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LOGICAL REASONING

1. DIRECTION TEST

1. Laxman left his home for a run and ran 15 km in the Northern direction. Then he turned left and ran 10 km. Then he turned another left and ran 5 km. Finally, he took a turn to the East and ran 10 km. In which direction is his current location with respect to his home?
   (a) North (b) South
   (c) Northwest (d) South-East

2. X walks southwards and then turns right then left and then right. In which direction is he moving now ?
   (a) South (b) North (c) West (d) South-west

3. I stand with my right hand extended side-ways towards South. Towards which direction will my back be?
   (a) East (b) South (c) North (d) West

2. NUMBER SERIES

4. In a certain code, RIPPLE is written as 613382 and LIFE is written as 8192.How is PILLER written in that code?
   (a) 318826 (b) 318286 (c) 618826 (d) 338816

5. If LOSE is coded as 1357 and GAIN is coded as 2468, what do figure 82146 for?
   (a) NGLAI (b) NGLIA (c) GNLIA (d) GNLA

6. Find out the next number in the following series 7, 11, 13, 17, 19, 23, 25, 29 ?
   (a) 30 (b) 31 (c) 32 (d) 33

7. 7, 23, 47, 119, 167
   (a) 211 (b) 223 (c) 287 (d) 319

3. Blood Relation

8. Vinod introduce Vishal as the son of the only brother of his father's wife. How is Vinod related to Vishal ?
   (a) Cousin (b) Brother (c) Son (d) Uncle

9. Pointing to a man in a photo- graph, a woman said, "the father of his brother is the only son of my grand- father", how is the woman related to the man in the photograph?
   (a) Mother (b) Aunty (c) Daughter (d) Sister

10. Pointing to a picture, Sumit said, she is the mother of my son's wife's daughter. How is lady related to the Sumit ?

(a) Uncle (b). Cousin (c) Daughter (d) None

11. Vicky introduces John as the son of the only brother of his father's wife. How is Vicky related to John?

(a) Cousin (b) Son (c) Brother (d) Uncle

4. Seating Arrangement

12. Five senior citizens are living in a Multi-Storeyed building. Mr. Manu lives in a flat above Mr. Ashokan, Mr. Lokesh in a flat below Mr. Gaurav, Mr. Ashokan lives in a flat below Mr. Gaurav and Mr. Rakesh lives in a flat below Mr. Lokesh. Who lives in the top most flat ?

(a) Mr. Lokesh (b) Mr. Gaurav (c) Mr. Manu (d) Mr. Rakesh

13. Eight persons A, B, C, D, E, F, G and H are sitting in a line. E sits second right to D. H sits fourth left to D. C and F are immediate neighbours, but C is not immediate neighbour of A. G is not neighbour of E. Only two persons sit between A and E. The persons on left end and right end respectively are:

(a) G and E (b) B and E (c) Hand E (d) G and B

5. Permutations and Combinations

14. 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

15. 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-I is also borrowed? In how many ways can he choose the three books to be borrowed?

(a) 41 (b) 51 (c) 61 (d) 71

16. 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

17. The number of ways in which n books can be arranged on a shelf so that two particular books are not together is:

(a) $n-2 \times n-1\,!$ (b) $n-2 \times n+1\,!$

(c) $n-1 \times n+1\,!$ (d) $n-2 \times n+2\,!$

18. Five bulbs of which three are defective are to be tried in two lights points in a dark room. In how many trials the room shall be lighted?

(a) 10 (b) 7 (c) 3 (d) None of these

19. Find the number of combination of the letters of the word COLLEGE taken four together:
(a) 18 (b) 16 (c) 20 (d) 26

20. How many numbers greater than a million can be formed with the digits 4,5, 0,4,5,3 ?
(a) 260 (b) 360 (c) 280 (d) 380

21. There are three blue balls, four red balls and five green balls. In how many ways can they be arranged in a row?
(a) 26,720 (b) 27,720 (c) 27,820 (d) 26,620

22. Six seats of articled clerks are vacant in a 'Chartered Accountant Firm'. How many different batches of candidates can be chosen out of 10 candidates?
(a) 216 (b) 210 (c) 220 (d) None

23. How many six digit telephone numbers can be formed by using 10 distinct digits ?
(a) 10^6 (b) 6^{10} (c) ${}^{10}C_6$ (d) ${}^{10}P_6$

24. Number of ways of painting a face of a cube by 6 colours is _____
(a) 36 (b) 6 (c) 24 (d) 1

25. A code word is to consist of two English alphabets followed by two distinct numbers from 1 to 9 .How many such code words are there?
(a) 6, 15,800 (b) 46,800 (c) 7, 19,500 (d) 4, 10,800

26. Given: $P(7,k) = 60P(7,k-3)$ .Then:
(a) $k = 9$ (b) $k = 8$ (c) $k = 5$ (d) $k = 0$

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. How many words can be formed with the letters of the word 'ORIENTAL' so that A and E always occupy odd places:
(a) 540 (b) 8640 (c) 8460 (d) 8450

29. Six persons A, B, C, D E and F are to be seated at a circular table. In how many ways can this be done, if A must always have either B or C on his right and B must always have either C or D on his right?
(a) 3 (b) 6 (c) 12 (d) 18

30. 7 books are to be arranged in such a way so that two particular books are always at first and last Final the number of arrangements.
(a) 60 (b) 120 (c) 240 (d) 480

31. Find the number of arrangements in which the letters of the word 'MONDAY' be arranged so that the words thus formed begin with 'M' and do not end with 'N'

(a) 720 (b) 120 (c) 96 (d) None

32. The number of ways of arranging 6 boys and 4 girls in a row so that all 4 girls are together is:

(a) 61. 4! (b) 2 (71. 4!) (c) 7! 4! (d) 2. (61. 4!)

33. How many numbers not exceeding 1000 can be made from the digits 1,2, 3, 4, 5, 6, 7, 8, 9 if repetition is not allowed.

(a) 364 (b) 585 (c) 728 (d) 819

34. A garden is having 6 tall trees in a row. In how many ways can 5 children stand, one in a gap between the trees in order to pose for a photograph?

(a) 24 (b) 120 (c) 720 (d) 30

35. If ${}^{11}c_x = {}^{11}c_{2x-4}$ and $x \neq 4$ than the value of ${}^{7}c_x =$

(a) 20 (b) 21 (c) 22 (d) 23

36. Out of 6 Boys & 4 girls, find the number of ways for selecting 5 members committee in which there is exactly two girls?

(a) 120 (b) 1440 (c) 720 (d) 71

37. From a group of 8 men and 4 women, 4 persons are to be selected to form a committee so that at least 2 women are there on the committee. In how many ways can it be done?

(a) 201 (b) 168 (c) 202 (d) 220

38. A business houses wishes to simultaneously elevate two of its six branch heads. In how many ways these elevation can take place?

(a) 12 (b) 3 (c) 6 (d) 15

39. A multiple - choice test contains five questions and each has four possible options. How many different answer keys are possible?

(a) 20 (b) 120 (c) 256 (d) 1024

40. The number of ways 4 boys and 3 girls can be seated in a row so that they are alternate is:

(a) 12 (b) 288 (c) 144 (d) 256

41. If ${}^{13}C_6 + 2{}^{13}C_5 + {}^{13}C_4 = {}^{15}C_x$ then, x = _____.

(a) 6 (b) 7 (c) 8 (d) 9

42. If ${}^{15}c_{3r} = {}^{15}c_{r+3}$, $r =$

(a) 2 (b) 3 (c) 4 (d) 5

43. A regular polygon has 44 diagonals then the No. of sides' are_____.
(a) 8 (b) 9 (c) 10 (d) 11

44. If ${}^{n}p_{r} = 3024$ and ${}^{n}c_{r} = 126$, then find n and r
(a) 9, 4 (b) 10, 3 (c) 12, 4 (d) 11, 4

45. There are 20 points in a plane area. How many triangles can be formed by these points if 5 points are collinear?
(a) 9550 (b) 560 (c) 1130 (d) 1140

46. If these are 40 guests in a party. If each guest takes a shake hand with all the remaining guests. Then the total number of hands shake is _____:
(a) 780 (b) 840 (c) 1,560 (d) 1,600

47. In how many ways that the crew of an eight oared be arranged so that if 3 of crew can row only on a stoke side and 2 row on the other side is:
(a) 1728 (b) 256 (c) 164 (d) 126

48. Six points are on a circle. The number of quadrilaterals that can be formed are:
(a) 30 (b) 360 (c) 15 (d) None of the above

49. Which of the following is a correct statement
(a) ${}^{n}p_{n} = {}^{n}p_{n-1}$ (b) ${}^{n}p_{n} = {}^{2n}p_{n-2}$
(c) $p_{n} = {}^{3n}p_{n-3}$ (d) ${}^{n}p_{n} = {}^{n(n+1)}p_{n-1}$

50. A fruit basket contains 7 apples, 6 bananas and 4 mangoes. How many selections of 3 fruits can be made so that all 3 are apples?
(a) 120 ways (b) 35 ways
(c) 168 ways (d) 70 ways

51. Eight Chairs are numbered from 1 to 8. Two women and three men are to be seated by allowing one Chair for each. First, the women choose the chairs from the chairs numbered 1 to 4 and then men select the chairs from the remaining.
The number of possible arrangement is
(a)120 (b) 288 (c) 32 (d) 1440

52. There are ten flights operating between city A 'and city B. The number of ways in which a person can travel from city A to city B and return by different flight is
(a)90 (b) 95 (c) 8C (d) 78

53. How many odd numbers of four digit can be formed with digit 0, 1, 2, 3, 4, 7 and 8?
(a)150 (b) 300 (c) 120 (d) 210

6. Sets Relations and Functions

54. Out of 20 members in a family, 11 like to take tea and 14 like coffee. Assume that each one likes at least one of the two drinks. Find how many like both coffee and tea:
(a) 2 (b) 3 (c) 4 (d) 28

