frequency Polygon

(d) Ogive

63.

No. of Accidents	0	1	2	3	4	5	6	7
Frequency	36	27	33	29	24	27	18	9

In how many cases 5 or more accidents occur?

(a) 96

(b) 133

(c) 78

(d) 54

64. The difference between upper limit and lower limit of a class is called:

(a) Class interval

(b) Class boundaries

(c) Mid-value

(d) Frequency

65. A man travels at a speed of 20km/hr and then returns at a speed of 30 km/ hr. His average speed of the whole journey is :

(a) 25 km/ hr

(b) 24.5 km/hr

(c) 24 km/hr

(d) None

66. The sum of the squares of deviations of a set of observations has the smallest value, when the deviations are taken from their:

(a) A.M.

(b) H.M.

(c) G.M.

(d) None

67. If two variables x and y are related by $2x + 3y - 7 = 0$ and the mean and mean deviation about mean of x are 1 and 0.3 respectively, then the co-efficient of mean deviation of y about mean is:

(a) -5

(b) 4

(c) 12

(d) 50

68. If the A.M. and H.M. for two numbers are 5 and 3.2 respectively then the G.M. will be:

(a) 4.05

(b) 16

(c) 4

(d) 4.10

69. What is the coefficient of range for the following distribution?

Class interval	10-19	20-29	30-39	40-49	50-59
Frequency	11	25	16	7	3

(a) 22

(b) 50

(c) 75.82

(d) 72.46

70. If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations. Then the combined H.M. is given by:

(a) 70

(b) 80

(c) 70.35

(d) 69.48

71. If X and Y are two random variables then v(x+y), when x is independent of y

(a) v (x) + v(y)

(b) v(x) + v(y) – 2 v (x,y)

(c) v(x) + v(y) + 2 v (x,y)

(d) v (x) – v (y)

72. G.M is a better measure than others when,

(a) ratios and percentages are given

(b) interval of scale is given

(c) Both (a) and (b)

(d) Either (a) or (b)

73. The sum of squares of deviation from mean of 10 observations is 250. Mean of the data is 10. Find the co-efficient of variation.

(a) 10%

(b) 25%

(c) 50%

(d) 0%

74. The equation of a line is 5x + 2y = 17. Mean deviation of y about mean is 5. Calculate mean deviation of x about mean.

(a) -2

(b) 2

(c) -4

(d) None

75. If variance of is x is 5, then find the variance of (2- 3x)

(a) 10

(b) 45

(c) 5

(d) -13

76. Let the mean of the variable 'x' be 50, then the mean of u=10+5x will be:

(a) 250

(b) 260

(c) 265

(d) 273

77. If sum of squares of the values = 3390, N = 30 and standard deviation = 7, find out the mean.

(a) 113

(b) 210

(c) 8

(d) None of these

78. Which of the following measures of central tendency cannot be calculated by graphical method?

(a) Mean

(b) Mode

(c) Median

(d) Quartile

79. In a non-leap year, the probability of getting 53 Sundays or 53 Tuesday or 53 Thursday is :

(a) 4/7

(b) 2/7

(c) 3/7

(d) 1/7

80. If A and B are two events and P (A) = 2/3, P(B) =3/5, $P\left(AUB\right)$ = 5/6, then the value of $P\left(A^{'}/B^{'}\right)$ is :

(a) ¼

(b) 5/12

(c) 5/8

(d) 5/4

81. The odds are 9:5 against a person who is 50 years living till he is 70 and 8:6 against a person who is 60 living till he is 80. Find the probability that at least one of them will be alive after 20 years.

(a) 11/14

(b) 22/49

(c) 31/49

(d) 35/49

82. What is the chance of throwing at least 7 in a single cast with two dices?

(a) 5/12

(b) 7/12

(c) 1/4

(d) 17/36

83. Correlation coefficient r, bxy and byx are all have ___ signs

(a) different

(b) same

(c) both

(d) none

84. The covariance between two variables is

(a) Strictly Positive

(b) Strictly negative

(c) Always Zero

(d) Either Positive or Zero or Negative

85. If u+5x = 6 and 3y-7v = 20 and correlation coefficient between x and y is 0.58 then what be the correlation coefficient between U and V ?

(a) 0.58

(b) -0.58

(c) -0.84

(d) 0.84

86. The coefficient of two variables is 0.9, then coefficient of non-determination is

(a) 0.9

(b) 0.19

(c) 0.81

(d) 0.1

87. If y = 3x+4 is the regression line y on x and the arithmetic mean of x is -1, what is the arithmetic mean of y

(a) 1

(b) -1

(c) 7

(d) none of these

88. if the sum of squares in difference of ranks, given by two judges A and B of 8 students is 21, What is the value of rank correlation coefficient?

(a) 0.7

(b) 0.65

(c) 0.75

(d) 0.8

89. In normal distribution what is the ratio of QD:MD:SD

(a) 12:10:15

(b) 15:10:12

(c) 10:15;12

(d) 10:12:15

90. Area covered normal curve by $\mu \pm 3\sigma$

(a) 68.28%

(b) 95.96%

(c) 99.73%

(d) 99.23%

91. If x is binomial variate with parameter 15 and 1/3 what is the value of mode of the distribution.

(a) 5& 6

(b) 5.5

(c) 5

(d) 6

92. In Poisson distribution which of the following is same.

(a) Mean and variance.

(b) Mean and SD

(c) Both

(d) None of these

93. The Quartile Deviation of Normal Distribution with mean is 10 and variance is 16 is

(a) 54.24

(b) 23.20

(c) 0.275

(d) 2.70

94. What is the standard deviation of number recoveries among 48 patients when the probability of recovering is 0.75 ?

(a) 36

(b) 81

(c) 9

(d) 3

95. Fishers Price Index number is equal is

(a) G. M of Kelly's Price Index number and Paasche's Price Index number

(b) G.M of Laspyres and Paaches Price Index number

(c) G.M of Bowley's price index number and Paasche's Index number.

(d) None of these

96. The prices of commodity in the year 2015 and 2020 were 25 and 30 respectively taking 2015 as base year the price relative is

(a) 109.8

(b) 110.25

(c) 113.25

(d) 83.33

97. For year 2015, price index was 267% with base year 2005. The percentage increase in price index over base year 2005 is:

(a) 267%

(b) 67%

(c) 167%

(d) None of these

98. In time Series Seasonal variations can occur within a period of

(a) one year

(b) Three years

(c) Nine years

(d) Five years

99. Damages due to floods, droughts, strikes fires and political disturbances are called in time series

(a) Trend

(b) Seasonal

(c) Cyclical

(d) Irregular

100. The Multiplicative Time Series Model is

(a) $Y = T+S+C+I$

(b) $Y = T.S.C.I$

(c) $Y = a+bx$

(d) $Y = a+bx +Cx^2$

Paper 3: Business Mathematics, Logical Reasoning and Statistics

Key Part A: Business Mathematics and Logical Reasoning

1	**(c)**	2	**(a)**	3	**(b)**	4	**(b)**	5	**(c)**
6	**(c)**	7	**(c)**	8	**(b)**	9	**(b)**	10	**(a)**
11	**(a)**	12	**(b)**	13	**(b)**	14	**(b)**	15	**(c)**
16	**(b)**	17	**(a)**	18	**(a)**	19	**(a)**	20	**(a)**
21	**(b)**	22	**(a)**	23	**(d)**	24	**(a)**	25	**(a)**
26	**(d)**	27	**(a)**	28	**(a)**	29	**(a)**	30	**(c)**
31	**(c)**	32	**(c)**	33	**(c)**	34	**(b)**	35	**(a)**
36	**(d)**	37	**(a)**	38	**(a)**	39	**(b)**	40	**(a)**

41	**(d)**	42	**(a)**	43	**(b)**	44	**(a)**	45	**(a)**
46	**(c)**	47	**(a)**	48	**(c)**	49	**(c)**	50	**(b)**
51	**(c)**	52	**(a)**	53	**(b)**	54	**(b)**	55	**(d)**
56	**(b)**	57	**(b)**	58	**(a)**	59	**(d)**	60	**(c)**

Key Part B: Statistics

61	**(b)**	62	**(d)**	63	**(d)**	64	**(a)**	65	**(c)**
66	**(a)**	67	**(c)**	68	**(c)**	69	**(d)**	70	**(a)**
71	**(a)**	72	**(a)**	73	**(c)**	74	**(b)**	75	**(b)**
76	**(b)**	77	**(c)**	78	**(a)**	79	**(c)**	80	**(b)**
81	**(c)**	82	**(b)**	83	**(b)**	84	**(d)**	85	**(b)**
86	**(b)**	87	**(a)**	88	**(c)**	89	**(d)**	90	**(d)**
91	**(c)**	92	**(a)**	93	**(d)**	94	**(d)**	95	**(b)**
96	**(d)**	97	**(c)**	98	**(a)**	99	**(d)**	100	**(b)**

Test Series: April, 2021

MOCK TEST PAPER SERIES -2

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 hours **Marks: 100**

SECTION A: BUSINESS MATHEMATICS AND LOGICAL REASONING

1. The ratio of the number of boys and girls in a school is 2:5. if there are 280 students in the school, find number of girls in the school

   (a) 200

   (b) 250

   (c) 150

   (d) 100

2. The third proportional to 9 and 25

   (a) 80/3

   (b) 80

   (c) 80/7

   (d) None of these

3. $\left(\frac{\sqrt{3}}{9}\right)^{5/2} \left(\frac{9}{3\sqrt{3}}\right)^{7/2} \times 9$ is equal to :

   (a) 1

   (b) $\sqrt{3}$

   (c) $3\sqrt{3}$

   (d) $\frac{3}{9\sqrt{3}}$

4. The value $\frac{\log_3 8}{\log_9 16. \log_4 10}$ is:

   (a) 3 $\log_{10}2$

   (b) 7 $\log_{10}3$

   (c) 3 $\log_e z$

   (d) None.

5. If $\frac{p}{q} = -\frac{2}{3}$ then the value of $\frac{2p+q}{2p-q}$ is:

   (a) 1

   (b) -1/7

(c) 1/7

(d) 7

6. Roots of the equation $3x^2 – 14x + k = 0$ will be reciprocal of each other if :

(a) k = -3

(b) k = 0

(c) k = 3

(d) k = 14

7. If one root of the equation $x^2 – 3x + k = 0$ is 2, then value of k will be

(a) -10

(b) 0

(c) 2

(d) 10

8. On the average an experienced person does 7 units of work while a fresh one work 5 units of work daily but the employer has to maintain an output of atleast 35 units of work per day. The situation can be expressed as:

(a) $7x + 5y < 35$

(b) $7x + 5y \leq 35$

(c) $7x + 5y > 35$

(d) $7x + 5y \geq 35$

9. If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is _____

(a) $x^2 – 16x - 25 = 0$

(b) $x^2 – 16x + 25 = 0$

(c) $x^2 +16x + 25 = 0$

(d) None of these

10. Solution space of the inequalities $2x + y \leq 10$ and $x-y \leq 5$:

(i) includes the origin

(ii) includes the point (4,3)

Which one is correct?

(a) Only (i)

(b) Only (ii)

(c) Both (i) and (ii)

(d) None of the above.

11. If $A = \frac{1}{\sqrt{2}}\begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$ then $A^T.A = A.A^T =$

    (a) Identity matrix

    (b) Null matrix

    (c) A^2

    (d) none of these

12. Find the Inverse of matrix $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$

    (a) $\begin{bmatrix} a & -b \\ -c & d \end{bmatrix}$

    (b) $\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

    (c) $\frac{1}{ad-bc}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

    (d) $\frac{1}{ad-bc}\begin{bmatrix} a & -b \\ -c & d \end{bmatrix}$

13. Two equal sums were lent out at 7% and 5% simple interest respectively. The interest earned on the two loans adds upto Rs.960 for four years. Find the sum lent out.

    (a) Rs. 4000

    (b) Rs.3000

    (c) Rs. 5000

    (d) Rs. 6000

14. A sum of money amounts to Rs. 20,800 in 5 years and Rs. 22720 in 7 years. Find the principle and rate of interest.

    (a) Rs. 5000, 6%

    (b) Rs.16000, 6%

    (c) Rs.80000, 8%

    (d) Rs. 10000, 10%

15. A machine can be purchased for Rs. 50,000. Machine will contribute Rs. 12,000 per year for the next five years. Assume borrowing cost is 10% per annum. Determine whether machine should be purchased or not: (P(5,0.10) = 3.79079)

    (a) Should be purchased

    (b) Should not be purchased

    (c) Can't say about purchase

    (d) None of the above

16. The annual birth and death rates per 1000 are 39.4 and 19.4 respectively. The number of years in which the population will doubled assuming there is no immigration or emigration is:

    (a) 35 years

    (b) 30 years

    (c) 25 years

    (d) None of these.

17. The effective annual rate of interest corresponding to nominal rate 6% p.a. payable half yearly is

    (a) 6.06

    (b) 6.07

    (c) 6.08

    (d) 6.09

18. The cost of machinery Rs.1,25,000 if its useful life estimated to the 20 years and the rate of depreciation of its cost is 10% p.a . Then scrap value of machinery is (given that $(0.9)^{20} = 0.1215$)

    (a) Rs. 15,187

    (b) Rs. 15,400

    (c) Rs. 15,300

    (d) Rs. 15,250

19. How much amount is required to be invested every year so as to accumulate Rs. 3,00,000 at the end of 10 years, if interest is compounded annually at 10%?

    {Give $(1.1)^{10} = 2.5937$}

    (a) Rs. 18,823.65

    (b) Rs. 18,828.65

    (c) Rs. 18,832.65

    (d) Rs. 18,182.65

20. Rs. 5000 is paid every year for 10 years to pay off a loan. What is the loan amount if interest be 14% per annum compounded annually? (P(10,0.14) = 5,21611)

    (a) Rs.26000.33

    (b) Rs.26080.55

    (c) Rs.27080.55

    (d) Rs.28080.55

21. Rs.2000 is invested at the end of each month in account paying interest 6% per compounded monthly , What is the future value of this annuity after 10th payment ?

    (a) Rs. 51, 100

    (b) Rs.52,200

    (c) Rs.53, 300

    (d) Rs.54, 500

22. If a simple interest on a sum of money at 6% p.a for 7 tears is equal to twice of simple interest on another Sum for 9 years at 5% p.a . The ratio will be

    (a) 2:15

    (b) 7: 15

    (c) 15: 7

    (d) 1:7

23. In what will be a sum of money double itself at 6.25% p.a . Simple interest?

    (a) 5 years

    (b) 8 years

    (c) 12 years

    (d) 16 years

24. What will be population after 3 years when present population is 25,000 and population increase at the rate of 3% in first year , at 4% in second year and at 5 % in third year ?

    (a) 28,119

    (b) 29,118

    (c) 30,100

    (d) 27,100

25. A sum amount to Rs. 1331 at a principal of Rs.1000 at 10% compounded annually. Find the time

    (a) 3.31 years

    (b) 4 years

    (c) 3 years

    (d) 2 years

26. A boy has 3 library tickets and 8 books of his interest in the library of these 8, he does not want to borrow mathematics part II unless mathematics part-1 is also borrowed? In how many ways can he choose the three books to be borrowed?

    (a) 41

    (b) 51

    (c) 61

    (d) 71

27. An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and Part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part, in how many maximum ways can the candidate select the questions?