55. In a group of 70 people, 45 speak Hindi, 33 speak English and 10 speak neither Hindi nor English. Find how many can speak both English as well Hindi:
(a) 13 (b) 19 (c) 18 (d) 28

56. Let $f:R\to R$ be such that $f(x)=2^x$, equal:
(a) $f(x)+f(y)$ (b) $f(x).f(y)$
(c) $f(x)+f(y)$ (d) None of these

57. If $f(x)=x^2+x-1$ and $4f(x)=f(2x)$ then find 'x'
(a) 4/3 (b) 3/2 (c) -3/4 (d) None of these

58. $x=\{x,y,w,z\}, y=\{1,2,3,4\}, H=\{(x,1);(y,2);(y,3);(z,4);(x,4)\}$
(a) H is function from x to y (b) H is not a function from x to y
(c) H is relation from y to x (d) None of these

59. Given the function $f(x)=(2x+3)$, then the value of $f(2x)-2f(x)+3$ will be:
(a) 3 (b) 2 (c) 1 (d) 0

60. If $f(x)=2x+h$ then find $f(x+h)-2f(x)$
(a) $h-2x$ (b) $2x-h$ (c) $2x+h$ (d) None of these

61. If $F:A\to R$ is a real valued function defined by $f(x)=\frac{1}{x}$
(a) R (b) $R-\{1\}$ (c) $R-\{0\}$ (d) $R-N$

62. In the set N of all natural numbers the relation R defined by a R b" if and only if , a divide b" then the relation R is :
(a) Partial order relation (b) Equivalence relation
(c) Symmetric relation (d) None of these

63. For any two sets A and B, $A\cap(A'\cup B)=$ _____, where A' represent the compliment of the set A :
(a) $A\cap B$ (b) $A\cup B$ (c) $A\cup B$ (d) None of these

64. If $f(x-1)=x^2-4x+8$, then $f(x+1)=$
(a) x^2+8 (b) x^2+7 (c) x^2+4 (d) x^2-4x

65. There are 40 students, 30 of them passed in English, 25 of them passed in Maths and 15 of them passed in both. Assuming that every Student has passed at least in one subject. How many student's passed in English only but not in Maths.
(a) 15 (b) 20 (c) 10 (d) 25

66. If $A=\{\pm 2,\pm 3\}, B=\{1,4,9\}$ AND $F=\{(2,4),(-2,4),(3,9),(-3,4)\}$
Then "F' is defined as:
(a) One to one function from A into B
(b) One to one function from A onto B
(c) Many to one function from A onto B.
(d) Many to one function from A into 8.

67. If f(x) $\frac{x}{\sqrt{1+x^2}}$ and $g(x)=\frac{x}{\sqrt{1-x^2}}$ Find fog?
(a) x (b) $\frac{1}{x}$ (c) $\frac{x}{\sqrt{1-x^2}}$ (d) $x\sqrt{1-x^2}$

68. $f(x)=3+x$, For $-3<x<0$ and $3-2x$ for $0<x<3$, Then value of f (2) will be
(a) -1 (b) 1 (c) 3 (d) 5

69. If $A=(1,2,3,4,5), B=(2,4)$ and $C=(1,3,5)$ then $(A-C)\times B$ 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) $\{(2,2),(2,4),(4,2),(4,4)\}$

70. For any two sets A and B the set $(A\cup B')$ is Equal to (where' de- notes compliment of the set)
(a) B-A (b) A-B (c) A'-B' (d) B'-A'

71. The range of the function f: $N\rightarrow N; f(x)=(-1)^{x-1}$, is
(a) {0,-1} (b) {1,-1} (c) {1,0} (d) {1,0,-1}

72. For a group of 200 persons, 100 are interested in music, 70 in photograph and 40 in swimming, Furthermore 40 are interested in both music photography, 30 in both music and swimming, 20 in photography and swimming and 10 in all the three. How many are interested in photography by in music and swimming?
(a) 30 (b) 15 (c) 25 (d) 20

73. If f: R→R is a function, defined by f(x) = 10x-7, if $g(x)=f^{-1}(x)$ then the value of g(x) is equal to

(a) $\frac{1}{10x-7}$ (b) $\frac{1}{10x+7}$ (c) $\frac{x+7}{10}$ (d) $\frac{x-7}{10}$

74. The No. of elements in range of constant function is

(a) One (b) Zero (c) Infinite (d) None

75. Of the 200 candidates who were interviewed for a position at call center, 100 had a two wheeler, 70 had a credit card and 140 had a mobile phone 40 of them had both a two wheeler and a credit card, 30 had both a credit card and mobile phone, 60 had both a two wheeler and a mobile phone and 10 had all the three. How many candidates had none of them?

(a) 0 (b) 20 (c) 10 (d) 18

7. Probability

76. A letter is taken out at random from the word RANGE and another is taken out from the word PAGE. The probability that they are the same letters is:

(a) 1/20 (b) 3/20 (c) 3/5 (d) ¾

77. An urn contains 9 balls two of which are red, three blue and four black. Three balls are drawn at random. The probability that they are of same colour is:

(a) $\frac{3}{27}$ (b) $\frac{20}{31}$ (c) $\frac{5}{84}$ (d) None

78. A card is drawn from a well shuffled pack of 52 cards. Let E, "a king or a queen is drawn" & E_2 : "a queen or a jack is drawn", then:

(a) E_1 and E_2 are not independent

(b) E_1 and E_2 are mutually exclusive

(c) E_1 and E_2 are independent

(d) None of these

79. If A and B are two events and $P(A)=\frac{3}{8}, P(B)=\frac{1}{2}, P(A\cap B)=\frac{1}{4}$, then the value of $P(A'\cup B')$ is

(a) $\frac{1}{4}$ (b) $\frac{3}{4}$ (c) $\frac{5}{8}$ (d) $\frac{5}{4}$

80. From a pack of cards, two are drawn, the first being replaced before the second is drawn. The chance that the first is a diamond and the second is king is:

(a) $\frac{1}{52}$ (b) $\frac{3}{2704}$ (c) $\frac{4}{13}$ (d) $\frac{3}{52}$

81. The theory of compound probability states that for any two events A and B:

(a) $P(A\cap B)=P(A)\times P(B)$

(b) $P(A\cap B)=P(A)\times P(B/A)$

(c) $P(A\cup B)=P(A)\times P(B/A)$

(d) $P(A\cup B)=P(A)+P(B)-P(A\cap B)$

82. Suppose E and F are two events of a random experiment. If the probability of occurrence of E is 1/5 and the probability of occurrence of F given E is 1/10, then the probability of non-occurrence of at least one of the events E. and F is:

(a) $\frac{1}{50}$ (b) $\frac{1}{25}$ (c) $\frac{13}{50}$ (d) $\frac{49}{50}$

83. A bag contains 8 red and 5 white balls. Two successive draws of 3 balls are made without replacement. The probability that the first draw will produce 3 white balls and second 3 red balls is:

(a) $\frac{6}{255}$ (b) $\frac{5}{548}$ (c) $\frac{7}{429}$ (d) $\frac{3}{233}$

84. Three identical dice are rolled. The probability that the same number will appear on each of them is:

(a) 1/6 (b) 1/12 (c) 1/36 (d) 1

85. Among the examinees in an examination 30%, 35% and 45% failed in Statistics, in Mathematics and in at least one of the subjects respectively. An examinee is selected at random. Find the probability that he failed in Mathematics only:

(a) 0.245 (b) 0.25 (c) 0.254 (d) 0.55

86. An. article consists of two parts A and B. The manufacturing process of each part is, such that probability of defect in A is 0.08 and that in B is 0.05. What is the probability that the assembled product will not have any defect?

(a) 0.934 (b) 0.864 (c) 0.85 (d) 0.874

87. If 10 men, among whom are A and B, stand in a row, what is the probability that there will be exactly 3 men between A and B?

(a) 11/15 (b) 4/15 (c) 1/15 (d) 2/15

88. The probability of an event can assume any value between:

(a) 0 and 1 (b) -1 and 0 (c) -1and 1 (d) None of these

89. 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) $\frac{11}{14}$ (b) $\frac{22}{49}$ (c) $\frac{31}{49}$ (d) $\frac{35}{49}$

90. If P(A) = P and P (B) = q, then:

(a) $P(A/B) \leq q/p$ (b) $P(A/B) \geq p/q$

(c) $P(A/B) \leq p/q$ (d) $P(A/B) \geq q/p$

91. The probability that a trainee will remain with a company is 0.8. The probability that an employee earns more than ₹ 20,000 per month is 0.4. The probability that an employee, who was a trainee and remained with the company or who earns more than ₹: 20,000 per month is 0.9. What is the probability that an employee earns more than ₹ 20,000 per month given that he is a trainee, who stayed with the company?
(a) 5/8 (b) 3/8 (c) 1/8 (d) 7/8

92. The limiting relative frequency of probability is:
(a) Axiomatic (b) classical
(c) statistical (d) Mathematical

93. If A and B are two independent events and $P(A \cup B) = 2/5; P(B) = 1/3$ Find $P(A)$
(a) 2/9 (b) -1/3 (c) 2/10 (d) 1/10

94. A bag contains 12 balls of which 3 are red 5 balls are drawn at random Find the probability that in 5 balls 3 are red.
(a) 3/132 (b) 5/396 (c) 1/36 (d) 1/22

95. P(A) =2/3; PB) = 3/5; P(AUB)= 5/6. Find P (B/A)
(a) 11/20 (b) 13/20 (c) 13/18 (d) None

96. If $P(A \cap B) = P(A) \times P(B)$, then the events are:
(a) Independent events (b) Mutually exclusive events
(c) Exhaustive events (d) Mutually inclusive events

97. In a pack of playing cards with two jokers probability of getting king of spade is
(a) 4/13 (b) 4/52 (c) 1/52 (a) 1/54