    (a) 35

    (b) 175

    (c) 210

    (d) 420

28. A Supreme Court Bench consists of 5 judges. In how many ways, the bench can give a majority division?

(a) 10

(b) 5

(c) 15

(d) 16

29. Given : P (7 , k) = 60 P (7, k-3). Then:

(a) k = 9

(b) k = 8

(c) k = 5

(d) k = 0

30. If $a^{1/x} = b^{1/y} = c^{1/z}$ and a,b,c are in G.P; the x,y,z are in:

(a) A.P.

(b) G.P.

(c) Both (a) & (b)

(d) None of these

31. If the p^{th} term of a G.P. is x and the q^{th} term is y, then find the nth term:

(a) $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]$

(b) $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]^{(p-q)}$

(c) 1

(d) $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]^{\frac{1}{p-q}}$

32. The sum of the series: 0.5+0.55+0.555+……. to n term is:

(a) $\frac{5n}{9}+\frac{5}{9}\left[1-(0.1)^n\right]$

(b) $\frac{5n}{9}-\frac{5}{81}\left[1-(0.1)^n\right]$

(c) $\frac{5n}{9}+\frac{5}{81}\left[1-(0.1)^n\right]$

(d) $\frac{5n}{9}+\frac{5}{81}\left[1+(0.1)^n\right]$

33. Let R is the set of real numbers such that the function f : R $\rightarrow$ R and g : R $\rightarrow$ R are defined by by f(x) = x^2+3x+1 and g(x) = 2x-3. Find (fog):

(a) $4x^2$+6x+1

(b) x^2+6x+1

(c) $4x^2$-6x+1

(d) x^2- 6x+1.

34. In a survey of 300 companies, the number of companies using different Media-Newspapers (N), Radio (R) and Television (T) are as follows:

n(N) = 200, n (R)= 100, n(T) = 40, n(N $\cap$ R) = 50, n(R $\cap$ T) = 20, n(N $\cap$ R) = 25, and

n(N $\cap$ R $\cap$ T) = 5, Find the numbers of companies using none of these media:

(a) 20 companies

(b) 250 companies

(c) 30 companies

(d) 50 companies

35. If A = [1,2,3,4}, B = {2,4,6,8} , f(1) = 2, f(2) = 4, f(3) = 6 and f(4) = 8, and f: A $\rightarrow$B then f^{-1} is:

(a) {(2,1), (4,2), (6,3) (8,4)}

(b) {(1,2), (2,4), (3,6), (4,8)}

(c) {(1,4), (2,2), (3,6), (4,8)}

(d) None of these

36. $\int (x^2 - 1)$dx is equal to:

(a) $\frac{x^3}{5} - \frac{2}{3}x^3 + x + k$

(b) $\frac{x^3}{3} - x + k$

(c) 2x

(d) none of these

37. If y = $2x + \frac{4}{x}$, then $x^2 \frac{d^2y}{dx^2} + x\frac{dy}{dx} - y$ yields

(a) 3

(b) 1

(c) 0

(d) 4

38. $\int x^2 e^{3x} dx$ is:

(a) $x^2.e^{3x}$-2xe^{3x}+2e^{3x}+C

(b) $\frac{e^{3x}}{3} - \frac{x.e^{3x}}{9} + 2e^{3x} + C$

(c) $\frac{x^2.e^{3x}}{3} - \frac{2x.e^{3x}}{9} + \frac{2}{27}e^{3x} + C$

(d) None of these

39. If $x^3 - 2x^2y^2+5x+y= 5$, then $\frac{dy}{dx}$ at x= 1 and y = 1 is:

(a) 4/3

(b) -5/4

(c) 4/5

(d) -4/3

40. Six seats of articled clerks are vacant in a 'Chartered Accountant Firm'. How many different batches of candidates can be chosen out of ten candidates?

(a) 216

(b) 210

(c) 220

(d) None

41. Find next number in the following series 7, 11, 13, 17, 19, 23, 25, 29,?

(a) 30

(b) 31

(c) 32

(d) 33

42. Find odd man out of the following series 15, 21, 63, 81, 69

(a) 15

(b) 21

(c) 63

(d) 81

43. If DELHI is coded as 73541 and CALCUTTA as 82589662, then CALICUT be coded as?

(a) 8251896

(b) 82518 69

(c) 8521896

(d) 8258196

44. Which of the following is odd one

(a) CEHL

(b) KMPT

(c) OQTX

(d) NPSV

45. Kiran walks 2 km towards North then he turns East and walks 10 km. After this he turns North and walks 3 km .Again he turns towards East and walks 2 km. How far from the starting point?

(a) 10 km

(b) 13km

(c) 15 km

(d) 17 km

46. Ramu moved a distance of 75 meters towards North. He then turned to left and walking for about 25 m, turned left again and walks 80m. Finally, he turned to the right at an angle of 45^0. In which direction was he moving finally?

(a) South-East

(b) South-West

(c) North-West

(d) North- East

47. If a man on motor bike starts from a point and rides 4 km South then turns left and rides 2 km and turn again to the right to ride in which direction is he moving?

(a) North

(b) West

(c) South

(d) North

48. I stand with my right hand extended side-ways towards south. Towards which direction will my back be?

(a) North

(b) West

(c) East

(d) South

49. Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U. If Q gets a North facing flat and is not next to S. S and U get diagonally opposite flat. R is next to U gets a south facing flat and T gets North facing flat. Whose falt is between Q and S?

(a) T

(b) U

(c) R

(d) P

50. In a straight line there are six person sitting in a row? B is between F and D. E is between A and C. A does not stand next to either F or D, C does not stand next to D. F is between which of the following?

    (a) B and E

    (b) B and C

    (c) B and D

    (d) B and A

51. Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from left end

    (a) A

    (b) B

    (c) D

    (d) E

52. Directions to solve

    (a) P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre

    (b) P is second to the right of T who is the neighbor of R and V.

    (c) S is not neighbour of P

    (d) V is neighbour of U

    (e) Q is not between S and W, W is not between U and S

    Who is two of the following are not neighbour

    (a) RV

    (b) UV

    (c) RP

    (d) QW

53. Pointing to a photograph of a boy Ravi said, “He is son of the only son of my mother “. How is Ravi related to that boy?

    (a) Brother

    (b) Uncle

    (c) Cousin

    (d) Father

54. If ‘A +B means A is brother of B’, A-B means A is sister of B, and A × B means A is the father of B. Which of the following means that C is the son of M?

    (a) M-N×C+F

    (b) F-C+ N×M

    (c) N+M-F×C

    (d) M×N-C+F

55. If D is brother of B and B is related C. To answer this question which of the following statements are necessary?

I. The son of D is the grandson of C.

II. B is the sister of D.

(a) Only 1

(b) Only II

(c) Either I or II

(d) I and II

56. A, B, C, D, E and F are members of the family. B is the son A but A is not mother B, A and C are married couple. F is brother of A. D is the sister of B. E is son of C.

How many male members are in the family?

(a) 1

(b) 2

(c) 3

(d) 4

57. Statements I: Some actors are singers.

II: All singers are directors.

Conclusions I: Some actors are directors.

II: No singer is actor.

(a) If only Conclusion I follows.

(b) If only Conclusion II follow.

(c) If both I and II follow.

(d) If neither I nor II follow.

58. Statements I: All actors are girls.

II: All the girls are beautiful

Conclusions I All the actors are beautiful.

II. Some girls are actors.

(a) If only Conclusion I follows.

(b) If only Conclusion II follow.

(c) If both I and II follow.

(d) If neither I nor II follow.

59. Statement I: Some players are singers.

II: All singers are tall.

Conclusion I: Some players are tall.

II: All players are tall.

(a) If only Conclusion I follow

(b) If only conclusion II follow

(c) If either I or II follow.

(d) If neither I nor II follow.

60. Statement I: Some books are pens.

II: No pen is pencil.

Conclusion I: Some books are pencil.

II : No book is pencil

(a) If only Conclusion I follow

(b) If only conclusion II follow

(c) If either I or II follow.

(d) If neither I nor II follow.

PART B – STATISTICS

61. The best method to collect data in case of natural calamity is

(a) Personal interview.

(b) Telephone interview.

(c) Mailed questionnaire method.

(d) Indirect interview.

62. Which of the following statements is true?

(a) Usually mean is the best measure of central tendency.

(b) Usually median is the best measure of central tendency.

(c) Usually mode is the best measure of central tendency.

(d) Normally, GM is the best measure of central tendency

63. The mean salary for a group of 40 female workers is 5000 per month and that for a group of 60 male workers is 6000 per month. What is the combined mean salary?

(a) 6500

(b) 6200

(c) 6160

(d) 5600

64. The standard deviation of 10, 16, 10, 16, 10, 10, 16, 16 is

(a) 4

(b) 6

(c) 3

(d) 0

65. When mean is 3.57 and mode is 2.13 then the value of the median is

    (a) 3.09

    (b) 5.01

    (c) 4.01

    (d) None of these.

66. The variance of the data 3, 4 ,5 , 8 is

    (a) 4.5

    (b) 3.5

    (c) 5.5

    (d) 6.5

67. If the profits of a company remains the same for the last ten months, then the standard deviation of profits for these ten months would be ?

    (a) Positive

    (b) Negative

    (c) Zero

    (d) (a) or (c)

68. The point of intersection of less than ogive and greater than ogive curve is gives us

    (a) Mean

    (b) Mode

    (c) Median

    (d) Harmonic Mean

69. The following frequency distribution

x	12	17	24	36	45
F	2	5	3	9	8

    Is classified as:

    (a) Continuous distribution

    (b) Discrete distribution

    (c) Cumulative frequency distribution.

    (d) None of the above

70. The median of the data 13, 8 ,11, 6, 4, 15, 2, 18 is

    (a) 5

    (b) 8

    (c) 11

    (d) 9.5

71. The A.M and H.M for two numbers are 5 and 3.2 respectively then the G.M will be

    (a) 4.05

    (b) 16

    (c) 4

    (d) 4.10

72. What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16?

    (a) 17

    (b) 16

    (c) 12.75

    (d) 12

73. What is the coefficient of range for the following for the following distribution?

Class Interval	10-19	20-29	30-39	40-49	50-59
Frequency	11	25	16	7	3

    (a) 22

    (b) 50

    (c) 75.82

    (d) 72.46

74. Which measure of dispersion is based on all the observations?

    (a) Mean deviation

    (b) Standard deviation

    (c) Quartile deviation

    (d) (a) and (b) but not (c)

75. Interval Quartile Range is ____of Quartile Deviation

    (a) Half

    (b) Double

    (c) Triple

    (d) Equal

76. The Sum of the squares of the deviations from mean of 10 observations is 250. Mean of the data is 10. Find coefficient of variation.

    (a) 10 %

    (b) 25%

    (c) 50 %

    (d) 0 %

77. The mean of the variable x is 50, then the mean of u = 10+5x will be

(a) 250

(b) 260

(c) 265

(d) 273

78. The Standard Deviation of a variable x is known to be 10. The Standard deviation of 50+5x

(a) 50

(b) 100

(c) 10

(d) 500

79. The of mean and SD of a series is a + b, if we add 2 to each observations of the series then the sum of the mean and SD is

(a) a+b+2

(b) 6-a+b

(c) 4+a-b

(d) a+b+4

80. Which of the following is affected by shifting of scale

(a) SD

(b) MD

(c) QD

(d) All the above

81. P(A) = 0.45 , P(B) =0.36 and P(A $\cap$ B) = 0.25 then P(A/B) = ?

(a) 1.40

(b) 1.80

(c) 0.714

(d) 0.556

82. If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace?

(a) 4/13

(b) 5/13

(c) 0.25

(d) 0.20

83. From the following probability distribution table, find E(x).

x:	1	2	3
f(x):	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{6}$

(a) 1

(b) 1.50

(c) 1.67

(d) None of these

84. The mean of a binomial distribution with parameter n and p is

(a) n (1– p).

(b) np (1 – p).

(c) np.

(d) $\sqrt{np(1-p)}$.

85. The total area of the normal curve is

(a) One.

(b) 50 per cent.

(c) 0.50.

(d) Any value between 0 and 1.

86. For a normal distribution with mean 150 and SD is 45, Find Q1 and Q3

(a) 119.35 and 190.65

(b) 119.65 and 180 .35

(c) 180.35 and 119.65

(d) 123.45 and 183.65

87. The Binomial distribution n = 9 and p = 1/3 . What is the value of the variance?

(a) 8

(b) 4

(c) 2

(d) 16

88 A bag contains 12 balls of which 3 are red and 5 balls are drawn at random. Find the probability that 5 balls 3 are red

(a) 3/132

(b) 5/396

(c) 1/36

(d) 1/22

89. A card is drawn from a pack of playing cards at random. What is the probability that the card drawn a king or red colour?

(a) 1/4

(b) 4/13

(c) 7/13

(d) 1/2

90 If x & y are two independent variables such that x ~ B(n_1,P) and y~B(n_2,p) then the parameter of Z = x+y is

(a) (n_1+n_2), P

(b) (n_1–n_2), P

(c) (n_1+n_2), 2P

(d) None of these

91. If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is

(a) 70%

(b) 30%

(c) 51%

(d) 36%

92. The correlation coefficient (r) is the _____of the two regression coefficients

(a) AM

(b) GM

(c) HM

(d) Median

93. The coefficient of correlation between x and y is 0.6. If x and y values are multiplied by -1, then coefficient of correlation will be

(a) –0.6

(b) 1/0.6

(c) 0.6

(d) 0.4

94. The regression equation x and y is3x +2y = 100, the value of bxy

(a) -2/3

(b) 100/3

(c) 3/2

(d) 2/3

95. price and Demand are the example of

(a) No Correlation

(b) Positive Correlation

(c) Negative Correlation

(d) None of these

96. If an increase of 10% in prices. The rise in wages is 20% then the real wage has increased by An index time series is a list of _____ numbers for two or more periods of time.

    (a) 20%

    (b) 10 %

    (c) Less than 10 %

    (d) More than 20%

97. Purchasing power of money is

    (a) Reciprocal of the Price Index Number.

    (b) Equal to price index number.

    (c) Unequal to price index number.

    (d) None of these.

98. The cost of living index numbers in years 2015 and 2021 were 97.5 and 115 respectively. The salary of a worker in 2015 was Rs. 19,500. How much additional salary is required for him in 2021 to maintain living standard of 2015?