98. Consider two events A and B not mutually exclusive, such that P(A) = 1/4, $P(B) = 2/5, P(A \cup B) = 1/2,$ then $P(A\bar{B})$ is
(a) 3/7 (b) 2/10 (c) 1/10 (d) None of them

99. If x be the sum of two numbers obtained when two dice are thrown simultaneously then $P(x \geq 7)$ is
(a) 5/12 (b) 7/12 (c) 11/15 (d) 3/8

100. If P(A/B) = P(A), then A and B are
(a) Mutually exclusive events (b) Dependent events
(c) Independent events (d) Composite events

101. The odds in favour of A solving a problem is 5:7 and Odds against B solving the same problem is 9:6. What is the probability that if both of them try, the problem will be solved?
(a) 117/180 (b) 181/200 (c) 147/180 (d) 119/180

102. Consider Urn 1:2white balls, 3 black balls; Urn II:4 white balls, 6 black balls. One ball is randomly transferred from first to second Urn, then one ball is drawn from II Um. The probability that drawn ball is white is

(a) 22/65 (b) 22/46 (c) 22/55 (d) 21/45

103. If $P(A \cup B) = P(A)$, Find $P(A \cap B)$.

(a) P(A).P(B) (b) P(A)+ P(B)

(c) 0 (d) P(B)

104. A bag contains 5 Red balls, 4 Blue Balls and 'm' Green Balls. If the random Probability of picking two green balls is 1/7. What is the No. of green Balls (m)

(a) 5 (b) 7 (c) 6 (d) None of above

105. The probability of Girl getting scholarship is 0.6 and the same probability for Boy is 0.8 Find the probability that at least one of the categories getting scholarship.

(a) 0.32 (b) 0.44 (c) 0.92 (d) None of these

106. A coin is tossed S times, what is the probability that exactly 3 heads will occur.

(a) $\frac{5}{16}$ (b) $\frac{1}{32}$ (c) $\frac{5}{36}$ (d) $\frac{3}{32}$

107. Arun & Tarun appear for an interview for two vacancies. The probability of Arun's selection is 1/3 and that of Tarun's selection is 1/5. Find the probability at only one of them will be selected.

(a) 2/5 (b) 4/5 (c) 6/5 (d) 8/5

108. A company employed 7CA's, 6 MBA's and 3 Engineer's. In how many ways the company can form a committee if the committee has two members of each type.

(a) 900 (b) 1,000 (c) 787 (d) 945

109. Two dice are thrown together. Find the probability of getting a multiple of2 on one dice and multiple of 3 on the other.

(a) 2/3 (b) 1/6 (c) 1/3 (d) None of the above

110. A bag contains 6 red balls and some blue balls. If the probability of drawing a blue ball from the bag is twice that of a red ball, find the number of blue balls in the bag

(a) 10 (b) 12 (c) 14 (d) 16

111. The odds that a book will be received favourably by 3 independent reviewers are 5 to 2, 3 to 4, 4 to 3 respectively, then the probability that out of 3 critics the majority will be favorable is_____

(a) $\frac{209}{343}$ (b) $\frac{209}{434}$ (c) $\frac{209}{443}$ (d) $\frac{209}{350}$

112. Find the probability of drawing spade on each of2 consecutive draws from a well shuffled pack of cards when the draws are without replacement.

(a) $\frac{2}{51}$ (b) $\frac{3}{51}$ (c) $\frac{4}{51}$ (d) $\frac{4}{51}$

113. If P(A) = 0.45, P(B) = 0.35, P(A and B) = 0.25 then P(A/B)

(a) 1.4 (b) 1.8 (c) 0.714 (d) 0.556

114. Two coins are tossed simultaneously then the probability of getting exactly one head is

(a) $\frac{3}{4}$ (b) $\frac{2}{3}$ (c) $\frac{1}{4}$ (d) $\frac{1}{2}$

115. For any two events

A_1, A_2; let $P(A_1) = \frac{2}{3}, P(A_2) = \frac{3}{8},$

$P(A_1 \cap A_2) = \frac{1}{4}$ then A_1, A_2 are

(a) Mutually Exclusive but not independent events
(b) Mutually Exclusive and independent events
(c) Independent but not Mutually Exclusive
(d) None

116. If a pair of dice is thrown what is the probability of occurring neither 7 nor 11 ?

(a) $\frac{1}{6}$ (b) $\frac{1}{8}$ (c) $\frac{2}{9}$ (d) $\frac{7}{9}$

117. If 6 coins are tossed simultaneously then the probability of obtaining exactly 2 heads is

(a) $\frac{1}{64}$ (b) $\frac{63}{64}$ (c) $\frac{15}{64}$ (d) None

118. There are 6 positive and 8 negative numbers. Four number are selected at random without replacement and multiplied. Find the probability that the product is positive.

(a) $\frac{420}{1001}$ (b) $\frac{409}{1001}$ (c) $\frac{70}{1001}$ (d) $\frac{505}{1001}$

Theoretical Distribution

119. For binomial distribution
(a) Variance < Mean (b) Variance = Mean
(c) Variance > Mean (d) None of the above

120. In a Normal Distribution
(a) The first and second quartile are equidistant from median
(b) The second and third quartiles are equidistant from the median
(c) The first and third quartiles are equidistant from the median
(d) None of the above

121. If X is a Poisson variate and E(x) = 1, then P (x > 1) is
(a) $1-\frac{e^{-1}}{2}$ (b) $1-e^{-1}$ (c) $1-2e^{-1}$ (d) $1-\frac{5}{2}e$

122. The mean and the variance of a random variable X having the probability density function P(X = x) = exp $\left\{-(x-4)^2\right\}/\sqrt{\pi}, -\infty < x < \infty$
(a) $4,\frac{1}{2}$ (b) $4,\frac{1}{\sqrt{2}}$ (c) $2,2$ (d) $2,\frac{1}{2}$

123. Which of the following is false in case of Normal distribution.
(a) it is multi model
(b) mean = median = mode
(c) it is symmetric
(d) Total area is 1

124. If x~B (5,p) and p(x = 2) = 0.4362 and p (x = 3) = 0.2181 then p =
(a) 3/4 (b) 1/3 (c) 2/3 (d) 1/4

125. In a poisson distribution
(a) Mean & SD are equal
(b) Mean, variance are equal
(c) SD & variance are equal
(d)both (a) and (b)

126. In Normal distribution mean median and mode are
(a) Equal
(b) Not equal
(c) Zero
(d) None of the above

127. If the points of inflexion of a normal curve are 6 and 14 then standard deviation is
(a) 4 (b) 8 (c) 16 (d) 32

128. There are 75 students in a class and their average marks is 50 and S.D of marks is 5. Number of students who have secured more than 60 marks (Given that area under the normal curve for Z = 2 is 0.4772) is
(a) 1 (b) 2 (c) 3 (d) 4

129. If a variate X has, Mean > vari- ance, then its distribution will be
(a) Binomial
(b) Poisson
(c) Normal
(d) t-distribution

130. Mean & variance of a Binomial 4 variate are $\frac{4}{3}$ and respectively then $P(x \geq 1)$ will be
(a) $\frac{728}{729}$ (b) $\frac{1}{729}$
(c) $\frac{723}{729}$ (d) None

131. Let the distribution function of a random variable x be F(x) = P(x ≤ x), then F(5) - F(2)
(a) P(2 ≤ x < 5) (b) P(2 ≤ x ≤ 5) (c) P(2 ≤ x ≤ 5) (d) P(2 < x < 5)

132. For a Binomial distribution mean is 4 and variance is 3 then, 3rd central moment is
(a) 5/2 (b) 7/4 (c) 3/2 (d) 1/3

133. In the Binomial distribution the parameters are n and p, then X assumes values
(a) Between 0 and n
(b) Between 0 and n both inclusive
(c) Between 0 and 1.
(d) Between 0 and ∞

134. In _____ distribution, Mean = Variance
(a) Binomial (b) Poisson
(c) Normal (d) t

135. Wages paid to workers follows
(a)Binominal distribution
(b)Poisson distribution
(c)Normal
(d)Chi-Square

136. For a Binominal distribution, the parameters are 15 and 1/3 Find mode:
(a) 5 and 6 (b) 5.5 (c) 5 (d) 6

137. Standard Deviation of Binominal distribution is –
(a) npq (b) $(npq)^2$ (c) $\sqrt{npq}$ (d) $n^2p^2q^2$

138. The Normal curve is
(a) Positively skewed (b) Negatively skewed
(c) Symmetrical (d) All these

139. For a poisson variate X, P(X=1) = P(X = 2). What is the mean of X?
(a) 1 (b) 3/2 (c) 2 (d) 5/2

140. _____ is/are Bi-parametric distribution(s)
(a) Binomial (b) Poisson (c) Normal (d) Both (a) & (c)

141. In Poisson distribution $\mu_4 = 2$, then find μ_2.
(a) 2 (b) 4
(c) $\frac{2}{3}$ (d) $\frac{1}{2}$

142. The second & third moments of observations (-6, -4, -2, 0, 2, 4, 6) are_____
(a) (12, 0) (b) (0, 12) (c) (16, 0) (d) (0, 16)

143. If X & Y are two independent Normal variates with means μ_1 and μ_2 and standard deviations σ_1 & σ_2 respectively, then X + Y follows_____
(a)Mean = $\mu_1 + \mu_2$, S.D=0
(b)Mean = $\mu_1 + \mu_2, S.D = \sigma_1^2 + \sigma_2^2$
(c)Mean = $0, S.D = \sigma_1^2 + \sigma_2^2$
(d)Mean = $\mu_1 + \mu_2, S.D = \sqrt{\sigma_1^2 + \sigma_2^2}$

144. In_____ distribution, mean = variance
(a) Binomial (b) Poisson (c) Normal (d) None

145. In Binomial distribution, if variance = mean² then n & p are:
(a) $1, \frac{1}{2}$ (b) $1,1$ (c) $2, \frac{1}{2}$ (d) $3, \frac{1}{2}$