    (a) Rs. 3,000

    (b) Rs. 4,000

    (c) Rs. 3,500

    (d) Rs. 4,500

99. A time series has

    (a) Two Components

    (b) Three Components

    (c) Four Components

    (d) Five Components

100. In a time series seasonal variations can occur within a period of

    (a) Four years

    (b) Three years

    (c) One year

    (d) Nine years

Test Series: April-2021

MOCK TEST PAPER SERIES –II

Paper 3: Business Mathematics, Logical Reasoning and Statistics

Key Part A: Business Mathematics and Logical Reasoning

1	**(a)**	2	**(a)**	3	**(a)**	4	**(a)**	5	**(c)**
6	**(c)**	7	**(c)**	8	**(d)**	9	**(b)**	10	**(a)**
11	**(a)**	12	**(c)**	13	**(a)**	14	**(b)**	15	**(b)**
16	**(a)**	17	**(d)**	18	**(a)**	19	**(a)**	20	**(b)**
21	**(a)**	22	**(c)**	23	**(d)**	24	**(a)**	25	**(c)**
26	**(a)**	27	**(d)**	28	**(d)**	29	**(c)**	30	**(a)**
31	**(d)**	32	**(b)**	33	**(c)**	34	**(d)**	35	**(a)**
36	**(b)**	37	**(c)**	38	**(c)**	39	**(a)**	40	**(b)**
41	**(b)**	42	**(d)**	43	**(a)**	44	**(d)**	45	**(b)**
46	**(c)**	47	**(c)**	48	**(b)**	49	**(a)**	50	**(b)**
51	**(d)**	52	**(a)**	53	**(d)**	54	**(d)**	55	**(d)**
56	**(d)**	57	**(a)**	58	**(c)**	59	**(a)**	60	**(c)**

Key Part B: Statistics

61	**(a)**	62	**(a)**	63	**(d)**	64	**(c)**	65	**(a)**
66	**(b)**	67	**(c)**	68	**(c)**	69	**(b)**	70	**(d)**
71	**(c)**	72	**(c)**	73	**(d)**	74	**(d)**	75	**(b)**
76	**(c)**	77	**(b)**	78	**(a)**	79	**(a)**	80	**(d)**
81	**(c)**	82	**(a)**	83	**(c)**	84	**(c)**	85	**(a)**
86	**(b)**	87	**(c)**	88	**(d)**	89	**(c)**	90	**(a)**
91	**(d)**	92	**(b)**	93	**(c)**	94	**(a)**	95	**(c)**
96	**(a)**	97	**(a)**	98	**(c)**	99	**(c)**	100	**(c)**

Test Series: October 2021

MOCK TEST PAPER 1

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. If x: y = 3:5, then find $\left(\frac{1}{x}+\frac{1}{y}\right):\left(\frac{1}{x}-\frac{1}{y}\right)$

   (a) 2

   (b) 4

   (c) 6

   (d) 8

2. if A: B = 3:5 and B:C= 5:4 , C:D = 2:3 and D is 50% more than E, find the ratio between A and E

   (a) 2:3

   (b) 3:4

   (c) 3:5

   (d) 4:5

3. Find the value of $\sqrt{6561}+\sqrt[4]{6561}+\sqrt[8]{6561}$

   (a) 81

   (b) 93

   (c) 121

   (d) 243

4. Find the value of $\log\frac{x^n}{y^n}+\log\frac{y^n}{z^n}+\log\frac{z^n}{x^n}$

   (a) -1

   (b) 0

   (c) 1

   (d) 2

5. If $\frac{8^n\times 2^3\times 16^{-1}}{2^n\times 4^2}=\frac{1}{4}$ then the value of n

   (a) 1

   (b) 3

   (c) $\frac{3}{2}$

(d) $\frac{2}{3}$

6. Given the Quadratic Equation $\frac{x+1}{x}-\frac{x}{x+1}=\frac{3}{2}$

   (a) 1 and -2/3

   (b) -1 and 2/3

   (c) -1 and -2/3

   (d) 1 and 2/3

7. A dealer has only ₹ 5760 to invest in fans (x) and sewing machines (y). The cost per unit of fan and sewing machine is ₹360 and ₹ 240 respectively. This can be shown by:

   (a) $360x + 240y \geq 5760$

   (b) $360x + 240y \leq 5760$

   (c) $360x + 240y = 5760$

   (d) none of these

8. The point of intersection between the lines $3x+ 4y = 7$ and $4x –y = 3$ lie in the

   (a) 1st quadrant.

   (b) 2nd quadrant.

   (c) 3rd quadrant

   (d) 4th quadrant.

9. The roots of equation $9^{x+2} – 6.3^{x+1} + 1 = 0$ are

   (a) -2

   (b) 2

   (c) $\sqrt{2}$

   (d) 0

10. The roots of the equation $x^2-x+1=0$ are

    (a) Imaginary and unequal

    (b) Real and unequal

    (c) Real and equal

    (d) Imaginary and equal

11. If one root of the quadratic equation is $2+\sqrt{3}$, the equation is _____

    (a) $x^2-4x+1=0$

    (b) $x^2+4x+1=0$

    (c) $x^2-4x-1=0$

    (d) none of these

12. If $\sqrt{1+\frac{25}{144}}=1+\frac{x}{12}$, then x is

    (a) 1

    (b) 2

    (c) 3

    (d) 0

13. A sum of ₹46,875 was lent out at simple interest and at the end of 1 year 8 months, the total amount was ₹ 50,000. Find the rate of interest per annum.

    (a) 8%

    (b) 4%

    (c) 12%

    (d) None

14. A sum of money amount to ₹ 6,200 in 2 years and ₹ 7,400 in 3 years. The principal and rate of interest are

    (a) ₹ 3,800, 31.57%

    (b) ₹ 3,000, 20%

    (c) ₹ 3,500, 15%

    (d) none of these

15. The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is

    (a) 3.2% p.a

    (b) 3.25% p.a

    (c) 3.0225% p.a

    (d) none of these

16. A sum of money gets doubled in 5 years at X% simple interest. If the interest was Y%, the sum of money would have become ten-fold in thirty years. What is Y – X (in %)

    (a) 10

    (b) 5

    (c) 8

    (d) None of the above

17. The nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross Domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is

    (a) 1.587P

    (b) 1.921 P

    (c) 1.403 P

    (d) 2.51 P

18. The difference between Compound Interest and Simple Interest on a certain sum for 2 years at 6% p.a. is ₹ 13.50. Find the sum

(a) 3750

(b) 2750

(c) 4750

(d) none

19. The sum required to earn a monthly interest of Rs 1200 at 18% per annum Simple Interest is

(a) ₹ 50,000

(b) ₹ 60,000

(c) ₹ 80,000

(d) none of these

20. The compound interest earned by a money lender on ₹ 7,000 for 3 years if the rate of interest for 3 years are 7%, 8% and 8.5% respectively is

(a) ₹ 1750

(b) ₹1800

(c) ₹ 1776

(d) none of these

21. Find the present value of an annuity of ₹ 1,000 payable at the end of each year for 10 years, if the money is worth 5% effective.

(a) ₹ 7,724

(b) ₹ 7000

(c) ₹ 8000

(d) none of these

22. The present value of annuity of ₹3,000 per annum for 15 years at 4.5% p.a C.I. annually is

(a) ₹ 23,809.41

(b) ₹ 32,214.60

(c) ₹ 32,908.41

(d) none of these

23. A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of ₹ 300 every year. Using V = a/I find V and V will be

(a) ₹ 2,000

(b) ₹ 2,500

(c) ₹ 3,000

(d) none of these

24. The future value of annuity of ₹2000 for 5 years at 5 % compounded annually is given (in nearest ₹) as

(a) ₹ 11, 051

(b) ₹ 21,021

(c) ₹ 1,56,24

(d) ₹ 61254

25. A Maruti Zen cost ₹ 3,60,000. Its price depreciates at the rate of 10% of a year during the first two years and at the rate of 20% in third year. Find the total depreciation.

    (a) ₹ 1,26,720

    (b) ₹ 1,15,620

    (c) ₹ 1,25,000

    (d) ₹ 1,10,520

26. Find the value of n if (n+1)! = 42 (n–1)!

    (a) 6

    (b) -7

    (c) 7

    (d) -6

27. If ${}^{n}P_{13} : {}^{n+1}P_{12} = 3 : 4$ then value of n is

    (a) 15

    (b) 14

    (c) 13

    (d) 12

28. A question paper contains 6 questions, each having an alternative. The number of ways an examiner can answer one or more questions is

    (a) 720

    (b) 728

    (c) 729

    (d) none of these

29. ${}^{5}C_{1} + {}^{5}C_{2} + {}^{5}C_{3} + {}^{5}C_{4} + {}^{5}C_{5}$ is equal to _____

    (a) 30

    (b) 31

    (c) 32

    (d) 35

30. The second term of a G P is 24 and the fifth term is 81. The series is

    (a) 16, 36, 24, 54…..

    (b) 24, 36, 53… …

    (c) 16, 24, 36, 54,……

    (d) none of these

31. The sum of progression (a+b), a, (a–b).....n term is

    (a) $\frac{n}{2}[2a+(n-1)b]$

    (b) $\frac{n}{2}[2a+(3-n)b]$

(c) $\frac{n}{2}[2a+(3-n)]$

(d) $\frac{n}{2}[2a+(n-1)]$

32. The series $1+10^{-1}+10^{-2}+10^{-3}....$ to ∞ is

(a) 9/10

(b) 1/10

(c) 10/9

(d) none of these

33. Find the sum of first twenty-five terms of A.P. series whose n^{th} term is $\left(\frac{n}{5}+2\right)$.

(a) 105

(b) 115

(c) 125

(d) 135

34. Find *g o f* for the functions f (x) = $\sqrt{x}$, g (x) = $2x^2+1$

(a) $2x^2+1$

(b) 2x+1

(c) $2x^2+1)$ ($\sqrt{x}$)

(d) $\sqrt{x}$

35. If $f(x)=x^2-1$ and $g(x)=\frac{x+1}{2}$, then $\frac{f(3)}{f(3)+g(3)}$ is

(a) 5/4

(b) 4/5

(c) 3/5

(d) 5/3

36. If A = {2,3}, B = {4,5}, C = {5,6} then AX (B$\cap$C) is

(a) {(2,5), (3,5)}

(b) {(4,2), (4,6)}

(c) {(4,3), (4,2)}

(d) none of these

37. if $f(x) = x^2/e^x$, then $f'(-1)$ is equal to

(a) -3e

(b) 1/e

(c) e

(d) none of these

38. If $y = e^{\sqrt{2x}}$, $\frac{dy}{dx}$ is calculated as

(a) $\frac{e^{\sqrt{2x}}}{\sqrt{2x}}$

(b) $e^{\sqrt{2x}}$

(c) $\frac{e^{\sqrt{2x}}}{\sqrt{2x}}$

(d) none of these

39. Evaluate: $\int_0^5 \frac{x^2}{x^2+(5-x)^2}dx$

(a) 2.5

(b) 0

(c) -1

(d) 2

40. Evaluate: $\int\left\{\frac{1}{\log x} - \frac{1}{(\log x)^2}\right\}dx$

(a) $\frac{1}{\log x}+c$

(b) $\frac{x}{\log x}+c$

(c) $-\frac{x}{\log x}+c$

(d) None of these

41. Find next term of the series 3,10,29,66, 127,?

(a) 164

(b) 187

(c) 216

(d) 218

42 Which number should come next 7, 26,63,124,215, 342,?

(a) 391

(b) 421

(c) 481

(d) 511

43 Find out the wrong number. 10,14,28,32,64,68,132

(a) 28

(b) 32

(c) 64

(d) 132

44. In a certain code 'SOUTHERN' is written as 'UVPTMQDG'. How is 'MARIGOLD' written in that code?

(a) JSBCNFKS

(b) JSBNHPME

(c) JSBNCKNF

(d) NBSKCJNF

45. In a certain code 'PRISM' is written as 'OSHTL' and 'RUBLE' is written as 'QVAMD'. How will 'WHORL' be written in that code?

(a) XISPM

(b) VINSK

(c) UINSK

(d) XGPQM

46 A is the son of C; C and Q are the sisters; Z is the mother of Q and P is the son of Z. Which of the following statements is true?

(a) A and P are cousins

(b) C and P are sisters

(c) P is the maternal uncle of A

(d) A is the maternal uncle of P

47. 'X @ Y' means 'X is the mother of Y;

'X $ Y' means 'X is the husband of Y;

'X # Y' means 'X is the sister of Y'.

'X * Y' means 'X is the son of Y'.

Which of the following indicates the relationship 'A is daughter of P'?

(a) P @ B # F * A

(b) P @ B # A * F

(c) A # F * B @ P

(d) A # F * B $ P

(From Q.48 to Q.49) Read the following information carefully and answer the questions given below?

There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father

48. How many female players are there?

(a) one

(b) two

(c) three

(d) Four

49. How is S is related to P

(a) Uncle

(b) Sister

(c) Niece

(d) Cousin

50. Pointing towards photograph. Vinod said, “she is the daughter of my wife’s mother’s only daughter”. How is Vinod is related to the girl in the Photograph?

(a) Cousin

(b) Uncle

(c) Father

(d) None

51. Raju walks northwards. After a while, he turns to his right and a little further to his left. Finally, after walking a distance of one kilometre, he turns to his left again. In which direction is he moving now?

(a) North

(b) South

(c) East

(d) West

52. Ravi wants to go to the College. He starts from his home, which is in the East and comes to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the College?

(a) North

(b) South

(c) East

(d) West

53. A man is facing south. He turns 135° in the anticlockwise direction and then 180° in the clockwise direction. Which direction is he facing now?

(a) North-East

(b) North-West

(c) South-East

(d) South-West

54. Rakesh moves towards South-East a distance of 7 m, then he moves towards West and travels a distance of 14 m. From here he moves towards North-West a distance of 7 m and finally he moves a distance of 4 m towards East and stood at that point. How far is the starting point from where he stood?

(a) 3 m

(b) 4 m

(c) 10 m

(d) 11 m

55. A and B start moving towards each other from two places 200 m apart. After walked 60 m, B turns left and goes 20 m, then he turns right and goes 40 m. He then turns right again and comes back to the road on which he had started walking. If A and B walk with the same speed, what is the distance between them now?

    (a) 20 m

    (b) 30 m

    (c) 40 m

    (d) 50 m

(56-58) Study the following information carefully to answer the questions given below. P, T, V, R, M, D, K and W are sitting around a circle table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour of P. P is to the immediate left of K.

56. Who is Second to the left of K?

    (a) P

    (b) R

    (c) M

    (d) W

57. Who is the immediate left of V?

    (a) D

    (b) M

    (c) W

    (d) None of these

58. What is R's Position with respect to V?

    (a) Third to the right

    (b) Fifth to the right

    (c) Third to the left

    (d) Second to the left

59. 8 Persons A, B, C, D, E, F, G and H are sitting in two rows opposite to each other. Each row has four persons. B and C are sitting in front of each other. C is between D and E. H is sitting immediate left of E. H and F are diagonally opposite. G and B are not near to each other. Who is in front of A?

    (a) E

    (b) D

    (c) C

    (d) B

60. A group of seven singers, facing the audience, are standing in a line on the stage as follow.

    (i) D is the right of C.

    (ii) F is stand beside G.

    (iii) B is to the left of F.

    (iv) C and B are one person between them.

    (Vi) A and D have one person between them.

Who is sitting on the second from extreme right?

(a) D

(b) F

(c) G

(d) E

Part B: Statistics

61. Statistics is concerned with

(a) Qualitative information

(b) Quantitative information

(c) (a) or (b)

(d) Both (a) and (b).

62. The primary data are collected by

(a) Interview method

(b) Observation method

(c) Questionnaire method

(d) All these.

63. The following data relate to the incomes of 86 persons:

Income in ₹	:	500–999	1000–1499	1500–1999	2000–2499
No. of persons	:	15	28	36	7

What is the percentage of persons earning more than Rs? 1500?

(a) 50

(b) 45

(c) 40

(d) 60

64. The following data relate to the marks of a group of students:

Marks:	Below 10	Below 20	Below 30	Below 40	Below 50
No. of students:	15	38	65	84	100

How many students got marks more than 30?