146. If X~N (50, 16) then which of the following is not possible.
(a) P(X60)=0.30 (b) P(X50) 0.50
(c) P(X60)=0.40 (d) P(X50) 0.50

147. The distribution of demand is as follows:

Demand	5	6	7	8	9	10
Probability	0.05	0.1	0.3	0.4	0.1	0.05

The mean is given by

(a) 7.55 (b) 7.85 (c) 1.25 (d) 8.35

148. An example of a bi-parametric discrete probability distribution is:

(a) Binomial distribution (b) Poisson distribution
(c) Normal distribution (d) Both (a) & (b)

149. In Normal distribution 95% observation lies between_____ &_____.

(a) (μ - 2σ,μ+2σ) (b) (μ - 3σ, μ+3σ)
(c) (μ - 1.960, μ +1.96σ) (d) (μ - 2.58 σ, μ + 2.58σ)

150. If x is a poisson variate with x-m mean m then $z = \frac{x-m}{\sqrt{m}}$ follows_____ distribution:

(a) Normal (b) Binomial
(c) Bernoulli (d) None of the above

151. The mean of a Binomial distribution is :

(a) np (1-p) (b) np
(c) $\sqrt[n]{p(1-p)}$ (d) None of the above

152. Mean of poisson distribution is 6 then variance is_____ :

(a) 6 (b) $\sqrt{6}$
(c) 4 (d) 3

153. The mean of the Binomial distribution B $\left(4\frac{1}{3}\right)$, is equal to

(a) $\frac{3}{5}$ (b) $\frac{4}{3}$ (c) $\frac{8}{3}$ (d) $\frac{3}{4}$

154. If for a Normal distribution Q_1= 54.52 and Q_3= 78.86 then the median of the distribution is,

(a) 12.17 (b) 66.69 (c) 39.43 (d) None of these

155. 4 coins were tossed 1,600 times. What is the probability that all 4 coins do not turn head upward at a time?

(a) 1600 e^{-100} (b) 1000 e^{-100} (c)100 e^{-1600} (d) e^{-1600}

156. If mean and variance are 5 and 3 respectively then relation between p and q is:

(a) p > q (b) p < q
(c) p = q (d) p is symmetric

Statistical Description of Data

157. Which of the following is not a two dimensional diagram?
(a) Square diagram (b) Line diagram
(c) Rectangular diagram (d) Pie-chart

158. From which graphical representation, we can calculate partition values?
(a) Lorenz curve (b) Ogive curve
(c) Histogram (d) None of the above

159. The data given below refers to the marks gained by a group of students:

	Below	Below	Below	Below	Below
Marks	10	20	30	40	50
No. of students	15	38	65	84	100

160. Then the No. of students getting marks more than 30 would be _____ .
(a) 50 (b) 53 (c) 35 (d) 62

161. Cost of sugar in a month under the heads raw materials, labour, direct production and others were 12,20,35 & 23 units respectively. The difference between their central angles for the largest & smallest components of the cost of Sugar is
(a) 92^0 (b) 72^0 (c) 48^0 (d) 56^0

162. What is a exclusive series?
(a) In which both upper and lower limit are not included in class frequency.
(b) In which lower limit is not included in class frequency.
(c) In which upper limit is not included in class frequency
(d) None of the above

163. The pair of averages whose value can be determined graphically?
(a) Mean & Median (b) Mode & Mean
(c) Mode & Median (d) None of the above

164. The difference between upper limit and lower limit of a class is called:
(a) Class Interval (b) Class Boundaries
(c) Mid-value (d) Frequency

165. If the class intervals are 10-14, 15-19, 20-24 _____ Then the first class boundaries are:
(a) 9.5-14.5 (b) 10-15 (c) 9-15 (d) 10.5-15.5

166. The following data related to the marks of group of students

Marks	No. of students
More than 70%	7
More than 60%	18
More than 50%	40
More than 40%	60
More than 30%	75
More than 20%	100

How many students have got marks less than 50%?

(a) 60 (b) 82 . (c) 40 (d) 53

167. The less than Ogive" is a:

(a) U-shaped curve (b) J-shaped curve

(c) S- shaped curve (d) Bell-shaped curve

168. The most appropriate diagram to represent 5 year plan outlay of India in different economic sectors is

(a) Pie diagram (b) Histogram

(c) Line diagram (d) Frequency polygon

169. For construction of Histogram the class intervals of frequency distribution is

(a) Equal (b) Unequal

(c) Either Equal or Unequal (d) None

170. The number of observations between 150 and 200 based on the following data is:

Value	More than 100	More than 150	More than 200	More than 250
No. of observations	70			

(a) 46 (b) 35 (c) 28 (d) 23

171. The curve obtained by joining the points, whose X-coordinates are the upper limits of the class-intervals and Y-coordinates are the corresponding cumulative frequencies is called

(a) Ogive (b) Histogram

(c) Frequency Polygon (d) Frequency Curve

172. Histogram is used for the presentation of the following type of series:

(a) Time series (b) Continuous frequency series

(c) Discrete series (d) Individual series

173. Data collected on religion from the census reports are

(a) Primary data (b) Secondary data (c) Sample data (d) (a) or (b)

174. Which of the following is not a two dimensional diagram?
(a) Square diagram (b) Line diagram
(c) Rectangular diagram (d) Pie-chart

175. From which graphical representation, we can calculate partition values?
(a) Lorenz curve (b) Ogive curve
(c) Histogram (d) None of the above

176. A pie diagram used to represent the following data _____

Source	Customers	Excise	Income Tax	Wealth Tax
Revenue in Millions	120	180	240	180

177. The central angles corresponding to Income Tax and Wealth Tax are
(a) 90°,120° (b) 120°,90°
(c) 60°,120° (d) 90°,60°

178. The pair of averages whose value can be determined graphically?
(a) Mean & Median (b) Mode & Mean
(c) Mode & Median (d) None of the above

179. If the class intervals are 10-14, 15-19, 20-24 _____ Then the first class boundaries are:
(a) 9.5-14.5 (b) 10-15 (c) 9-15 (d) 10.5-15.5

180. 100 persons are divided into number of male/female and employed/un- employed it refers to
(a) Cardinal Data (b) Ordinal Data
(c) Spatial Data (d) Temporal Data

181. Which is most common diagrammatic representation for grouped frequency distribution.
(a)Histogram (b) Ogive (c) Both (a) & (b) (d) None of these

182. Classification is of_____ kinds:
(a) One (b) two (c) three (d) Four

183. Divided Bar Chart is considered for
(a) Comparing different components of a variable
(b) The relation of different components to the table
(c) (a) or (b)
(d) (a) and (b)

Ratio & Proportion , Indices & Logarithm :

a) Ratio & Proportion :

184. Two numbers are in the ratio of 2:3 and the difference of their squares is 320. The number are:
(a) 12,18 (b) 16,24 (c) 14,21 (d) None

185. If p:q is the sub-duplicate ratio of $p-x^2$:$q-x^2$,then x^2 is :
(a) $\frac{p}{p+q}$ (b) $\frac{q}{p+q}$ (c) $\frac{qp}{p-q}$ (d) None

186. Two numbers are in the ratio 7:8 If 3 is added to each of them ratio Becomes 8:9.The numbers are:
(a) 14,16 (b) 24,27 (c) 21,24 (d) 16,18

187. A box contains ₹56 in the form of coins of one rupee, 50 paise and 25 paise. The number of 50 paise coin is double the number of 25 paise coins and four times the numbers of one rupee coins. The numbers of 50 paise coins in the box is:
(a) 64 (b) 32 (c) 16 (d)14

188. Eight people are planning to share equally the cost of a rental car. If one person withdraws from the arrangement and the others share equally entire cost of the car, then the share of each of the remaining persons increased by :
(a) $1/9$ (b) $1/8$ (c) $1/7$ (d) $7/8$

189. Ratio of earnings of A and B is 4:7. If the earnings of A increase by 50% and those of B decrease by 25%, the new ratio of their earning becomes 8:7. What is A's earning ?
(a) ₹21,000 (b) ₹26,000 (c) ₹28,000 (d) Data inadequate

190. The third proportional between $\left(a^2-b^2\right) and \left(a+b\right)^2$ is :
(a) $\frac{a+b}{a-b}$ (b) $\frac{a-b}{a+b}$ (c) $\frac{(a-b)^2}{a+b}$ (d) $\frac{(a+b)^3}{a-b}$

191. If A, B and C started a started by investing ₹ 1,26,000, ₹ 84,000 and ₹ 2,10,000. If at the end of the year profit is ₹ 2,42,000 then the share of each is:
(a) ₹ 72,600; ₹ 48,400; ₹ 1,21,000 (b) ₹ 48,400 ; ₹ 1,21,000; ₹ 72,600
(c) ₹ 72,000 ; ₹ 49,000; ₹ 1,21,000 (d) ₹ 48,000: ₹ 1,21,400; ₹ 72,600

192. If $\frac{p}{q}=-\frac{2}{3}$ then the value of $\frac{2p+q}{2p-q}$ is :
(a) 1 (b) $-\frac{1}{7}$ (c) $\frac{1}{7}$ (d) 7

193. Fourth proportional to x, 2x,(x+1) is :
(a) x + 2 (b) (x + 2) (c) (2x + 2) (d) (2x - 2)

194. Which of the numbers are not in proportion?
(a) 6,8,5,7 (b) 7,14,6,12 (c) 18,27,12, 18 (d) 8,6,12,9

195. Find two numbers such that mean proportional between them is 18 and third proportional between them is 144
(a) 9 ; 36 (b) 8 ; 32 (c) 7 ; 28 (d) 6;14