(a) 65

(b) 50

(c) 35

(d) 43

65. The curve obtained by joining the points, whose x- coordinates are the upper limits of the class-intervals and y coordinates are corresponding cumulative frequencies is called

(a) Ogive

(b) Histogram

(c) Frequency Polygon

(d) Frequency Curve

66. If x and y are related by x–y–10 = 0 and mode of x is known to be 23, then the mode of y is

(a) 20

(b) 13

(c) 3

(d) 23

67. If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations then the combined HM is given by

(a) 65

(b) 70.36

(c) 70

(d) 71

68. If the quartile deviation of x is 6 and 3x + 6y = 20, what is the quartile deviation of y?

(a) 3

(b) 4

(c) 5

(d) 6

69. Which one is an absolute measure of dispersion?

(a) Range

(b) Mean Deviation

(c) Standard Deviation

(d) All these measures

70. The median of 27, 30, 26, 44, 42, 51, 37 is

(a) 30

(b) 42

(c) 44

(d) 37

71. Mean of 25,32,43,53,62,59,48,31,24,33 is

(a) 44

(b) 43

(c) 42

(d) 41

72. If the A.M of any distribution be 25 & one term is 18. Then the deviation of 18 from A.M is

(a) 7

(b) -7

(c) 43

(d) none

73. The algebraic sum of the deviations of a frequency distribution from its mean is always,

(a) greater than zero

(b) less than zero

(c) zero

(d) a non-zero number

74. Pooled Mean is also called

(a) Mean

(b) Geometric Mean

(c) Grouped Mean

(d) none

75. If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation of y is

(a) 25

(b) 30

(c) 40

(d) 20

76. Following are the wages of 8 workers in rupees: 50, 62, 40, 70, 45, 56, 32, 45. If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage?

(a) 0.625

(b) 0.500

(c) 0.375

(d) 0.450

77. Given that for two events A and B, P (A) = 3/5, P (B) = 2/3 and P (AUB) = 3/4, what is P (A/B)?

(a) 0.655

(b) 13/60

(c) 31/60

(d) 0.775

78. A problem in probability was given to three CA students A, B and C whose chances of solving it are 1/3, 1/5 and 1/2 respectively. What is the probability that the problem would be solved?

(a) 4/15

(b) 7/8

(c) 8/15

(d) 11/15

79. A packet of 10 electronic components is known to include 2 defectives. If a sample of 4 components is selected at random from the packet, what is the probability that the sample does not contain more than 1 defective?

(a) 1/3

(b) 2/3

(c) 13/15

(d) 3/15

80. The probability that there is at least one error in an account statement prepared by 3 persons A, B and C are 0.2, 0.3 and 0.1 respectively. If A, B and C prepare 60, 70 and 90 such statements, then the expected number of correct statements

(a) 170

(b) 176

(c) 178

(d) 180

81. A bag contains 6 white and 4 red balls. If a person draws 2 balls and receives ₹ 10 and ₹ 20 for a white and red balls respectively, then his expected amount is

(a) ₹ 25

(b) ₹ 26

(c) ₹ 29

(d) ₹ 28

82. What is the first quartile of X having the following probability density function?

$$f(x) = \frac{1}{\sqrt{72\pi}} e^{\frac{-(x-10)^2}{72}} \quad \text{for } -\infty < x < \infty$$

(a) 4

(b) 5

(c) 5.95

(d) 6.75

83. If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

(a) 40

(b) 45

(c) 50

(d) 60

84. If X follows normal distribution with $\mu = 50$ and $\sigma = 10$, what is the value of

$P(x \leq 60 / x > 50)$?

(a) 0.8413

(b) 0.6828

(c) 0.1587

(d) 0.7256

85. For a normal distribution with mean as 500 and SD as 120, what is the value of k so that the interval [500, k] covers 40.32 per cent area of the normal curve? [Given $\varphi(1.30) = 0.9032$.]

(a) 740

(b) 750

(c) 656

(d) 800

86. If the mean deviation of a normal variable is 16, what is its quartile deviation?
    (a) 10.00.
    (b) 13.50.
    (c) 15.00.
    (d) 12.05.
87. For a Poisson variate X, P (X = 1) = P (X = 2). What is the mean of X?
    (a) 1.00.
    (b) 1.50.
    (c) 2.00.
    (d) 2.50.
88. For a Poisson distribution,
    (a) mean and standard deviation are equal.
    (b) mean and variance are equal.
    (c) standard deviation and variance are equal.
    (d) both (a) and (b).
89. The variance of a binomial distribution with parameters n and p is
    (a) $np^2 (1 – p)$.
    (b) $\sqrt{np(1-p)}$
    (c) $nq (1 – q)$
    (d) $n^2p^2 (1– p)^2$
90. For a p x q classification of bivariate data, the maximum number of conditional distributions is
    (a) p
    (b) p + q
    (c) pq
    (d) p or q
91. For a p x q bivariate frequency table, the maximum number of marginal distributions is
    (a) p
    (b) p + q
    (c) 1
    (d) 2
92. If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is
    (a) 70%
    (b) 30%
    (c) 51%
    (d) 49%

93. If the covariance between two variables is 20 and the variance of one of the variables is 16, what would be the variance of the other variable?

(a) $S^2y \geq 25$

(b) More than 10

(c) Less than 10

(d) More than 1.25

94. If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by

(a) (1, –1)

(b) (–1, 1)

(c) (–1, –1)

(d) (2, 3)

95. _____ satisfies circular test

(a) G.M. of price relatives or the weighted aggregate with fixed weights

(b) A.M. of price relatives or the weighted aggregate with fixed weights

(c) H.M. of price relatives or the weighted aggregate with fixed weights

(d) none

96. From the following data for the 5 groups combined

Group	Weight	Index Number
Food	35	425
Cloth	15	235
Power & Fuel	20	215
Rent & Rates	8	115
Miscellaneous	22	150

The general Index number is

(a) 270

(b) 269.2

(c) 268.5

(d) 272.5

97. Laspyres formula does not satisfy

(a) Factor Reversal Test

(b) Time Reversal Test

(c) Circular Test

(d) All the above

98. If $\Sigma P_0Q_0 = 1360$, $\Sigma P_nQ_0 = 1900$, $\Sigma P_nQ_n = 1880$ then the Laspeyre's Index number is

(a) 71

(b) 139.71

(c) 175

(d) None of these.

99. The consumer price Index for April 1985 was 125. The food price index was 120 and other items index was 135. The percentage of the total weight of the index is

(a) 66.67

(b) 68.28

(c) 90.25

(d) None of these.

100. Net monthly salary of an employee was ₹ 3000 in 1980. The consumer price index number in 1985 is 250 with 1980 as base year. If the has to be rightly compensated then, 7th dearness allowances to be paid to the employee is :

(a) ₹ 4.800

(b) ₹ 4,700

(c) ₹ 4,500

(d) None of these.

Test Series: October-2021

MOCK TEST PAPER SERIES –I

Paper 3: Business Mathematics, Logical Reasoning and Statistics

Key Part A: Business Mathematics and Logical Reasoning

1	**(b)**	2	**(b)**	3	**(b)**	4	**(b)**	5	**(c)**
6	**(a)**	7	**(b)**	8	**(a)**	9	**(a)**	10	**(a)**
11	**(a)**	12	**(a)**	13	**(b)**	14	**(a)**	15	**(c)**
16	**(a)**	17	**(a)**	18	**(a)**	19	**(c)**	20	**(c)**
21	**(a)**	22	**(b)**	23	**(c)**	24	**(a)**	25	**(a)**
26	**(a)**	27	**(a)**	28	**(b)**	29	**(b)**	30	**(c)**
31	**(b)**	32	**(c)**	33	**(b)**	34	**(b)**	35	**(b)**
36	**(a)**	37	**(a)**	38	**(a)**	39	**(a)**	40	**(b)**
41	**(d)**	42	**(d)**	43	**(d)**	44	**(c)**	45	**(b)**
46	**(c)**	47	**(d)**	48	**(c)**	49	**(b)**	50	**(c)**
51	**(d)**	52	**(a)**	53	**(d)**	54	**(c)**	55	**(c)**
56	**(b)**	57	**(a)**	58	**(a)**	59	**(a)**	60	**(b)**

Key Part B: Statistics

61	**(d)**	62	**(d)**	63	**(a)**	64	**(c)**	65	**(a)**
66	**(b)**	67	**(c)**	68	**(a)**	69	**(d)**	70	**(d)**
71	**(d)**	72	**(b)**	73	**(c)**	74	**(c)**	75	**(c)**
76	**(b)**	77	**(d)**	78	**(d)**	79	**(c)**	80	**(c)**
81	**(d)**	82	**(c)**	83	**(d)**	84	**(b)**	85	**(c)**
86	**(b)**	87	**(c)**	88	**(b)**	89	**(c)**	90	**(b)**
91	**(d)**	92	**(c)**	93	**(a)**	94	**(a)**	95	**(a)**
96	**(b)**	97	**(d)**	98	**(b)**	99	**(a)**	100	**(c)**

Test Series: November 2021

MOCK TEST PAPER TEST SERIES -II

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. If , then x is equal to:
   (a) 1
   (b) 3
   (c) 5
   (d) 10

2. If xy + yz + zx = -1, then the value of $\left(\frac{x+y}{1+xy}+\frac{z+y}{1+zy}+\frac{x+z}{1+zx}\right)$ is
   (a) xyz
   (b) $-\frac{1}{yz}$
   (c) $\frac{1}{xyz}$
   (d) $\frac{1}{x+y+z}$

3. The salaries of A, B and C are of ratio 2:3:5. if the increments of 15%, 10% and 20% are done their respective salaries, then find new salaries.
   (a) 23: 33: 60
   (b) 33:23:60
   (c) 23: 60:33
   (d) 33: 60: 23

4. If A: B = 5:3, B:C = 6:7 and C: D = 14:9 then the value of A: B:C:D
   (a) 20:14:12:9
   (b) 20:9:12:14
   (c) 20:9:14:12
   (d) 20:12:14:9

5. The salary of P is 25% lower than that of Q and the salary of R is 20% higher than Q , the ratio of salary of R and P will be :
   (a) 5:8
   (b) 8:5
   (c) 5:3

(d) 3:5

6. The cab bill is partly fixed and partly varies on the distance covered. For 456 km the bill is Rs.8252, for 484 km the bill is Rs. 8728. What will the bill be for 500km?

   (a) Rs. 8876

   (b) Rs.9156

   (c) Rs.9472

   (d) Rs.9000

7. $(x + 4)$ is a factor of $x^4 + 4x^3 - ax^2 - bx + 24$. Also, $a + b = 29$. Find the value of b.

   (a) 7

   (b) 16

   (c) 22

   (d) 13

8. X and Y have their present ages in the ratio 6:7. 14 years ago, the ratio of the ages of the two was 4:5. What will be the ratio of their ages 21 years from now?

   (a) 7: 11

   (b) 9: 10

   (c) 8: 11

   (d) 11: 13

9. The equation $3x^2 + mx + n = 0$ has roots that are double that of the equation $x^2 + 10x + 12 = 0$. What is the value of m + n?

   (a) 104

   (b) 204

   (c) 102

   (d) 202

10. What is the smallest integral value of n for which $n^3 + 7n^2 - 50n - 336 > 0$

    (a) 8

    (b) 6

    (c) 7

    (d) None of the above

11. If α and β are the roots of the equation $x^2+7x+12 =0$, then the equation whose roots $(\alpha+\beta)^2$ and $(\alpha-\beta)^2$ will be

    (a) $x^2-14x+49 = 0$

    (b) $x^2-24x+144 = 0$

    (c) $x^2-50x+49 = 0$

    (d) $x^2-19x+49 = 0$

12. The value of 'k 'for system of equations $kx+2y = 5$ and $3x+y = 1$ has no solution is:

    (a) 5

    (b) 2/3

    (c) 6

    (d) 3/2

13. On the average, experienced person does 5 units of work while a fresh one 3 units of work daily, but the employer have to maintain the output at least 30 units of work per day. The situation can be expressed as

    (a) $5x+3y \leq 30$

    (b) $5x+3y \geq 30$

    (c) $5x+3y = 30$

    (d) None of these

14. The sum of money doubles itself in 10 years. The number of years it would be treble itself is:

    (a) 25 years

    (b) 15 years

    (c) 20 years

    (d) None

15. Arun purchased a vaccum cleaner by giving ₹1700 as cash down payment, which will be followed by five EMIs of ₹480 each. The vaccum cleaner can also be bought by paying ₹3900 cash. What is the approx. rate of interest p.a. (at simple interest) under this instalment plan?

    (a) 18%

    (b) 19%

    (c) 22%

    (d) 20%

16. Present Value of a five year annuity is Rs. 2,000. If the rate of interest is 8% p.a., what is the amount of each annuity payment?

    (a) Rs.500.9

    (b) Rs.463.8

    (c) Rs.363.1

    (d) Rs.486.4

17. Abdul has taken a loan from Bahadur at 7% p.a. The loan has to be repaid in three equal yearly instalments of Rs. 10,000 each. What is the amount of loan taken?

    (a) Rs.25,467

    (b) Rs.26,897

    (c) Rs.26,243

    (d) None of the above

18. A took a loan from B. The loan is to be repaid in annual installments of Rs. 2,000 each. The first instalment is to be paid three years from today and the last one is to be paid 8 years from today? What is the value of loan today, using a discount rate of eight percent?

    (a) Rs.9,246

    (b) Rs.7,927

    (c) Rs.8,567

    (d) None of the above

19. If the cost of capital be 12% per annum, then the Net Present Value (in nearest Rs.) from the given cash flow is given as

Year	0	1	2	3

Operating Profit (in thousand Rs.)	(100)	60	40	50

(a) Rs.34048

(b) Rs.34185

(c) Rs.51048

(d) Rs.21048

20. Let the operating profit of a manufacturer for five years is given as

Year	1	2	3	4	5	6
Operating Profit (in lakh Rs.)	90	100	106.4	107.14	120.24	157.35

Calculate Compound Annual Growth Rate (CAGR)

(a) 9%

(b) 12%

(c) 11%

(d) 13%

21. If a sum triples itself in 15 years at simple rat of interest, the rate of interest per annum will be:

(a) 13%

(b) 13.3%

(c) 13.5%

(d) 18.0%

22. What will be population after 3 years when present population is 25, 000 and population increases at the rate of 3% in I year, at 4% in II year and 5% in III year?

(a) Rs.28,119

(b) Rs.29,118

(c) Rs.27, 000

(d) Rs.30, 000

23. The future value of an annuity of Rs.1500 made annually for five years at interest of 10% compounded annually is (Given that $(1.1)^5 = 1.61051$)

(a) Rs.9517.56

(b) Rs.9157.65

(c) Rs.9715.56

(d) Rs.9175.65

24. Find the effective rate of interest equivalent to the nominal rate of 7% converted monthly:

(a) 7.26%

(b) 7.22%

(c) 7.02%

(d) 7.20%

25. How much will be Rs.25,000 to in 2 years at compound interest if the rates for the successive years are at 4% and 5% per year

(a) Rs.27,300

(b) Rs.27,000

(c) Rs.27,500

(d) Rs.27,900

26. A box contains 3 pink caps, 2 purple caps and 4 orange caps. In how many ways they can be arranged so that the caps of the same colour come together. (Assume all caps of same colour are not identical)

(a) 1724

(b) 1728

(c) 1732

(d) 1764

27. ${}^{15}C_3 + {}^{15}C_{13}$ is equal to:

(a) ${}^{16}C_3$

(a) ${}^{30}C_{16}$

(c) ${}^{15}C_8$

(d) ${}^{15}C_{15}$

28. Tere are 12 questions to be answered in Yes or No. How many ways can these be answered?

(a) 1024

(b) 2048

(c) 4096

(d) None

29. In how many ways 3 Prizes can be distributed among 3 students equally

(a) 10

(b) 45

(c) 60

(d) 120

30. The sum of the first 3 terms in an AP is 18 and that of the last 3 is 28. If the AP has 13 terms, what is the sum of the middle three terms?