196. The mean proportion between 24 and 54 is _____
(a) 33 (b) 34 (c) 35 (d) 36

197. If one type of rice of cost ₹ 13.84 is mixed with another type of rice of cost ₹ 15.54, the mixture is sold at ₹ 17.60 with a profit of 14.6% on selling price then in which proportion the two types of rice mixed ?
(a) 3:7 (b) 5:7 (c) 7:9 (d) 91:

198. What must be added to each of the numbers 10, 18, 22, 38 to make them proportional:
(a) 5 (b) 2 (c) 3 (d) 9

b) Indices :

199. Value of $\left(a^{1/8}+a^{-1/8}\right)\left(a^{1/8}-a^{-1/8}\right)\left(a^{1/4}+a^{-1/4}\right)\left(a^{1/2}+a^{-1/2}\right)$ is :
(a) $a+\frac{1}{a}$ (b) $a-\frac{1}{a}$ (c) $a^2+\frac{1}{a^2}$ (d) $a^2-\frac{1}{a^2}$

200. Simplification of $\frac{x^{m.3n}.x^{4m-9n}}{x^{6m-6n}}$ is:
(a) x^m (b) x^{-m} (c) x^n (d) x^{-n}

201. If $4^x = 5^y = 20^z$ then z is equal to:
(a) xy (b) $\frac{x+y}{xy}$ (c) $\frac{1}{xy}$ (d) $\frac{xy}{x+y}$

202. $\left(\frac{\sqrt{3}}{9}\right)^{5/2}\left(\frac{9}{3\sqrt{3}}\right)^{7/2}\times 9$ is equal to :
(a) 1 (b) $\sqrt{3}$ (c) $3\sqrt{3}$ (d) $\frac{3}{9\sqrt{3}}$

203. If $2^x - 2^{x-1} = 4$ then the value of x^x is:
(a) 2 (b)1 (c) 64 (d) 27

204. If $x = y^a, y = z^b$ and $z = x^c$ then abc is:

(a) 2 (b) 1 (c)3 (d) 4

205. $\frac{2^n + 2^{n-1}}{2^{n+1} - 2^n}$

(a) $1/2$ (b) $3/2$ (c) $2/3$ (d) $1/3$

206. If $2^x \times 3^y \times 5^z = 360$ Then what is the value of x, y, z. ?

(a) 3,2,1 (b) 1,2,3 (c) 2,3,1 (d) 1,3,2

207. The recurring decimal 2.7777 ……..can be expressed as

(a) 24/9 (b) 22/9 (c) 26/9 (d) 25/9

208. Find the value of X, If $x.(x)^{1/3} = \left(x^{1/3}\right)^x$

(a) 3 (b) 4 (c) 2 (d) 6

209. If $\sqrt[3]{a} + \sqrt[3]{b + \sqrt[3]{c}} = 0$;then find the value of $\left[\frac{a+b+c}{3}\right]^3 =$

(a) 9abc (b) $\frac{1}{9abc}$ (c) abc (d) $\frac{1}{abc}$

210. The value of $\left(\frac{y^a}{y^b}\right)^{a^2+ab+b^2} \left(\frac{y^b}{y^c}\right)^{b^2+bc+c^2} \left(\frac{y^c}{y^a}\right)^{c^2+ca+a^2} =$

(a) y (b) -1 (c) 1 (d) None

211. If $p^x = q, q^y = r, r^z = p^6$ then the value of xyz is ……..

(a) 0 (b) 1 (c) 3 (d) 6

212. 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) ∞

213. If $a = \frac{\sqrt{6}+\sqrt{5}}{\sqrt{6}-\sqrt{5}}, b = \frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}+\sqrt{5}}$ then the value of $\frac{1}{a^2} + \frac{1}{b^2}$ is

(a) 486 (b) 484 (c) 482 (d) 500

c) Logarithm:

214. $7 \log \left(\frac{16}{15}\right) + 5 \log \left(\frac{25}{24}\right) + 3 \log \left(\frac{81}{80}\right)$ is equal to

(a) 0 (b) 1 (c) log 2 (d) log 3

215. The value of the expression $a^{\log_a b.\log_b c.\log_c d.\log_d .t}$

(a) t (b) abcdt (c) (a+b+c+d+t) (d) None

216. If $\log_{10000}\ x = \frac{-1}{4}$, then x is given by

(a) 1/100 (b) 1/10 (c) 1/20 (d) None of these

217. If log (2a-3b) = log a – log b, then a=?

(a) $\frac{3b^2}{2b-1}$ (b) $\frac{3b}{2b-1}$ (c) $\frac{b^2}{2b+1}$ (d) $\frac{3b^2}{2b+1}$

218. $\frac{1}{\log_{ab}(abc)} + \frac{1}{\log_{bc}(abc)} + \frac{1}{\log_{ca}(abc)}$ is equal to :

(a) 0 (b) 1 (c) 2 (d) -1

219. If $x = \frac{e^n - e^{-n}}{e^n + e^{-n}}$ then the value of n is

(a) $\frac{1}{2}\log_e \frac{1+x}{1-x}$ (b) $\log_e \frac{1+x}{1-x}$

(c) $\log_e \frac{1-x}{1+x}$ (d) $\log_e \frac{1-x}{1+x}$

220. If $\log_2[\log_3(\log_2 x)] = 1$, then x equals ;

(a) 128 (b) 256 (c) 512 (d) None

221. log (m+n) = log m + log n , m can be expressed as:

(a) $m=\frac{n}{n-1}$ (b) $m=\frac{n}{n+1}$ (c) $m=\frac{n+1}{n}$ (d) $m=\frac{n+1}{n-1}$

222. $\log_4(x_2+x)$ - $\log_4(x+1)$=2. Find x

(a) 16 (b) 0 (c) -1 (d) none of these

223. If $\log_a b + \log_a c = 0$ then

(a) b =c (b) b=-c (c) b = c = 1 (d) b and c are reciprocals

224. The value of $2^{\log x}+2^{\log x^2}+2^{\log x^3}+\ldots\ldots\ldots+2^{\log x^n}$ will be

(a) $\frac{n(n+1)\log x}{2}$ (b) n(n+1) log x

(c) $n^2 \log x$ (d) none of these

225. If $n=m!$ where ('m' is a positive integer > 2) then the value of:

$\frac{1}{\log_2 n}+\frac{1}{\log_3 n}+\frac{1}{\log_4 n}+\ldots\ldots\ldots+\frac{1}{\log_m n}$ is

(a) 1 (b) 0 (c) -1 (d) 2

226. If $\log_x Y=100$ and $\log_2 x=10$, then the value of 'Y' is

(a) 2^{10} (b) 2^{100} (c) $2^{1,000}$ (d) $2^{10,000}$

227. Which of the following is true. If $\frac{1}{ab}+\frac{1}{bc}+\frac{1}{ca}=\frac{1}{abc}$

(a) $\log(ab+bc+ca)=abc$ (b) $\log\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)=abc$

(c) $\log(abc)=0$ (d) $\log(a+b+c)=0$

228. Find Value of $[\log_y x \cdot \log_z y \cdot \log_x z]^3 =$

(a) 0 (b) -1 (c) 1 (d) 3

229. Find the value of $\text{Log}_4 9 . \text{Log}_3 2 =$

(a) 3 (b) 9 (c) 2 (d) 1

230. If $X=\log_{24}12$; $y=\log_{36}24$; $z=\log_{48}36$ then xyz+1=?

(a) 2xy (b) 2zx (c) 2yz (d) 2

231. If $x^2+y^2 = 7xy$ then $\log\frac{1}{3}(x+y) =$

(a) logx+logy (b) $\frac{1}{2}(\log x+\log y)$

(c) $\frac{1}{3}(\log x+\log y)$ (d) $\frac{1}{3}(\log x.\log y)$

232. If log x = a-b ; log y=a+b then $\log\left(\frac{10x}{y^2}\right)$

(a) 1-a-3b (b) a-1+3b (c) a+3b-1 (d) 1-b+3a

233. Number of digits in the numeral for $2^{64}[\text{Given}\log 2=0.30103:$

(a) 18 digits (b) 19 digits (c) 20 digits (d) 21 digits

Measures of Central Tendency & Dispersion :

234. The mean salary of a group of 50 persons is ₹5,850. Later on it is discovered that the salary of one employee has been wrongly taken as 8,000 instead of ₹7,800. The corrected mean salary is

(a) 5,854 (b) 5,846
(c) 5,650 (d) None of the above

235. If the mode of a data is 18 mean is 24 then median_____

(a) 18 (b) 24 (c) 22 (d) 21

236. For data on frequency distribution of weights:
70, 73, 49, 57, 56, 44, 56, 71, 65, 62, 60, 50, 55, 49, 63 and 45
If we assume class length as 5, the number of class intervals would be

(a) 5 (b) 6 (c) 7 (d) 8

237. The point of intersection of the "less then "and "more then "Ogives correspond to

(a) Mean (b) Mode (c) Median (d) 10^{th} percentile

238. A man travels from Agra to Gwalior at an average speed of 30 km per hour and back at an average speed of 60 km per hour. What is his average speed?

(a) 38 km per hour (b) 40 km per hour
(c) 45 km per hour (d) 35 km per hour

239. Which of the following measures of central tendency cannot be shown by graphical method?

(a) Mean (b) Median (c) Mode (d) Quartiles

240. GM of 8,4,2 is_____

(a) 4 (b) 2 (c) 8 (d) None

241. Which of the following statement is true?

(a) Median is based on all observations
(b) The Mode is the mid value
(c) The Median is the 2nd Quartile
(d) The Mode is the 5th decile

242. For two numbers A.M.=10 and G.M.=8; the H.M…?

(a) 9 (b) 8.9 (c) 6.4 (d) None

243. The 3rd decile for the values 15, 10, 20, 25, 18, 11, 9, 12 is

(a) 13 (b) 10.7 (c) 11 (d) 11.5

244. The A.M. of square of first '2n' natural number is

(a) $\frac{1}{6}(2n+1)(4n-1)$ (b) $\frac{1}{6}(2n-1)(4n-1)$
(c) $\frac{1}{6}(2n-1)(4n+1)$ (d) $\frac{1}{6}(2n+1)(4n+1)$

245. A Random variables x follows uniform distribution in the interval [-3, 7]. Then the mean of distribution is

(a) 2 (b) 4 (c) 5 (d) 6

246. There were 50 students in a class. 10 failed whose average marks were 2.5. The total marks of class were 281. Find the average marks of students who passed?