(a) 23

(b) 18

(c) 19

(d) None of the above

31. The ratio of sum of first n natural numbers to that of sum of cubes of first n natural numbers is

(a) 3:16

(b) n(n+1) / 2

(c) 2 / n(n+1)

(d) None of the above

32. If the sum of 'terms of an Arithmetic Progression is $2n^2$, the fifth term is.

(a) 20

(b) 50

(c) 18

(d) 25

33. The number of words that can be formed out of the letters of the word "ARTICLE" so that vowels occupy even places is

(a) 36

(b) 144

(c) 574

(d) 754

34. Let Z be the universal set for two sets – A and B. If n(A) = 300, n(B) = 400 and n (A ∩ B) = 200, then n (A' ∩ B') is equal to 400 provided n(Z) is equal to

(a) 900

(b) 800

(c) 700

(d) 600

35. In a group of students 80 can speak Hindi, 60 can speak English and 40 can speak Hindi and English both, then number of students is:

(a) 100

(b) 140

(c) 180

(d) 60

36. if $f(x) = x^2-1$ and $g(x) = 2x+3$ then gof (3)

(a) 71

(b) 61

(c) 41

(d) 19

37. $\int 2^{3x}.3^{2x}.5^{x}\,dx =$

(a) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(270)} + C$

(b) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(360)} + C$

(c) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(180)} + C$

(d) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(90)} + C$

38. Marginal cost and marginal revenue of a commodity is C'(x)=8+6x and R'(x)=30. Fixed cost is 0. Find the total profit.
    (a) $22x + 3x^2$
    (b) $22x - 3x^2$
    (c) $22x - x^2$
    (d) $x + 3x^2$
39. Find the value of)dx
    (a) 3
    (b) -3
    (c) 0
    (d) 1
40. A total cost function of a company RXL ltd is $C(x) = 10+50x-30x^2+x^3/3$ Where x denotes the output. Find the output level at which the profit is maximum if price function is given by 450-30x
    (a) 30
    (b) 40
    (c) 50
    (d) 20
41. Find out the next term of the series 4, 25, 121, 289, _____
    (a) 529
    (b) 441
    (c) 625
    (d) None of the above
42. Which number should come next ➔ 7, 13, 13, 14, 19, 15 ?
    (a) 15
    (b) 25
    (c) 19
    (d) None of the above
43. Find out the wrong number. 2,10,18,54,162,486,1458
    (a) 18
    (b) 10
    (c) 54
    (d) 162
44. In a certain code, "Delhi is capital" is coded as "7 5 9", "capital are beautiful" is coded as "3 6 9", "Delhi is beautiful" is coded as "6 7 5", "Patna also capital" is coded as "9 2 4". What is code for "beautiful" ?
    (a) 2
    (b) 4
    (c) 6
    (d) 9
45. If 'SYSTEM' is coded as 131625 then 'TERMS 'will be coded as ?

(a) 62251

(b) 62451

(c) 64251

(d) 62415

46. Pointing to a photograph Lalita says, “He is the son of the only son of my grandfather.” How is the man in the photograph related to Lalita?

(a) Brother

(b) Uncle

(c) Cousin

(d) Data is inadequate

47. Pointing to a photograph. Ram said, “He is the son of the only daughter of the father of my brother.” How is Ram related to the man in the photograph?

(a) Nephew

(b) Brother

(c) Father

(d) Maternal Uncle

(48-49) Read the following information carefully and answer the questions given below ? There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P’s uncle, Q and S are the daughters of the only brother of R’s father

48. Ho many female players are there?

(a) one

(b) two

(c) three

(d) Four

49. How is S is related to P

(a) Uncle

(b) Sister

(c) Niece

(d) Cousin

50. Pointing towards photograph. Vinod said “she is the daughter of my wife’s mother’s only daughter “. How is Vinod is related to the girl in the Photograph?

(a) Cousin

(b) Uncle

(c) Father

(d) None

51. Kamal starts from point ‘O’ and moved towards North 2 km, then he turns right and moved 4 km again he turned towards North and walked up to 1 km reached at A. Find the distance between OA.

(a) 6

(b) 7

(c) 4

(d) 5

52. When a person faces north and walks 25 m right, and he turns left and walks 20 m and again he turns right 25 m and turns right and walks 40 m in which direction is he now from his starting point.

(a) North-West

(b) North –East

(c) South- East

(d) South-West

53. Sanjay started from his house towards west. After a walking a distance 15 km he turned to the right and walked 10 km, he again turned to the right and walked 5 km. After this he turns left at 135^0 and covered 10 km in which direction should he is going?

(a) South

(b) South-West

(c) South-East

(d) North –West

54. Raju Walked from A to B in the east 10 m, then he turns towards right and walked 3 m. Again, he turned to the right and walked 14 m. how far is from is she from point A?

(a) 4 feet

(b) 5 feet

(c) 12 feet

(d) 13 feet

55. Mamtha moved a distance of 75 m towards north, then she turns to the left and walked to about 25 m, turned left again and walks 80 m. Finally, she turns to the right at angle of 45^0. In which direction was she is moving finally?

(a) South-East

(b) South-West

(c) North-West

(d) North-East

56. Five students A, B, C, D, and E are standing in a row. D is right on the E; B is on the left of E but on the right of A. D is next to C on his left. The student in middle is

(a) B

(b) E

(c) C

(d) A

57. Five children are sitting in row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and T is not sitting next to K . Who are adjacent to S.

(a) K+P

(b) R+P

(c) Only P

(d) P and T

(58-60) Directions to solve

(a) p, Q, R, S, T, U, V and W are sitting round the circle and facing the centre.

(b) P is second to the right of T who is neighbour of R and V.

(c) S is not the neighbour of U.

(d) V is neighbour of U.

(e) Q is not between S and W. W is not between u and S

58. Who is immediate left of V?

(a) P

(b) U

(c) R

(d) T

59. What is the position of R

(a) Between P and T

(b) Second to the right of S

(c) to the immediate right of W

(d) inadequate data

60. Which are not following are not neighbour

(a) UV

(b) VT

(c) RV

(d) PQ

Part B: Statistics

61. Salaries of employees working in ABC limited is as follows:

Salaries (In thousands)	below 10	below 20	below 50	below 100	below 1000
Number of employees	28	34	65	84	123

Find the number of employees with salaries more than 50k?

(a) 65

(b) 84

(c) 39

(d) 58

62. Which of the following is not a criteria for ideal measure of central tendency?

(a) It should be ambiguously defined

(b) It should be simple to compute

(c) It should be based on all the observations

(d) None of these

63. Which of the following is not an example of continuous variable?

(a) Temperature in India

(b) Profit of Company X

(c) Number of road accidents

(d) A person's height

64. At ABC ltd, the average age of employees is 36. Average age of male employees is 38 and that of females is 32. Find the ratio of female to male in the company.

(a) 1:3

(b) 2:1

(c) 1:2

(d) 3:1

65. The mean height of girls in class in 162cm while for boys is 182cm. The ratio of number of girls: boys is 1:2. Find the mean height of the whole class

(a) 170 cm

(b) 180 cm

(c) 154 cm

(d) None of these

66. In the equation 4x+2y = 3, quartile deviation for y is 3. Find the quartile deviation for x.

(a) 4.5

(b) 6

(c) 1.5

(d) None of these

67. The Standard deviation is independent of change of

(a) Scale

(b) Origin

(c) Both (a) and (b)

(d) None of these

68. Find D6 for the following observations. 7, 9, 5, 4, 10, 15, 14, 18, 6, 20

(a) 11.40

(b) 12.40

(c) 13.40

(d) 13.80

69. If all the observations are decreased by 4, find the relation between new SD and old SD.

(a) New SD = Old SD/2

(b) New SD = Old SD - 2

(c) New SD = Old SD - 4

(d) Remains unchanged

70. Standard deviation of first n natural number is 2. What is the value of n?

(a) 7

(b) 6

(c) 5

(d) 8

71. Find the variance of 3x+2 if standard deviation of x is 4
    (a) 9
    (b) 160
    (c) 16
    (d) 144
72. if the variance of x = 148.6 and mean of x = 40 , then the coefficient of variation is
    (a) 37.15
    (b) 30.48
    (c) 33.75
    (d) None of these
73. The average of 10 observations is 14.4. If the average of first four observations is 16.5. The average of remaining 6 observations is :
    (a) 13.6
    (b) 13.0
    (c) 13.2
    (d) 12.5
74. If the rates return from three different shares are 100%, 200% and 400% respectively. The average rate of return will be.
    (a) 350%
    (b) 233.33%
    (c) 200%
    (d) 300%
75. For a 4 x 7 classification of bivariate data, the maximum number of conditional distributions is :
    (a) 11
    (b) 28
    (c) 35
    (d) None
76. The coefficients of correlation between two variables x and y is the simple _____ of two regression coefficients.
    (a) Harmonic Mean
    (b) Arithmetic Mean
    (c) Geometric Mean
    (d) None of the above
77. There are two equations: m + 3p = 2 and 6n + 2q = 1. Correlation coefficients for p and q is 0.5. Find the correlation coefficients of m and n
    (a) 0.6
    (b) 0.5
    (c) -0.5
    (d) None of these

78. If r=0, regression lines are:
    (a) Perpendicular
    (b) Parallel
    (c) They coincide
    (d) Cannot be determined
79. Below scatter diagram shows what type of correlation

    (a) Perfect negative correlation
    (b) Negative correlation
    (c) Positive correlation
    (d) Perfect positive correlation
80. Number of defects in clothes a garments showroom will form a
    (a) Poisson distribution
    (b) Normal distribution
    (c) Binomial distribution
    (d) Cannot be determined
81. If X and Y are two random variables and if E(X) =3 and E(Y) = 6, then E(XY) = ?
    (a) 3
    (b) 6
    (c) 18
    (d) 24
82. An unbiased coin is tossed 6 times. Find the probability that the tosses result in heads only,
    (a) 1/64
    (b) 5/64
    (c) 10/64
    (d) None of these
83. Find the two numbers if AM and GM is 10 and 6 respectively
    (a) 6, 6
    (b) 12, 8
    (c) 9, 4
    (d) 18, 2
84. Probability distribution may be
    (a) Discrete
    (b) Continuous
    (c) Infinite
    (d) (a) or (b)
85. In a certain Poisson frequency distribution, the probability corresponding to two success is half the probability corresponding to three successes. The mean of the distribution is
    (a) 6

(b) 12

(c) 3

(d) 2.45

86. The normal curve is

(a) Positively skewed

(b) Negatively skewed

(c) Symmetrical

(d) All these

87. An example of a bi-parametric discrete Probability distribution is

(a) Binomial distribution

(b) Poisson Distribution

(c) Normal Distribution

(d) Both (a) and (b)

88. For a normal distribution Q1 = 54.32 and Q3 = 78.86, then the median of the distribution is

(a) 12.17

(b) 39.43

(c) 66.69

(d) None of these

89. What is the mean of X having the following density function f(x) = $\frac{1}{4\sqrt{2\prod}} e^{-\frac{(x-10)^2}{32}}$ for -∞< x <∞

(a) 10

(b) 4

(c) 40

(d) None of these

90. In a Binomial Distribution B (n, p), n= 4, then P (x=2) = 3 P (x= 3) find P

(a) 1/3

(b) 2/3

(c) 6/4

(d) 4/3

90. One card is drawn from a pack of 52 , what is the probability that is a king or queen ?

(a) 11/13

(b) 2/13

(c) 1/13

(d) None of these

91. The probability that a leap year has 53 Wednesday is

(a) 2/7

(b) 5/3

(c) 2/3

(d) 1/7

92. A coin is tossed six times, then the probability of obtaining heads and tails alternatively is

(a) ½

(b) 1/64

(c) 1/32

(c) 1/16

93. Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice 9 is

(a) 8/9

(b) 1/9

(c) 7/9

(d) None of these

94. The probability distribution of the demand for a commodity is given below

Demand (x)	5	6	7	8	9	10
Probability: P(x)	0.05	0.10	0.30	0.40	0.10	0.05

The expected value of demand will be :

(a) 7.55

(b) 7.85

(c) 1.25

(d) 8.35

95. A bag contains 4 Red and 5 Black balls. Another bag contains 5 Red and 3 Black balls. If one ball is drawn at random each bag. Then the probability that one Red and One Balck is

(a) 12/72

(b) 25/72

(c) 37/72

(d) 13/72

96. If Laspyres index number is 250 and Paschees index number is 160, them Fishers Index number is

(a) 200

(b) 120

(c) 150

(d) 170

97. Which is called an ideal index number

(a) Laspyres Index number

(b) Pasches Index number

(c) Fishers Index number

(d) Marshall- Edgeworth Index number

98. The circular test is an extension of

(a) The time reversal test

(b) The factor reversal test

(c) The Unit test

(d) None of these

99. Circular test is satisfied by

(a) Laspyres Index number

(b) Paschhes index number

(c) The simple geometric mean of price geometric mean of price relatives and price relatives and weighted aggregative with fixed weights.