(a) 6.4 (b) 25 (c) 256 (d) 86

247. If the mean of two numbers is 30 and Geometric Mean is 24 then what will be those two numbers?

(a) 36 and 24 (b) 30 and 30

(c) 48 and 12 (d) None of these

248. If the mean of data is 55.6 and he mode is 46, then the median is_____

(a) 50.4 (b) 40.7 (c) 52.4 (d) None

249. _____ is used for ordering the size of designed cloths.

(a) Mean (b) Median (c) Mode (d) None

250. The mean of 6, 4, 1, 5, 6, 10 and 3 is 5. If each number is added with 2, then the new mean is_____

(a) 7 (b) 5 (c) 6 (d) 10

251. A person purchases 5 rupees worth of eggs from 10 different markets. You are to find average No. of eggs per rupee for all the markets taken together. What is the suitable form of average in this case?

(a) AM (b) GM (c) HM (d) None

252. If Standard deviation of X is σ, then Standard deviation of $\frac{ax+b}{c}$, where a, b and c are arbitrary constants, will be

(a) σ (b) $\frac{a\sigma+b}{c}$ (c) $\frac{a}{c}.\sigma$ (d) $\left|\frac{a}{c}\right|\sigma$

253. Which of the following measures of dispersion is used for calculating the consistency between two series?

(a) Quartile deviation (b) Standard Deviation

(c) Coefficient of variation (d) None of them

254. $\sum x^2 = 3390, n = 30, \sigma = 7;$ then $\bar{X} =$_____

(a) 113 (b) 210 (c) 8 (d) None

255. If the mean of frequency distribution is 100 and coefficient of variation is 45% then standard deviation is_____
(a) 45 (b) 0.45 (c) 0.045 (d) None

256. Coefficient of mean deviation about mean for the first 9 natural numbers is:
(a) $\frac{200}{9}$ (b) 80 (c) $\frac{400}{9}$ (d) 50

257. Mean=5, S.D=2.6, Median 5, Q.D 1.5 then coefficient of Q.D is:
(a) 35 (b) 39 (c) 30 (d) 32

258. 262. The formula for range of middle 50% items of a series is
(a) $Q_3 - Q_1$ (b) $Q_3 - Q_2$ (c) $Q_2 - Q_1$ (d) $\frac{Q_3 - Q_1}{2}$

259. 1st quartile is 142 Semi-inter Quartile 18. Then median is
(a) 151 (b) 160 (c) 178 (d) None

260. Co-efficient of QD is equal to _____
(a) $\frac{QD}{M} \times 100$ (b) $\frac{QD}{x} \times 100$ (c) $\frac{QD}{Z} \times 100$ (d) None

261. If every observation is increased by 5 then
(a) SD increases by 5 (b) MD increases by 5
(c) QD increases by 5 (d) None affected

262. Find the range of 6,5,4,3,1, 3,6,10,8.
(a) 6 (b) 3 (c) 9 (d) 10

263. If V(x) = 23 Find variance of (2x+10:)
(a) 104 (b) 110 (c) 92 (d) 85

Correlation & Regression :

264. In Spearman's Correlation Coefficient, the sum of the differences of ranks between two variables shall be _____.
(a) 0 (b) 1 (c) -1 (d) None of them

265. The coefficient of correlation between X and Y series is - 0.38. The linear relation between U & V are 3X + 5U = 3 and -8Y - 7V = 44, what is the coefficient of correlation between U & V?
(a) 0.38 (b) -0.38 (c) 0.40 (d) None of them

266. Two variables X and Y are related as 4x + 3y = 7 then correlation between x and y is_____
(a) Perfect positive (b) Perfect negative
(c) Zero (d) None of these

267. If r is the karl pearson's coefficient of correlation in a bivariate distribution the two regression lines are at right angles when_____
(a) r = ±1 (b) r = 0 (c) r = $\pm\infty$ (d) None

268. If r = 0.28, Cov. (x,y) = 7.6, V(x) = 9 then σ_y =
(a) 8.75 (b) 9.04 (c) 6.25 (d) None

269. Price and Demand is example for
(a) No correlation (b) Positive correlation
(c) Negative correlation (d) None of these

270. Determine the coefficient of correlation between x and y series

	X-Series	Y-Series
Number of items	15	15
Arithmetic mean	25	18
Sum of Square of deviation of mean	136	138

271. Sum of product deviation of X and Y series from mean = 122
(a) -0.89 (b) 0.89 (c) 0.69 (d) -0.69

272. Correlation coefficient between x and y is 1, then correlation coefficient between x - 2 and (-y/2) + 1 is.
(a) 1 (b) -1 (c) -1/2 (d) 1/2

273. In case 'Insurance Companies' Profits and the No. of claims they have to pay:
(a) Positive correlation (b) Negative correlation
(c) No correlation (d) None of these

274. If r = 0.6 then the coefficient of non-determination is _____
(a) 0.4 (b) -0.6 (c) 0.36 (d) 0.64

275. If the sum of the squares of Rank differences in the marks of 10 students in two students is 44, then the coefficient of rank correlation is_____
(a) 0.78 (b) 0.73 (c) 0.87 (d) None

276. Coefficient of correlation between X & Y is 0.6. If both X and Y are multiplied by -1. Then resultant coefficient of correlation is
(a) 0.6 (b) Negative (c) 1/0.6 (d) None

277. 280.If there is a constant increase in the series then the obtained graph is:
(a) Convex (b) Concave
(c) Parabola (d) Straight line from left to right

278. If the plotted points in a scatter diagram are evenly distributed, then the correlation is
(a) Zero (b) Negative (c) Positive (d) (a) or (b)

279. The covariance between two variables is
(a) Strictly positive (b) Strictly negative
(c) Always Zero (d) Either positive or negative or zero

280. If the regression lines are $8x-10y+66=0$ and $40x-18x-18y=214$, the correlation coefficient between 'x' and 'y' is :
(a) 1 (b) 0.6 (c) -0.6 (d) -1

281. The coefficients of correlation between two variables X and Y is the simple of the two regression.
(a) Arithmetic Mean (b) Geometric Mean
(c) Harmonic Mean (d) None of the above

282. If 2 variables are uncorrelated, their regression lines are:
(a) Parallel (b) Perpendicular
(c) Coincident (d) Inclined at 45 degrees

283. If x, y denote the arithmetic means, $\sigma_x;\sigma_y$ denote the standard the deviations, $b_{xy};b_{yx}$ denote the regression coefficients of the variables 'X' and 'Y' respectively, then the point of intersection of regression lines X on Y & Y on X is _____
(a) $(\bar{X};\bar{Y})$ (b) σ_x,σ_y (c) (σ_x,σ_y) (d) (σ_x^2,σ_y^2)

284. For certain x and y series which are correlated, the two line of regression are
$5x-6y+9=0$
$15x-8y-130=0$
The correlation coefficient is
(a) 4/5 (b) 3/4 (c) 2/3 (d) 1/2

285. If Y=18X+ 5 is the regression line of X on Y; The value of b_{xy} is

(a) 5/18 (b) 18 (c) 5 (d) 1/18

286. $8x-3y+7=0,-7y+6=0$ are two regression equation then the correlation coefficient, r =

(a) 0.86 (b) -0.86 (c) 0.45 (d) -0.45

287. If r = +1 or - 1 then the two regression lines _____

(a) Have 30% angle between them (b) Have 45% angle between them

(c) Coincide (d) Perpendicular to each other

288. The equations two lines of regression for x & y are 5x = 22 + y and 64x = 24+ 45y. then the value of regression coefficient of y on x will be _____.

(a) 5 (b) $\frac{1}{5}$ (c) $\frac{64}{45}$ (d) $\frac{45}{65}$

289. Two regression lines for a bivariate data are $2x-5y+6=0$ and $5x-4y+3=0$. Then the coefficient correlation shall be _____.

(a) $\frac{-2\sqrt{2}}{5}$ (b) $\frac{2}{5}$ (c) $\frac{+2\sqrt{2}}{5}$ (d) $\frac{\sqrt{2}}{5}$

290. Two regression equations are x +y=6 and x + 2y = 10 then correlation coefficient between X any Y is

(a) -1/2 (b) 1/2 (c) $-\frac{1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{2}}$

291. Which of the following is true :

(a) $b_{xy}=r.\frac{\sigma_y}{\sigma_x}$ (b) $b_{xy}=r.\frac{\sigma_x}{\sigma_y}$

(c) $b_{xy}=\pi.\frac{\sum xy}{\sigma_x}$ (d) $b_{xy}=\pi.\frac{\sum xy}{\sigma_y}$

292. The two lines of regression become identical when

(a) r = 1 (b) r = -1 (c) r = 0 (d) (a) or (b)

293. Regression lines are passes through the _____ points.

(a) Mean (b) Standard deviation

(c) Both (a) & (b) (d) Non

294. $5y=9x-22$ & $20x=9y+350$ are two regression lines. Find the correlation coefficient between x & y:

(a)0.9 (b) 0.1 (c)-0.9 (d) -0.1

Differential Calcus :

295. The slope of the tangent at the point (2,-2) to the curve $x^2 + xy+y^2 – 4 = 0$ is given by
(a) 0 (b) 1 (c) -1 (d) None

296. x = 2 t + 5 and y = t^2 - 5 , then $\frac{dy}{dx}$ = ?
(a) t (b) -1/t (c) 1/t (d) 0

297. If f(x) = x^k and f ' (1) = 10 then the value of k is
(a) 10 (b) -10 (c) 1/10 (d) None

298. Given x = 2^t + 5 ; y = t^2 – 2 , then $\frac{dy}{dx}$ is calculated as :
(a) t (b) 1/t (c) -1/t (d) None

299. If f(x) = $^{x}C_3$; then f $'$ (1) = ?
(a) $\frac{1}{6}$ (b) $-\frac{1}{6}$ (c) $\frac{5}{6}$ (d) $-\frac{5}{6}$

300. $\frac{d}{dx}\left[2^{\log 2x}\right]$=_____
(a) 1 (b) 0 (c) 1/2 (d) $2^x.\log_2 x$

301. If y = $e^{a\log x} + e^{x\log a}$, then $\frac{dy}{dx}$ =
(a) $X^a + a^x$ (b) a. $X^{a-1} + a^x \log a$
(c) $aX^{a-1} + Xa^x$-1 (d) $X^x + a^a$

302. The cost function C(x) = 125 + 500x- $x^2 + x^3/3$, 0 $\le x \le$100 and the demand function for the items is given by , p(x) = 1500 – x , then the marginal profit when 18 items are sold is
(a) 751 (b) 571 (c) 676 (d) 875

303. If y = x^2, then dy/ dx at x = 1 is equal to
(a) 0 (b) 1 (c) -1 (d) 2

Sequence & Series:

304. The first and the last terms of an A P, are - 4 and 146. The sum of terms is 7171. The number of terms is:
(a) 101 (b) 100 (c) 99 (d) None

305. The sum of square of first n natural numbers is:
(a) $\frac{n(n+1)}{2}$ (b) $\frac{n(n+1)(2n+1)}{6}$
(c) $\frac{n(n-1)(n-1)}{6}$ (d) $\frac{n(n+1)(2n+2)}{6}$

306. The sum of all natural numbers between 100 and 1000 which are multiple of 5 is:
(a) 98,450 (b) 96,450 (c) 97,450 (d) 95,450

307. Find the sum of all natural number between 250 and 1,000 which are exactly divisible by 3 :
(a) 1,56,375 (b) 1,56,357 (c) 1,65,375 (d) 1,65,357

308. If the sum of n terms of an A.P is $(3n^2 - n)$ and its common difference is 6, then its first term is
(a) 3 (b) 2 (c) 4 (d) 1

309. If the sum of n terms of an A.P is $2n^2 + n$. what is the difference between its 10^{th} term & 1^{st} term
(a) 207 (b) 36 (c) 90 (d) 63

310. The sum of the third and ninth term of an A.P is 8. Find the sum of the first 11 terms of the progression.
(a) 44 (b) 22 (c) 19 (d) 11

311. 8^{th} term of A.P is 15, then sum of its 15 terms is
(a) 15 (b) 0 (c) 225 (d) 225/2

312. An AP has 13 terms whose sum is 143. The third terms is 5, then first term is
(a) 4 (b) 7 (c) 9 (d) 2

313. If the sum of first 'n' terms of an A.P is $6n^2+6n$, then fourth term of the series:
(a) 120 (b) 72 (c) 48 (d) 24

314. If x, y, z are the terms in G.P then the terms X^2+Y^2, $XY+YZ$, Y^2+Z^2 are in:
(a) A.P (b) G.P (c) H.P (d) None of these

315. The sum of the infinite GP $1+\frac{1}{3}+\frac{1}{9}+\frac{1}{27}+.....\infty$ is equal to
(a) 1.95 (b) 1.5 (c) 1.75 (d) None

316. G.M of a, b, c, d is 3 then G. M of $\frac{1}{a},\frac{1}{b},\frac{1}{c},\frac{1}{d}$ is

(a) $\frac{1}{3}$ (b) 3 (c) $\frac{1}{81}$ (d) 81

317. Find the sum of the infinite terms

$2,\frac{4}{y},\frac{8}{y^2},\frac{16}{y^3}.....$ If $y > 2$

(a) $\frac{2y}{y-2}$ (b) $\frac{4y}{y-2}$ (c) $\frac{3y}{y-2}$ (d) None of these

318. If G be geometric mean between a&b, then the value of $\frac{1}{G^2-a^2}+\frac{1}{G^2-b^2}$ is equal to

(a) G^2 (b) $3G^2$ (c) $1/G^2$ (d) $2/ G^2$

319. A person pays in ₹ 975 monthly instalments, each instalment is less than former by ₹ 5. The amount of first instalment of first instalment is ₹100. In what time will the entire amount be paid?

(a) 26 months (b) 15 months (c) Both (a) & (b) (d) 18 months

320. A contract who fails to complete a building in a certain specified time is compelled to forfeit ₹ 200 for the first day of extra time required and thereafter forfeited amount is increased by ₹ 25 for every day. If he loses ₹ 9,450 , for how many days did he over-run contract time?

(a) 19 days (b) 21 days (c) 23 days (d) 25 days

321. A man employed in a company is promised a salary of ₹ 3,000 every month for the first year and an increment of ₹ 1,000 in his monthly salary every succeeding year. How much does the man earn from the company in 20 years

(a) ₹ 30,00,000 (b) ₹ 27,50,000 (c) ₹19,10,000 (d) ₹ 7,90,000

322. 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

323. On 1st January every year a person buys National Saving Certificates of value exceeding that of his last year's purchase by ₹ 100. After 10 years, he finds that the total value of the certificates purchased by him is ₹ 54,500. Find the value of certificates purchased by him in the first year:

(a) ₹ 6,000 (b) ₹ 4,000 (c) ₹ 5,000 (d) ₹ 5,500

324. Find three numbers in G.P. such that their sum is 21, and the sum of their squares is 189:

(a) 5, 7, 9 (b) 3, 7, 11 (c) 3, 6, 12 (d) 4, 8, 9

325. Find the ninth term of the series:

$\sqrt{2},5\sqrt{2},9\sqrt{2},.....$

(a) $25\sqrt{2}$ (b) $31\sqrt{2}$ (c) $33\sqrt{2}$ (d) $52\sqrt{2}$

326. The sum of how many terms of the sequence 256, 128, 64…….. is 511.
(a) 8 (b) 9 (c) 7 (d) None of these

327. $(x+1), 3x, (4x+2)$ are in A.P Find the value of x
(a) 2 (b) 3 (c) 4 (d) 5

328. Find two numbers whose A.M is 10 and G.M. is 8
(a) [10, 10] (b) [16, 4] (c) [18, 2] (d) [14, 6]

329. $\sum n^2$ 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

330. The sum of an AP, whose first term is -4 and last term is 146 is 7171. Find the value of n.
(a) 99 (b) 100 (c) 101 (d) 102

331. Find the sum to infinity of the following series: 1 – 1 + 1 – 1 + 1 – 1 ……∞
(a) 1 (b) ∞ (c) ½ (d) Does not exist

332. If a_1, a_2, a_3 represent first, second and third term of an A.P respectively, the first term is 2 and $(a_1+a_2)a_3$ is minimum, then the common difference is equal to
(a) 5/2 (b) -5/2 (c) 2/5 (d) -2/5

333. Divide 144 into three parts which are in AP. and such that the largest is twice the smallest, the smallest of three number will be :
(a) 48 (b) 36 (c) 13 (d) 32

Quadratic Equations :

334. On solving $\sqrt{\frac{x}{1-x}}+\sqrt{\frac{1-x}{x}}=2\frac{1}{6}$, we get one value of x as :
(a) $\frac{4}{13}$ (b) $\frac{1}{13}$ (c) $\frac{2}{13}$ (d) $\frac{3}{13}$

335. Find the positive value of k for which the equations: $x^2+kx+64=0$ and $x^2-8x+k=0$ will have real roots:
(a) 12 (b) 16 (c) 18 (d) 22

336. If one root of an 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) $x^2 - 4x + 1 = 0$

337. A man starts his job with a certain monthly salary and earns a fixed increment every year. If his salary was ₹ 1,500 after 4 years of service and ₹ 1,800 after 10 years of service, what was his starting salary and what is the annual increment in rupees?

(a) ₹ 1,300, ₹ 50 (b) ₹ 1,100, ₹ 50

(c) ₹ 1,500, ₹ 30 (d) None

338. The sides of an equilateral triangle are shortened by 12 units, 13 units and 14 units respectively and a right angled triangle is formed. The side of the equilateral triangle is:

(a) 17 units (b) 16 units (c) 15 units (d) 18 units

339. Area of a rectangular garden is 8000 square metres. Ratio in length and breadth is 5:4. A path of uniform width, runs all round the inside of the garden. If the path occupies 3200 m², what is its width?