(d) None of these

100. If the price of a commodity in a place have decreased by 30% over the based period places, then the index number of that place is

(a) 30

(b) 60

(c) 70

(d) 80

Test Series: November-2021

MOCK TEST PAPER SERIES –II

Paper 3: Business Mathematics, Logical Reasoning and Statistics

Key Part A: Business Mathematics and Logical Reasoning

1	**(b)**	2	**(c)**	3	**(a)**	4	**(d)**	5	**(b)**
6	**(d)**	7	**(c)**	8	**(b)**	9	**(b)**	10	**(d)**
11	**(c)**	12	**(c)**	13	**(b)**	14	**(c)**	15	**(c)**
16	**(a)**	17	**(c)**	18	**(b)**	19	**(d)**	20	**(b)**
21	**(b)**	22	**(a)**	23	**(b)**	24	**(b)**	25	**(a)**
26	**(b)**	27	**(a)**	28	**(c)**	29	**(c)**	30	**(a)**
31	**(c)**	32	**(c)**	33	**(b)**	34	**(a)**	35	**(a)**
36	**(d)**	37	**(b)**	38	**(b)**	39	**(b)**	40	**(d)**
41	**(a)**	42	**(b)**	43	**(b)**	44	**(c)**	45	**(b)**
46	**(a)**	47	**(d)**	48	**(c)**	49	**(b)**	50	**(c)**
51	**(d)**	52	**(c)**	53	**(d)**	54	**(b)**	55	**(b)**
56	**(b)**	57	**(a)**	58	**(b)**	59	**(a)**	60	**(c)**

Key Part B: Statistics

61	**(d)**	62	**(a)**	63	**(c)**	64	**(c)**	65	**(d)**
66	**(c)**	67	**(b)**	68	**(b)**	69	**(d)**	70	**(a)**
71	**(d)**	72	**(b)**	73	**(b)**	74	**(c)**	75	**(a)**
76	**(c)**	77	**(b)**	78	**(a)**	79	**(a)**	80	**(a)**
81	**(c)**	82	**(a)**	83	**(d)**	84	**(d)**	85	**(a)**
86	**(c)**	87	**(a)**	88	**(c)**	89	**(a)**	90	**(a)**
91	**(a)**	92	**(c)**	93	**(b)**	94	**(a)**	95	**(c)**
96	**(a)**	97	**(c)**	98	**(a)**	99	**(c)**	100	**(c)**

MOCK TEST PAPER 1

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. Find the value of $\left[\log_{10}\sqrt{25} - \log_{10}\left(2^3\right) + \log_{10}\left(4\right)^2\right]$
   (a) x
   (b) 10
   (c) 1
   (d) None
2. If A: B = 2:5, then (10A + 3B): (5A + 2B) is equal to
   (a) 7:4
   (b) 7:3
   (c) 6:5
   (d) 7:9
3. The ratio compounded of 4:5 and sub-duplicate of a:9 is 8:15. Then value of "a" is
   (a) 2
   (b) 3
   (c) 4
   (d) 5
4. If ½ , 1/3 ,1/5 and 1/x are in proportion , then the value of x will be
   (a) 15/2
   (b) 6/5
   (c) 10/3
   (d) 5/6
5. If $P = x^{1/3} + x^{-1/3}$ then find value of $3p^3 - 9p$
   (a) 3
   (b) ½(x+1/x)
   (c) (x+1/x))
   (d) 2((x+1/x))
6. Fourth proportional to x, 2x, (x+1) is:
   (a) (x+2)
   (b) (x-2)
   (c) (2x+2)

(d) (2x-2)

7. The value of $\frac{\left(3^{n+1}+3^{n}\right)}{\left(3^{n+3}-3^{n+1}\right)}$ is equal to

(a) 1/5

(b) 1/6

(c) ¼

(d) 1/9

8. The value of $\frac{x^2-(y-z)^2}{(x+z)^2-y^2}+\frac{y^2-(x-z)^2}{(x+y)^2-z^2}+\frac{z^2-(x-y)^2}{(y+z)^2-x^2}$

(a) 0

(b) 1

(c) -1

(d) ∞

9. If abc = 2 then the value of $\frac{1}{1+a+2b^{-1}}+\frac{1}{1+\frac{1}{2}b+c^{-1}}+\frac{1}{1+c+a^{-1}}$ is

(a) 1

(b) 2

(c) 3

(d) 1/2

10. If $\frac{3x-2}{5x-6}$ is the duplicate ratio of 2/3 then the value of 'x ' is

(a) 2

(b) 6

(c) 5

(d) 9

11. If α and β are the roots of the equation $x^2 + 7x + 12 = 0$, then the equation whose roots $(\alpha + \beta)^2$ and $(\alpha - \beta)^2$ will be:

(a) $x^2 – 14x + 49 = 0$

(b) $x^2 – 24x + 144 = 0$

(c) $x^2 – 50x + 49 = 0$

(d) $x^2 – 19x + 144 = 0$

12. Roots of the equation $2x^2+3x+7 = 0$ are α and β then the value of $\alpha\beta^{-1}+\beta\alpha^{-1}$ is

(a) 2

(b) 3/7

(c) 7/2

(d) -19/14

13. On solving the inequalities $5x + y \leqq 100$, $x + y \leq 60$, $x \geq 0$, $y \geq 0$, we get the following situation:
    (a) (0,0), (20,0), (10,50), & (0,60)
    (b) (0,0), (60,0), (10,50), & (0,60)
    (c) (0,0), (20,0), (0,100) & (10,50)
    (d) none of these

14. The rules and regulations demand that the employer should employ not more than 5 experienced hands to 1 fresh one and this fact is represented by (Taking experienced person as x and fresh person as y)
    (a) $y \geq \frac{x}{5}$
    (b) $5y \leq x$
    (c) $5y \geq x$
    (d) none of these

15. In what time will be a sum of money doubles itself at 6.25% p.a simple interest ?
    (a) 5 years
    (b) 8 years
    (c) 12 years
    (d) 16 years

16. Mr. X invests ₹ 10,000 every year starting from today for next 10 years suppose interest rate is 8% per annum compounded annually. Calculate future value of the annuity: (Given that $(1+0.08)^{10} = 2.158925$]
    (a) ₹ 156454.88
    (b) ₹ 144865.625
    (c) ₹ 156554.88
    (d) none of these

17. The difference between the simple and compound interest on a certain of 3 years at 5% p.a is ₹ 228.75. The compound interest on the sum of for 2 years at 5% per annum is
    (a) ₹ 3175
    (b) ₹ 3075
    (c) ₹ 3275
    (d) ₹ 2975

18. How much time would the simple interest on a certain sum be 0.125 times the principal at 10% per annum
    (a) $1\frac{1}{4}$ years
    (b) $1\frac{3}{4}$ years
    (c) $2\frac{1}{4}$ years
    (d) $2\frac{3}{4}$ years

19. The time in by which a sum of money is 8 times of itself if it doubles itself in 15 years interest compounded annually.
    (a) 42 years
    (b) 43 years
    (c) 45 years
    (d) 46 years
20. Present value of a scooter is ₹7290, if its value decreases every year by 10% then the value before 3 years is equal to
    (a) 10,000
    (b) 10,500
    (c) 20,000
    (d) 20,500
21. Find the effective rate of interest at 10% p.a when the interest is payable quarterly.
    (a) 10.38%
    (b) 5%
    (c) 5.04%
    (d) 4%
22. The difference between in simple interest on a sum invested of ₹1500 for 3 years is ₹18. The difference in their rate is
    (a) 0.4
    (b) 0.6
    (c) 0.8
    (d) 0.10
23. What will be the population after 3 years . When the population increases at the rate 3 % in I year, 4 % in II year and 5% in III year.
    (a) 28,119
    (b) 29,118
    (c) 27,000
    (c) 30,000
24. If ₹10,000 is invested at 8 % per annum, then compounded quarterly.Then value of investment after 2 years is
    (a) ₹11,716.59
    (b) ₹10,716.59
    (c) ₹12,715.59
    (d) none of these
25. In how many years will a sum of money become double at 5% p.a compound interest
    (a) 14 years
    (b) 15 years
    (c) 16 years

(d) 14.3 years

26. The future value of an annuity of ₹ 1,000 is made annually for 5 years at interest rate of 14% compounded annually [Given that $(1.14)^5 = 1.92541$] is _____

(a) ₹ 5610

(b) ₹ 6610

(c) ₹ 6160

(d) ₹ 5160

27. The number of ways of arranging 6 boys and 4 girls in a row so that all 4 girls are together is:

(a) 6!. 4!

(b) 2 (7! 4!)

(c) 7! 4!

(d) 2. (6! 4!)

28. $15C_{3r}+15C_{r+3}$ then 'r' is equal to

(a) 2

(b) 3

(c) 4

(d) 5

29. If ${}^nP_4 = 20\ ({}^nP_2)$ then the value of 'n' is _____

(a) -2

(b) 7

(c) -2 and 7 both

(d) None of these.

30. How many different words can be formed with the letters of the word "LIBERTY"

(a) 4050

(b) 5040

(c) 5400

(d) 4500

31. If x, y and z are the terms in G.P , then the term x^2+y^2 , xy + yz , y^2+z^2 are in

(a) AP

(b) GP

(c) HP

(d) none of the above

32. In a GP .if fourth term is 3 then the product of first seven terms is

(a) 3^5

(b) 3^7

(c) 3^6

(d) 3^8

33. In a G.P. If the third term of a GP is $\frac{2}{3}$ and 6th term is $\frac{2}{81}$, then the first term is

(a) 6

(b) 1/3

(c) 9

(d) 2

34. Sum upto infinity series $\frac{1}{2}+\frac{1}{3^2}+\frac{1}{2^3}+\frac{1}{3^4}+\frac{1}{2^5}+\ldots..$

(a) 19/24

(b) 24/19

(c) 5/24

(d) none of these

35. If f(x) = $\frac{2+x}{2-x}$, then f^{-1} (x) :

(a) $\frac{2(x-1)}{x+1}$

(b) $\frac{2(x+1)}{x-1}$

(c) $\frac{x+1}{x-1}$

(d) $\frac{x-1}{x+1}$

36. If f : R $\rightarrow$ R is a function, defined by $f(x) = 2^x$; then f(x+y) is

(a) f(x) +f(y)

(b) f(x). f(y)

(c) f(x) ÷f(y)

(d) none

37. If f(x) = x+2, $g(x) = 7^x$, than gof(x) = ____

(a) $7^x.x+2.7^x$

(b) 7^x+2

(c) $49(7^x)$

(d) none of these

38. Given x = 2t + 5; $y = t^2-2$, then $\frac{dy}{dx}$ is calculated as:

(a) t

(b) 1/t

(c) -1/t

(d) none of these

39. $\int e^x \left(x^2 + 2x\right) dx$

(a) $x^2.e^x+c$

(b) $x.e^x+c$

(c) $-x.e^x+c$

(d) $e^{-x}+c$

40. if xy =1 then $y^2 + \frac{dy}{dx} = ?$

(a) 1

(b) 0

(c) 2

(d) none of these

41. The missing term of the series 11, 10 __27, 66.5, 198.5

(a) 14

(b) 16

(c) 21

(d) 19

42. What comes at last place in R, U, X, A, D, ?

(a) E

(b) F

(c) G

(d) H

43. If Z = 52 and ACT = 48, then BAT will be equal to

(a) 39

(b) 41

(c) 44

(d) 46

44. If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH?

(a) 246173

(b) 214673

(c) 214763

(d) 216473

45. If E = 5 and **READ** is coded as 7, then what is the code of **'DEAR'** ?

(a) 6

(b) 7

(c) 8

(d) 9

46. M is to the East of D, F is to the South of D and K is to the West of F. M is in which direction with respect to K?

(a) South-West

(b) North-West

(c) North-East

(d) South-East

47. A cyclist goes 30 km to North and then turning to goes 40 km. Again he turns to his right and goes 20 km. After this he turns to his right and goes 40 km. How far is the from his starting point?

(a) 0 km.

(b) 10 km.

(c) 25 km.

(d) 40 km.

48. A boy from his home, first walks 20 m in North-West direction then 20 m in South - West direction. Next, he walks 20m South - East direction. Finally, he turns towards his house. In which direction is he moving?

(a) North - West

(b) North-East

(c) South – West

(d) South – East

49. Raju leaves his house and walks 12 km towards North. He turns right and walks another 12 km. He turns right, walks 12 km more and turns left to walk 5 km. How far is he from his home and in which direction?

(a) 7 km east

(b) 10 km east

(c) 17 km east

(d) 24 km eas

50. A child goes 50 meter towards South and then turning to his right, he goes 50 meter. Then, turning to his left, he goes 30 meter. Again he turns to his left and goes 50 meter. How far is he from his initial position?

(a) 30 m

(b) 40 m

(c) 50 m

(d) 80 m

51. D is daughter of E . A is son of D . C is brother of A and B is sister of A . F is brother of D . How F is related to B ?

(a) Father-in -Law

(b) Uncle

(c) Brother

(d) Mother-in-law

52. Introducing a boy a girl said, “He is the son of the daughter of the father of my uncle “. Who is the boy to the girl ?

(a) Brother

(b) Nephew

(c) Uncle

(d) Son-in-law

53. It is given that “A is the mother of B; B is the sister of C; C is the father of D”. How is A related to D?

(a) Mother

(b) Grandmother

(c) Aunt

(d) Sister

54. Rita told Mani, "The girl I met yesterday at the beach was the youngest daughter of the brother-in-law of my friend's mother." How is the girl related to Rita's friend ?

(a) Cousin

(b) Daughter

(c) Niece

(d) Aunt

55. Sanjay has three daughters, and each daughter has a brother. How many male members are there in the family?

(a) 4

(b) 2

(c) 3

(d) 1

Directions (Q 56-57): Study the following information carefully and answer the questions given below.

I. P, Q, R, S, T, U and V are sitting on a wall and all of them are facing West.

II. S is on the immediate left of R.

III. T is at an extreme end and has Q as his neighbor.

IV. V is between Q and U.

V. S is sitting third from the north end.

56. Who is sitting to the left of S ?

(a) Q

(b) U

(c) T

(d) R

57. Which of the following pairs of people are sitting at the extreme ends ?

(a) QV

(b) PR

(c) TP

(d) ST

58. Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary. Who is sitting immediate right to Reeta ?

(a) Bindu

(b) Rani

(c) Mary

(d) Seema

(Directions 59-60) . Four ladies A, B, C and D and four gentlemen E, F, G and H are sitting in circle around a table facing each other

(i) No two ladies or gentlemen are sitting side by side

(ii) C, who is sitting between G and E , facing D

(iii) F is between D and A and facing G

(iv) H is to the right of B

59. Who is immediate neighbor of B ?

(a) G and H

(b) E and F

(c) A and B

60. Who is sitting left of A

(a) F

(b) E

(c) C

(d) D

Part B: Statistics

61. Median of a distribution can be obtained from

(a) Frequency polygon

(b) Histogram

(c) ogives

(d) None of these.

62. Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?

(a) 72^{o}

(b) 48^{o}

(c) 56^{o}

(d) 92^{o}

63. In a study relating to the labourers of a jute mill in West Bengal, the following information was collected.

'Twenty per cent of the total employees were females and forty per cent of them were married. Thirty female workers were not members of Trade Union. Compared to this, out of 600 male workers 500 were members

of Trade Union and fifty per cent of the male workers were married. The unmarried non-member male employees were 60 which formed ten per cent of the total male employees. The unmarried non-members of the employees were 80'. On the basis of this information, the ratio of married male non-members to the married female non-members is

(a) 1: 3

(b) 3: 1

(c) 4: 1

(d) 5: 1

64. For the non-overlapping classes 0—19 , 20—39 , 40—59 the class mark of the class 0—19 is

(a) 0

(b) 19

(c) 9.5

(d) none of these

65. For open-end classification, which of the following is the best measure of central tendency?

(a) AM

(b) GM

(c) Median

(d) Mode

66. The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is

(a) 10

(b) 20

(c) 25

(d) 8.30

67. If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation is

(a) 25

(b) 30

(c) 40

(d) 20

68. For a moderately skewewd distribution, the median is twice the mean , then the mode is ____ times the median.

(a) 3

(b) 2

(c) $\frac{2}{3}$

(d) $\frac{3}{2}$

69. If average marks for agroup of 30 girls is 80 , a group of boys is 70 and combined average is 76, then how many boys are in the group ?

(a) 21

(b) 20

(c) 22

(d) 19

70. The median value of the set of observations 48, 36, 72, 87, 19, 66, 56 and 91

(a) 53

(b) 87

(c) 61

(d) 19

71. If two vriables a and b are related by c= ab then GM.of c =

(a) GM of a +GM of b

(b) GM of a×GM of b

(c) GM of a -GM of b

(d) GM of a /GM of b

72. If there are three obsewrvations 15, 20,25 then the sum of devation of the observations from their AM is.

(a) 0

(b) 5

(c) -5

(d) 10

73. The mean weight of 15 students is 110 kg. The mean weight of 5 of them is 100 kg. and of another five students is 125 kg. then the mean weight of the remaining students is :

(a) 120

(b) 105

(c) 115

(d) None of these

74. If the Arithmetic mean between two numbers is 64 and the Geometric mean between them is 16. The Harmonic Mean between them is _____.

(a) 64

(b) 4

(c) 16

(d) 40

75. The regression coefficients remain unchanged due to

(a) Shift to origin

(b) Shift to scale

(c) Always

(d) Never

76. If the plotted points in a scatter diagram lie from upper left to lower right, then the correlation is
    (a) Positive
    (b) Zero
    (c) Negative
    (d) none of these.
77. The covariance between two variables is
    (a) Strictly positive
    (b) Strictly negative
    (c) Always 0
    (d) Either positive or negative or zero.
78. If the coefficient of correlation between two variables is –0 9, then the coefficient of determination is
    (a) 0.9
    (b) 0.81
    (c) 0.1
    (d) 0.19.
79. For a probability of a random variable x is given below :

X:	1	2	4	5	6
P:	0.15	0.25	0.2	0.3	0.1

    What is the Standrard deviation of x ?
    (a) 1.49
    (b) 1.56
    (c) 1.69
    (d) 1.72
80. Given that for two events A and B, P (A) = 3/5, P (B) = 2/3 and P (A) = 3/4, what is P (A/B)?
    (a) 0.655
    (b) 13/60
    (c) 31/60
    (d) 0.775
81. If 2x + 3y + 4 = 0 and V(x) = 6 then V(y) is
    (a) 8/3
    (b) 9
    (c) 9
    (d) 6
82. X and Y stand in a line with 6 other people. What is the probability that there are 3 persons between them?
    (a) 1/5
    (b) 1/6
    (c) 1/7

(d) 1/3

83. Four unbiased coins are tossed simultaneously. The expected number of heads is :

X:	0	1	2	3	4
P(x)	1/16	4/16	6/16	4/16	1/16

(a) 1

(b) 2

(c) 3

(d) 4

84. Assume that the proabailityfor rain on a day is 0.4 . An umbrella salesman can earn ₹ 400 per day in case of rain on that day will lose ₹ 100 per day if there is no rain . The expected eranings (in ₹) per day of the salesman is

(a) 400

(b) 200

(c) 100

(d) 0

85. The covraince between two variables X and Y is 8.4 and their variances are 25 and 36 respectively .Calculate karl Pearson's coefficient of correlation between them.

(a) 0.82

(b) 0.28

(c) 0.01

(d) 0.09

86. What is the probability of getting 3 heads if 6 unbaised coins are tossed simultaneously ?

(a) 0.3125

(b) 0.25

(c) 0.6825

(d) 0.50

87. The mode of the binomial distribution for which the mean is 4 varaince 3 is equal to ?

(a) 4

(b) 4.5

(c) 4.25

(d) 4.1

88. For Poisson Distribution :

(a) Mean and Standard Deviation are equal

(b) Mean and Vraince are equal

(c) Standard Devaiation and Variance are equal

(d) Both (a) and (b) are equal

89. If avaraiate x has , mean>variance , then the distribution will be ____

(a) Binomial Distribution

(b) Poisson Distribution

(c) Normal Distribution

(d) T-Distribution

90. An example of a bi-parametric continuous probability distribution

(a) Binomial

(b) Poisson

(c) Normal

(d) Chi-square

91. For a poisson variate X, P(x=2) =3 P(x=4) , then the standard deviation of X is

(a) 2

(b) 4

(c) $\sqrt{2}$

(d) 3

92. What is the mean of X having the following density function ?

$$f(x) = \frac{1}{4\sqrt{2\prod}} e^{-\frac{(x-10)^2}{32}} \text{ for } -\infty < x < \infty$$

(a) 10

(b) 4

(c) 40

(d) none of these

93. The divations are minimum when taken from

(a) Mean

(b) Median

(c) Mode

(d) GM

94. Histogram is useful to determine graphically the value of

(a) Arithmetic Mean

(b) Median

(c) Mode

(d) HM

95. If x and y are related as 3x-4y= 20 then the Quartile divation of x is 12 , then the Quartile deviation of y is :

(a) 14

(b) 15

(c) 16

(d) 9

96. The index number for the year 2012 taking 2011 as the base year from the data given below by using simple average of price relative method is

Commodity	A	B	C	D	E
Price in 2011	115	108	95	80	90
Price in 2012	125	117	108	95	95

(a) 112

(b) 117

(c) 120

(d) 111

97. Suppose a business executive was earning ₹ 2,050 in the base period. What should be his salary in the current period if his standard of living is to remain the same? Given $\sum W = 25$ and $\sum IW = 3544$:

(a) ₹ 2096

(b) ₹ 2906

(c) ₹ 2106

(d) ₹ 2306

98. Find the Paasche's Index number for prices from the following

Commodity	Base year		Current year	
	Price	Commodity	Price	Commodity
A	1	6	3	5
B	3	5	8	5
C	4	8	10	6

(a) 261.36

(b) 265.48

(c) 274.32

(d) 282

99. Index numbers are not helpful in

(a) Framining Economic Policies

(b) Revealing Trend

(c) Forecasting

(d) Identifying errors

100. The weight average of price relatives of commodities when the weight is equal to the value of commodities in base year yields _____index number

(a) Fisher's Ideal

(b) Laspyres

(c) Paasches

(d) Marshall-Edgeworth

Paper 3: Business Mathematics, Logical Reasoning and Statistics

Key Part A: Business Mathematics and Logical Reasoning

1	**(c)**	2	**(a)**	3	**(c)**	4	**(a)**	5	**(c)**
6	**(c)**	7	**(b)**	8	**(b)**	9	**(a)**	10	**(b)**
11	**(c)**	12	**(d)**	13	**(a)**	14	**(a)**	15	**(d)**
16	**(a)**	17	**(b)**	18	**(a)**	19	**(c)**	20	**(a)**
21	**(a)**	22	**(a)**	23	**(a)**	24	**(a)**	25	**(d)**
26	**(b)**	27	**(c)**	28	**(b)**	29	**(b)**	30	**(b)**
31	**(b)**	32	**(b)**	33	**(a)**	34	**(a)**	35	**(a)**
36	**(b)**	37	**(c)**	38	**(a)**	39	**(a)**	40	**(b)**
41	**(a)**	42	**(c)**	43	**(d)**	44	**(b)**	45	**(b)**
46	**(c)**	47	**(b)**	48	**(b)**	49	**(c)**	50	**(a)**
51	**(b)**	52	**(a)**	53	**(b)**	54	**(a)**	55	**(b)**
56	**(b)**	57	**(c)**	58	**(c)**	59	**(a)**	60	**(a)**

Key Part B: Statistics

61	**(c)**	62	**(d)**	63	**(c)**	64	**(c)**	65	**(c)**
66	**(a)**	67	**(c)**	68	**(b)**	69	**(b)**	70	**(c)**
71	**(b)**	72	**(a)**	73	**(b)**	74	**(b)**	75	**(a)**
76	**(c)**	77	**(d)**	78	**(b)**	79	**(c)**	80	**(d)**
81	**(a)**	82	**(c)**	83	**(b)**	84	**(c)**	85	**(b)**
86	**(a)**	87	**(a)**	88	**(b)**	89	**(a)**	90	**(c)**
91	**(c)**	92	**(a)**	93	**(b)**	94	**(c)**	95	**(d)**
96	**(d)**	97	**(b)**	98	**(a)**	99	**(d)**	100	**(b)**

Test Series: June, 2022

MOCK TEST PAPER II

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. If x: y = 2:3, then (5x+2y): (3x-y) =

   (a) 19: 3

   (b) 16:3

   (c) 7:2

   (d) 7:3

2. If $(25)^{150} = (25x)^{50}$, then the value of x will be:

   (a) 5^3

   (b) 5^4

   (c) 5^2

   (d) 5

3. The value of $\left(\frac{y^a}{y^b}\right)^{a^2+ab+b^2} \times \left(\frac{y^b}{y^c}\right)^{b^2+bc+c^2} \times \left(\frac{y^c}{y^a}\right)^{c^2+ca+a^2}$ is equal to

   (a) y

   (b) -1

   (c) 1

   (d) None of these

4. If $x = \log_{24} 12, y = \log_{36} 24, z = \log_{48} 36$ then $xyz + 1 =$

   (a) 2xy

   (b) 2xz

   (c) 2yz

   (d) 2

5. A person has asset worth of ₹ 1,48,200. He wish to divide it amongst his wife, son and daughter in the ratio 3:2:1respectively . From this assets share of his wife son will be :

   (a) ₹ 24,700

   (b) ₹ 49, 400

   (c) ₹ 74,100

   (d) ₹ 37,050

6. X, Y, Z together starts a business, if X invests 3 times as much as Y invests and Y invests two third of what Z invests, then the ratio of capitals of X,Y, Z is

   (a) 3:9:2

   (b) 6:3:2

   (c) 3:6:2

   (d) 6:2:3

7. If the ratio of the roots of the equation $4x^2-6x+p=0$ is 1:2 then the value of p is:

   (a) 1

   (b) 2

   (c) -2

   (d) -1

8. If roots of equation $x^2+x+r= 0$ are α and β and $\propto^3+\beta^3= -6$. Find the value of 'r'

   (a) -5/3

   (b) 7/3

   (c) -4/3

   (d) 1

9. If $2^{x+y} = 2^{2x+y} = \sqrt{8}$ then the respective values of x and y are ___

   (a) 1, ½

   (b) ½, 1

   (c) ½, ½

   (d) None of these

10. If $a^2+ b^2 = 45$ and ab = 18, the $\frac{1}{a}+\frac{1}{b}$ is:

    (a) ± 1/3

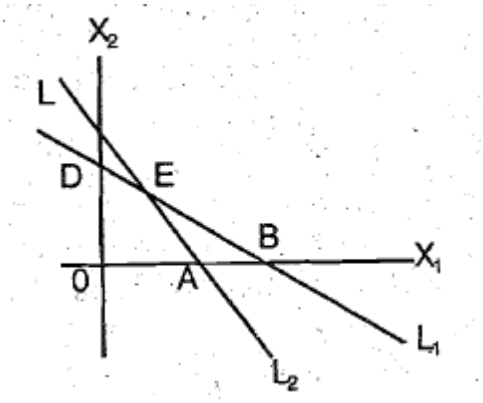
    (b) ±2/3

    (c) ±1/2

    (d) None of these

11. The common region represented by the following in qualities

    $L_1: x_1+x_2< 4$: L_2: $2x_1-x_2>6$



(a) OABC

(b) outside of OAB

(c) Δ BCE

(d) Δ ABE

12. An employer recruits experienced (x) and fresh workmen(y) for his under the condition that he can not employ more than 11 people and y can be related by the inequality.

(a) $x+y \neq 11$

(b) $x+y \leq 11, x \geq 0, y \geq 0$

(c) $x+y \geq 11, x \geq 0, y \geq 0$

(d) none of these

13. $6x + y \geq 18$, $x + 4y \geq 12$, $2x + y \geq 10$ On solving the inequalities; we get:

(a) (0, 18), (12, 0), (4, 2) & (7, 6)

(b) (3, 0), (0, 3), (4, 2) & (7, 6)

(c) (5, 0), (0, 10), (4, 2) & (7, 6)

(d) (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)

14. Find the effective rate of interest if an amount of 30,000 deposited in a bank. For 1 year at the rate of 10% per annum compounded semi-annually.

(a) 10.05%

(b) 10.10%

(c) 10.20%

(d) 10.25%

15. The present population of a town is 25,000. If it grows at the rate of 4%, 5%, 8% during 1st year, 2nd year, 3rd year respectively. Then find the population after 3 years.

(a) 29,484

(b) 29,844

(c) 29,448

(d) 28,944

16. The present value of a scooter is ₹ 7290. The rate of depreciation is 10%. What was its value 3 years ago?

(a) 10000

(b) 10010

(c) 9990

(d) 12000

17. The rate of interest for the first 2 year is 3% per annum, for next 3 years is 8% per annum and for the period beyond 5 years, 10% per annum. If a man gets ₹ 1520 as a simple interest for 6 years; how much money did he deposit?

(a) ₹ 3800

(b) ₹ 3000

(c) ₹ 4000

(d) None of these

18. Suppose your parent decides to open a PPF account in a bank towards your name with ₹ 10,000 every year staring from today for next 15 years. When you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this annuity?

(a) 83,042

(b) 80,900

(c) 90,100

(d) None of these

19. In what rate % per annum will ₹ 1,000 amounts to ₹ 1331 in 3 years? The interest is compounded yearly is:

(a) 10%

(b) 12%

(c) 11%

(d) None of these

20. The difference between simple interest and compound interest on a certain for 2 years at 10% p.a. is ₹ 10. Find the Sum

(a) ₹ 1010

(b) ₹ 1095

(c) ₹ 1000

(d) ₹ 990

21. The future value of an annuity of ₹ 5,000 is made annually for 8 years at interest rate of 9% compounded annually [Given that (1.09) =1.99256] is

(a) ₹ 55,142.22

(b) ₹ 65,142.22

(c) ₹ 65,532.22

(d) ₹ 57,425.22

22. In how many years will a sum of money becomes four times at 12% p.a. simple interest?

(a) 18 years

(b) 21 years

(c) 25 years

(d) 28 years

23. The effective rate of interest does not depend upon

(a) Amount of Principal

(b) Amount of Interest

(c) Number of Conversion periods

(d) None of these

24. Find the effective rate of interest at 10% p.a. When interest is payable quarterly.

(a) 10.38%

(b) 5%

(c) 5.04%

(d) 4%

25. In simple interest if the principle is ₹ 2,000 and the rate and time are roots of the equation

$x^2-11x+30 = 0$

(a) ₹ 500

(b) ₹ 600

(c) ₹ 700

(d) ₹ 800

26. Determine the present value of perpetuity of ₹ 50,000 per month at the rate interest 12% per annum is

(a) ₹ 45,00,000

(b) ₹ 50,00,000

(c) ₹ 55,00,000

(d) ₹ 60,00,000

27. Find the number of even numbers greater than 100 that can be formed with the digits 0,1,2,3?

(a) 10

(b) 15

(c) 20

(d) None of these

28. In how many ways can the letters of the word "ALEGEBRA" be arranged without changing the relative order of the vowels?

(a) 82

(b) 70

(c) 72

(d) None of these

29. In how many ways can the letters of the word "DIRECTOR" be arranged so that the three vowels are never together?

(a) 180

(b) 18,000

(c) 18,002

(d) None of these

30. The first and fifth term of an A.P. of 40 terms are -29 and -15 respectively. Find the sum of all positive terms of this A.P.

(a) 1605

(b) 1705

(c) 1805

(d) None of these

31. If the common difference of an AP equals to the first term, then the ratio of its m^{th} term and n^{th} term is:

(a) n:m

(b) m: n

(c) $m^2:n^2$

(d) None of these

32. Find the value of 1 + 2 + 3 + ---------- + 105

(a) 5000

(b) 5560

(c) 5565

(d) None of these

33. In a G. P sixth term is 729 and the common ratio is 3, then the first term of G.P is

(a) 2

(b) 3

(c) 4

(d) 7

34. The number ways in which 4 persons can occupy 9 vacant seats is

(a) 6048

(b) 3024

(c) 1512

(d) 4536

35. If A = {1, 2,3}, B = {3,4} and C = {4, 5,6} ,then $A \times (B \cap C)$ =

(a) {(1,4), (2,4), (3,4)}

(b) {(4,4), (4,3), (4,1)}

(c) {(3, 4), (2, 4)}

(d) {(1, 2), (1, 4), (1, 6), (3, 4)}

36. Let R be a relation on N defined by x +2y = 8. The domain of R is:

(a) {2, 4, 8}

(b) {2, 4, 6, 8}

(c) {2, 4, 6}

(d) {1, 2, 3, 4}

37. The domain of the function $f(x) = \frac{x^2 + 3x + 5}{x^2 - 5x + 4}$ is:

(a) R

(b) R –{1, 4}

(c) R – {1}

(d) (1, 4)

38. If $y = x^x$, then $\frac{dy}{dx}$ is :

(a) $x^x (2 + \log x)$

(b) $x^x \log(ex)$

(c) $x^x \log\left(\frac{e}{x}\right)$

(d) None of these

39. If $y = \sqrt{x} + \frac{1}{\sqrt{x}}$ then $2x\frac{dy}{dx}$ is

(a) $\sqrt{x} - \frac{1}{\sqrt{x}}$

(b) $\sqrt{x} + \frac{1}{\sqrt{x}}$

(c) $x - \frac{1}{x}$

(d) None of these

40. Evaluate $\int 2^x x^2 dx$

(a) $\frac{2^x.x^2}{2} - \frac{x.2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 2)^2} + c$

(b) $\frac{2^x.x^3}{3} - \frac{x^2.2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 3)^2} + c$

(c) $\frac{2^x.x^2}{3} - \frac{x^3.2^x}{3} + \frac{2^{x+1}}{(\log 2)^3} + c$

(d) None of these

41. Find missing term of the series 2, 3,3,5, 10, 13, ? , 43, 172, 177

(a) 23

(b) 38

(c) 39

(d) 40

42. Find wring number of the series 1,5,5,9,7,11,11,15,12,17

(a) 11

(b) 12

(c) 17

(d) 15

43. Find missing term of the letter series A, CD, GHI, UVWXY

(a) LMNO

(b) MNO

(c) MNOP

(d) NOPQ

44. In a certain code TELEPHONE is written as ENOHPELET. How is ALIGATOR written in that code?

(a) ROTAGILA

(b) ROTAGAIL

(c) ROTAGILE

(d) ROTEGILA

45. In a certain Code, 'CLOUD' is written as 'GTRKF'. How is 'SIGHT' written in that code?

(a) UGHHT

(b) UHJFW

(c) WFJGV

(d) WGJHV

46. Raju starts walking straight towards East. After walking 75 metres, he turns to the left and walks 25 metres straight. Again, he turns to the left, walks a distance of 40 metres straight, again he turns to the left and walks a distance of 25 metres. How far is he from the starting point?

(a) 25 meters

(b) 50 meters

(c) 115 meters

(d) 35 meters

47. Ravi started from the house towards West. After walking a distance of 30 metres, he turned towards right and walked 20 metres. He then turned left and moving a distance of 10 metres, turned to his left again and walked 40 metres. He now turned to the left and walked 5 metres. Finally, he turned to his left. In which direction was he walking now?

(a) North

(b) South

(c) East

(d) South-West

48. I am facing South. I turn right and walk 20 meters. Then I turn right again and walk 10 meters. Then I turn left and walk 10 meters and then turning right walk 20 meters. Then I turn right again and walk 60 meters. Which direction am I facing now?

(a) North

(b) North-West

(c) East

(d) North-East

49. Going 50 m to the south of her house Radhika turns left and goes another 20 m. Then turning to the North, she goes 30 m and then starts walking to her house. In which direction is she walking now?

(a) North-West

(b) North

(c) South-East

(d) East

50. A man is facing west. He turns 45^0 in the clockwise direction and then another 180^0 in the same direction and then 270^0 in the anticlockwise direction. Which direction is he facing now?

(a) South

(b) North-West

(c) West

(d) South-West

51. E is the son of A. D is the son of B. E is married to C. C is B's daughter. How is D related to E ?

(a) Brother

(b) Uncle

(c) Brother-in-law

(d) Husband

52. Pointing towards a girl in the photograph, Pooja said. “She is the mother of Janaki whose father is my son.” How is Pooja related to the girl in the photograph?

(a) Mother

(b) Cousin

(c) Aunt

(d) Mother-in-Law

53. Following questions are based on the information given below.

(i) 'P×Q' means 'P is the father of Q'.

(ii) 'P−Q' means 'P is the sister of Q'.

(iii) 'P+Q' means 'P is the mother of Q'.

(iv) 'P÷Q' means 'P is the brother of Q'.

In the expression B+D×M÷N, how M is related to B

(a) Granddaughter

(b) Son

(c) Grandson

(d) Granddaughter or Grandson

54. There are six children playing football namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father. How is C related to F ?

(a) Cousin

(b) Brother

(c) Son

(d) Uncle

55. Mr. Vimlesh said, “This girl is the wife of the grandson of my mother.” How is the Mr. Vimlesh related to the girl?

(a) Father

(b) Grand Father

(c) Husband

(d) Father–in–Law

56. Six students are sitting in row in an examination hall. K is sitting between V and R. V is sitting next to M. M is sitting next to B. B is sitting extreme left and Q is sitting next to R . Who is sitting adjacent to V?

(a) M and R

(b) M and K

(c) K and R

(d) M and Q

(57-58) Read the following information carefully and answer the questions and answer the questions that follow.

There are 3 females A, B and E and 4 males C, D, F, and G standing in a straight line. No two females are together. B is to right of C, F and D are not together as A is placed between them. G is not near B or E but E and F are together. D is not to the right of B.

57. Who are in the extreme ends?

(a) G and B

(b) C and F

(c) B and D

(d) None of these

58. Who is exactly in the middle?

(a) A

(b) F

(c) E

(d) None of these

Study the following information carefully and answer the given Questions

Seven persons A, B, C, D, E, F and G are sitting in a straight line (not necessarily in the same order) facing North.

I. Only two persons sit between F and G and G sits second to the left of B.

II. D sits third to the left of C

III. E sits exactly between G and B and B sits at the extreme right end of the row.

59. Who amongst the following sits at the extreme left of the line?

(a) F

(b) D

(c) C

(d) E

60. Who amongst the following sits exactly middle of the line?

(a) A

(b) C

(c) E

(d) G

Part B: Statistics

61. Histogram is used for finding:

(a) Mode

(b) Mean

(c) First Quartile

(d) None

62. Data are said to be _____ if the investigator himself is responsible for the collection of data.

(a) Primary Data

(b) Secondary Data

(c) Mixed of Primary and Secondary Data

(d) None of these

63. The frequency of the Class 20-30 in the following data is;

Class	0-10	10-20	20-30	30-40	40-50
Cumulative Frequency	5	13	28	34	38

(a) 5

(b) 28

(c) 15

(d) 13

64. There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the female unmarried employees?

(a) 30

(b) 10

(c) 40

(d) 50

65. The quartile deviation from the following observations is 10,18,20,28,15,17,22,25,29,32,34 is equal to:

(a) 8

(b) 6

(c) 10

(d) 5

66. SD of first five consecutive natural numbers is:

(a) $\sqrt{10}$

(b) $\sqrt{8}$

(c) $\sqrt{3}$

(d) $\sqrt{2}$

67. If the profit of a company remains same for the last 10 months then the SD of profit of the company would be:

(a) Positive

(b) Negative

(c) Zero

(d) either (a) or (c)

68. A batsman in his 20th innings makes a score of 120 and thereby increases his average by 5. What is his average after 20th innings?

(a) 60

(b) 55

(c) 65

(d) 70

69. The sum of squares of the deviations of the given values from their ..... is minimum.

(a) Arithmetic Mean

(b) Median

(c) Mode

(d) None of these

70. When mean is 3.57 and mode is 2.13 then the value of median is

(a) 3.09

(b) 5.01

(c) 4.01

(d) None of these

71. The mean of first three terms is 14 and mean of next two terms is 18. The mean of all five terms is

(a) 14.5

(b) 15

(c) 14

(d) 15.6

72. The Standard deviation of a variable x is to be 10. The Standard deviation of 50+5x is

(a) 50

(b) 100

(c) 10

(d) 500

73. The Quartile deviation is

(a) 2/3 of SD

(b) 4/5 of SD

(c) 5/6 of SD

(d) None of these

74. The first Quartile is 142 and Semi-Inter Quartile Range is 18 , then the value of Median is:

(a) 151

(b) 160

(c) 178

(d) None of these

75. Geometric Mean of 8,4, 2 is

(a) 4

(b) 2

(c) 8

(d) none of these

76. If P(A) = $\frac{1}{2}$; P(B) = $\frac{1}{3}$ and $P(A \cap B) = \frac{1}{4}$ then the value of $P(\overline{A} U \overline{B})$ is:

(a) $\frac{1}{4}$

(b) $\frac{3}{4}$

(c) $\frac{2}{5}$

(d) None of these

77. From the following probability distribution table, find E(x).

x:	1	2	3
f(x):	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{6}$

(a) 1

(b) 1.50

(c) 1.67

(d) None of these

78. A husband and a wife appear in an interview for two vacancies in the same post. The probability of husband's selection is 3/5 and that of wife's selection is 1/5. Then the probability that only one of them is selected is:

(a) 16/25

(b) 17/25

(c) 14/25

(d) None of these

79. A bag contains 5Red and 4 Black balls. A ball is drawn at random from the bag and put into another bag contains 3 red and 7 black balls. A ball is drawn randomly from the second bag. What is the probability that it is red?

(a) 32/99

(b) 1/3

(c) 74/99

(d) None of these

80. If x be a poison variates with parameter 1; then find P(3<X<5). (Given e^{-1}= 0.36783)

(a) 0.015326

(b) 0.15326

(c) 0.012326

(d) None of these

81. The probability that a student is not a swimmer is $\frac{1}{5}$, then the probability that out of five students four are swimmers is:

(a) $\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$

(b) ${}^5C_1\left(\frac{1}{5}\right)^4\left(\frac{4}{5}\right)$

(c) ${}^5C_4\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$

(d) None of these

82. In a Binomial distribution n = 9 and P = 1/3. What is the value of Variance.

(a) 8

(b) 4

(c) 2

(d) 16

83. The variance of standard normal distribution is

(a) 1

(b) 0

(c) σ^2

(d) 0

84. In a Poisson Distribution P(x=0) =P(x=2). Find E(x)

(a) $\sqrt{2}$

(b) 2

(c) -1

(d) 0

85. Name of the distribution which has Mean= Variance

(a) Binomial

(b) Poisson

(c) Normal

(d) (a) and (b)

86. If the difference between mean and mode is 33, then the difference between Mean and Median will be _____

(a) 63

(b) 31.5

(c) 11

(d) None of the above

87. Relative frequency for a particular class lies between:

(a) 0 and 1

(b) 0 and 1, both inclusive

(c) -1 and 0

(d) -1 and 1

88. Less than type and more than type Ogives meet at a point known as:

(a) Mean

(b) Median

(c) Mode

(d) None

89. If mean and coefficient of variation of the marks of n students is 20 and 80 respectively. What will be variance of them

(a) 256

(b) 16

(c) 25

(d) None of these

90. A non-leap year, the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays is

(a) 4/7

(b) 2/7

(c) 3/7

(d) 1/7

91. In a bivariate distribution if the rank correlation coefficient r = 0.12; ΣD^2 =146; Then the no. of observed pairs (N) is

(a) 9

(b) 8

(c) 7

(d) 10.

92. For 10 pairs of observations, number of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation?

(a) $\sqrt{0.2}$

(b) 1/3

(c) -1/3

(d) $-\sqrt{0.2}$

93. Consider the two regression lines 3x + 2y = 26 & 6x + y = 31, Find the mean values of x and y.

(a) $\bar{x} = 4$ and $\bar{y} = 7$

(b) $\bar{x} = 7$ and $\bar{y} = 4$

(c) $\bar{x} = 5$ and $\bar{y} = 6$

(d) None of these

94. For a m×n two way or bivariate frequency table, the maximum number of marginal distributions is coefficient

(a) 1

(b) 2

(c) m+n

(d) mn

95. If the regression line of Y on X is given by Y = X + 2 and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_x^2}$ = _____.

(a) 3

(b) 2

(c) 4

(d) None of these

96. The number of tests of Adequacy is

(a) 2

(b) 3

(c) 4

(d) 5

97. Fishers Ideal formula for calculating Index number satisfies the

(a) Unit Test

(b) Factor Reversal Test

(c) Time reversal Test

(d) both (b) and (d)

98. Purchasing power of money is

(a) Reciprocal of Price index number

(b) Equal to Price Index number

(c) Unequal to Price Index number

(d) None of these

99. The simple index number for the current year using simple aggressive method for the following data

Commodity base	Base year Price (P_0)	Current Year Price (P_1)
Wheat	80	100
Rice	100	150
Gram	120	250
Pulses	200	300

(a) 200

(b) 150

(c) 240

(d) 160

100. The cost-of-living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of CA Jitendra in 2015 was 195000. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?

(a) 30,000

(b) 40,000

(c) 35,000

(d) 45,000

Paper 3: Business Mathematics, Logical Reasoning and Statistics

Key Part A: Business Mathematics and Logical Reasoning

1	**(b)**	2	**(b)**	3	**(c)**	4	**(c)**	5	**(b)**
6	**(b)**	7	**(a)**	8	**(a)**	9	**(a)**	10	**(c)**
11	**(d)**	12	**(b)**	13	**(a)**	14	**(d)**	15	**(a)**
16	**(a)**	17	**(a)**	18	**(c)**	19	**(a)**	20	**(c)**
21	**(a)**	22	**(c)**	23	**(a)**	24	**(a)**	25	**(b)**
26	**(b)**	27	**(c)**	28	**(c)**	29	**(b)**	30	**(b)**
31	**(b)**	32	**(c)**	33	**(b)**	34	**(b)**	35	**(a)**
36	**(c)**	37	**(b)**	38	**(b)**	39	**(b)**	40	**(a)**
41	**(c)**	42	**(b)**	43	**(c)**	44	**(a)**	45	**(d)**
46	**(d)**	47	**(a)**	48	**(d)**	49	**(a)**	50	**(d)**
51	**(c)**	52	**(d)**	53	**(c)**	54	**(a)**	55	**(b)**
56	**(b)**	57	**(a)**	58	**(b)**	59	**(b)**	60	**(b)**

Key Part B: Statistics

61	**(a)**	62	**(a)**	63	**(c)**	64	**(b)**	65	**(b)**
66	**(d)**	67	**(c)**	68	**(c)**	69	**(a)**	70	**(a)**
71	**(d)**	72	**(a)**	73	**(a)**	74	**(b)**	75	**(a)**
76	**(b)**	77	**(c)**	78	**(c)**	79	**(a)**	80	**(a)**
81	**(c)**	82	**(c)**	83	**(a)**	84	**(a)**	85	**(b)**
86	**(c)**	87	**(a)**	88	**(b)**	89	**(a)**	90	**(a)**
91	**(d)**	92	**(c)**	93	**(a)**	94	**(b)**	95	**(c)**
96	**(c)**	97	**(d)**	98	**(a)**	99	**(d)**	100	**(c)**