(a) 12m (b) 6m (c) 10m (d) 4m

340. The value of

$$2+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{2+.....\infty}}}}\text{ is :}$$

(a) $1\pm\sqrt{2}$ (b) $2\pm\sqrt{5}$ (c) $2\pm\sqrt{3}$ (d) None

341. If $\left(2+\sqrt{3}\right)$ is a root of a quadratic equation $x^2 + p x + q = 0$ then find the value of p and q.

(a) (4.- 1) (b) (4. 1) (c) (-4, 1) (d) (2, 3)

342. A straight line passes through the point (3,2). Find the equation of the straight line.

(a) x + y =1 (b) x + y =3 (c) x + y =5 (d) x + y = 2

343. Positive value of 'k' for which the roots at equation $12x^2+kx+5=0$ are in ratio 3:2, is

(a) 5/12 (b) 12/5 (c) $\frac{5\sqrt{10}}{2}$ (d) $5\sqrt{10}$

344. 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

345. It roots of equation $x^2+x+r=0$ are 'α' and 'β' and $\alpha^3+\beta^3=-6$. Find the value of 'r'?

(a) $\frac{-5}{3}$ (b) $\frac{7}{3}$ (c) $\frac{-4}{3}$ (d) 1

346. If one root of the Equation $px^2 + qx + r = 0$ is r then other root of the Equation will be

(a) 1/q (b) 1/r (c) 1/p (d) $\frac{1}{p+q}$

347. 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) $x^2 - 16x + 25 = 0$

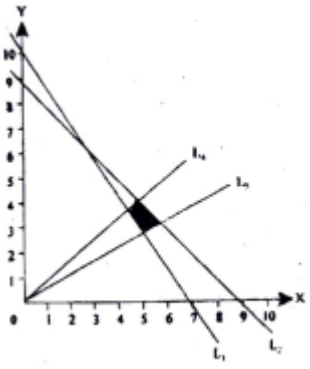
(c) $x^2 - 16x + 5 = 0$ (d) None of these

348. Roots of equation $2x^2 + 3x + 7 = 0$ are α and β. The value of $\alpha\beta^{-1} + \beta\alpha^{-1}$ is

(a) 2 (b) 3/7 (c) 7/2 (d) -19/14

Inequalities :

349. Graphs of Inequations are drawn below :



L_1:5x + 3y =30 L_2 :x+y=9

$L_3 : y = \frac{x}{3}$ $L_4 : y = \frac{x}{2}$

350. The common region (shaded part) shown in the diagram refers to the inequalities:

(a) $5x + 3y \le 30$
$x + y \le 9$
$y \le \frac{1}{2}x$
$y \le x/2$
$x \ge 0, y \ge 0$

(b) $5x + 3y \ge 30$
$x + y \le 9$
$y \ge x/3$
$y \le x/2$
$x \ge 0, y \ge 0.$

(c) $5x + 3y > 30$
$x + y \ge 9$
$y \le x/3$
$y \ge x/2$
$x \ge 0, y \ge 0.$

(d) $5x + 3y > 30$
$x + y < 9$
$y \ge 9$
$y \le x/2$
$x \ge 0, y \ge 0.$

351. If $\left|x+\frac{1}{4}\right|>\frac{7}{4}$,then:

(a) $x<\frac{-3}{2}$ or x>2 (b) $x<-2 \text{ or } x>\frac{3}{2}$

(c) $-2<x<\frac{3}{2}$ (d) None of these

352. On solving the inequalities $6x+y\geq 18; x+4y\geq 12; 2x+y\geq 10$,we get the following situation;

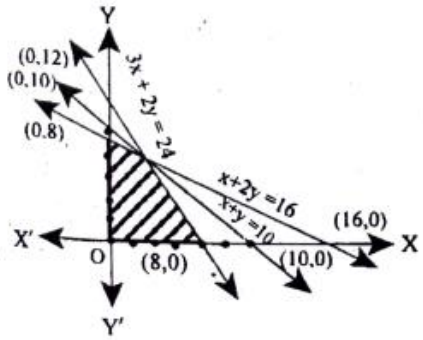
(a) (0,18),(12,0),(4,2)& (7,6) (b) (3,0),(0,3),(4,2),&(7,6)

(c) (5, 0), (0, 10), (4, 2) & (7, 6) (d) (0, 18), (12, 0), (4, 2), (0, 0) and (7, 6)

353. 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

354. The shaded region represents:



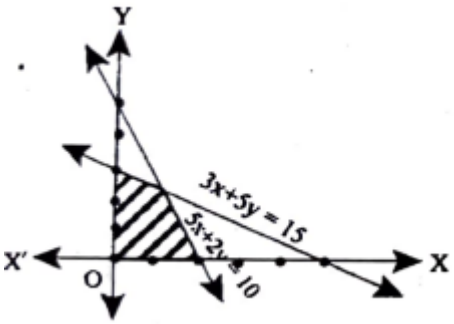
(a) $3x+2y\leq 24, x+2y\geq 16,$
$x+y\leq 10x, x\geq 0, y\geq 0$

(b) $3x+2y\leq 24, x+2y\leq 16,$
$x+y\geq 10, x\geq 0, y\geq 0$

(c) $3x+2y\leq 24, x+2y\leq 16,$
$x+y\leq 10, x\geq 0, y\geq 0$

(d) None of these.

355. The shaded region represents:



(a) $3x+5y \le 15, 5x+2y \ge 10, x, y \ge 0$
(b) $3x+5y \le 15, 5x+2y \le 10, x, y \ge 0$
(c) $3x+5y \ge 15, 5x+2y \ge 10, x, y \ge 0$
(d) None of these.

Time Value:

356. Mr *x* Invests 10,000 every year starting from today for next 10 years suppose interest rate 8% per annum compounded annually. Calculate future value of the annuity:

(Given that $(1+0.08)^{10} = 2.15892500$]

(a) ₹ 156454.88 (b) ₹ 144865.625
(c) ₹ 32218.629 (d) None of these

357. The present value of an annuity of ₹ 3,000 for 15 years at 4.5% p.a. C.I is

[Given that $(1.045)^{15}, = 1.935282$]

(a) ₹ 23,809.67 (b) ₹ 32,218.67 (c) ₹ 32,908.67 (d) None of these

358. How much amount is required to be invested every year so as to accumulate ₹3,00,000 at the end of 10 years, if interest is compounded annually at 10 %?

[Give $(1.1)^{10} = 2.5937$]

(a) ₹ 18,823.65 (b) ₹ 18,828.65 (c) ₹ 18,832.65 (d) ₹ 18,882.65

359. Vipul purchases car for ₹ 5, 50,000. He gets a loan of ₹ 5, 00,000 at 15% pa whole from a Bank and balance ₹ 50,000 he pays at the time of purchase. He has to pay tie amount of loan in 12 equal monthly end of instalments with interest starting from the end first month. The money he has to pay at the end of every month is [Given $(1.0125)^{12} = 1.16075452$]

(a) ₹ 45,130.43 (b) ₹ 45,230.43 (c) ₹ 45,330.43 (d) None of these

360. Raja aged 40 wishes his wife Rani to have ₹ 40 lakhs at his death. If his expectation of life is another 30 years and he starts making equal annual investments commencing now at 3% compound interest p.a. How much should he invest annually?

(a) ₹ 84,077 (b) ₹ 81,628 (c) ₹ 84,449 (d) ₹ 84,

361. A sinking fund is created for redeeming debentures worth ₹ 5 lacs at the end of 25 years. How much provision needs to be made out of profits each year provided sinking fund investments can earn interest at 4% p.a.?

(a) 12,006 (b) 12,040 (c) 12,039 (d) 12,035

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

363. Paul borrowers ₹ 20,000 on condition to repay it with compound interest at 5% p.a. in annual instalment of ₹ 2,000 each. Find the number of years in which the debt would be paid off.

(a) 10 years (b) 12 years (c) 14 years (d) 15 years

364. Find the present value of an annuity of ₹ 1,000 payable at the end of each year for 10 years. If rate of interest is 6% compounding per. annum.

(given $(1.06)^{-10} = 0.5584$):

(a) ₹ 7360 (b) ₹ 8,360 (c) ₹ 12,000 (d) None of these

365. The future value of an annuity of ₹ 5,000 is made annually for 8 years at interest rate of 9% compounded annually

[Given that $(1.09)^8 = 1.99256$_____]

(a) ₹ 55,142.22 (b) ₹ 65,142.22 (c) ₹ 65,532.22 (d) ₹ 57,425.22

366. How much amount is required to be invested every year as to accumulate ₹ 6, 00,000 at the end of 10th year, if interest is compounded annually at 10% rate of interest?

(a) ₹ 37,467 (b) ₹ 37,476 (c) ₹ 37,647 (d) ₹ 37,674

367. The future value of an annuity of ₹ 1,000 made annually for 5 years at the rate of interest 14% compound annually is

(a) ₹ 5610 (b) ₹ 6610 (c) ₹ 6160 (d) ₹ 5160

368. Suppose your mom decides to gift you ₹10,000 every year starting from today for the next sixteen years. You deposit this amount in a bank as and when you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this money:[Given that of this money: (Given that P (15, 0.085) =8.304236]

(a) 83,042 (b) 90,100 (c) 93,042 (d) 10,100

369. The future value of an annuity of ₹ 1 500 made annually for 5 years at an interest rate of 10% compounded annually is____

[Given that $(1.1)^5 = 1.61051$]

(a) 9517.56 (b) 9157.65 (c) 9715.56 (d) 9175.65

370. What sum should be invested at the end of every year so as to accumulate an amount of ₹ 796870 at the of 10 years at the rate of interest 10% compounded annually, [given that $A(10;0.1)=15.9374$]
(a) 40,000 (b) 4,50,000 (c) 4,80,000 (d) 50,000

371. A person invests ₹ 2,000 at the end of each month @ of interest 6% compounding monthly, find the amount of annuity after the 10th interest is:
(a) ₹ 20,456 (b) ₹ 20,156 (c) ₹ 20,256 (d) ₹ 20,356

372. Determine the present value of perpetuity of ₹ 50,000 per month @ Rate of interest 12% p.a is_____
(a) ₹ 45, 00,000 (b) ₹ 50, 00,000 (c) ₹ 55, 00,000 (d) ₹ 60, 00, 000

373. Let a person invest a fixed sum at the end of each month in an account paying interest 12% per year compounded monthly. It the future value of this annuity after the 12th payment is ₹ 55,000 then the amount invested every month is?
(a) ₹ 4,837 (b) ₹ 4,637 (c) ₹ 4,337 (d) ₹ 3337

374. ₹ 800 is invested at the end of each month in an. account paying interest 6% per year compounded monthly. What is the future value of this annually after 10 payment?
(a) ₹ 4,444 (b) ₹ 8,756 (c) ₹ 3,491 (d) ₹ 8,182

375. The present value of an Annuity immediate is the same as
(a) Annuity regular for (n -1) year plus the initial receipt in the beginning of the period
(b) Annuity regular for (n.-1) years
(c) Annuity regular for (n + 1) years
(d) Annuity regular for (n + 1) years plus the initial receipt in the beginning of the period

376. Find the future value of annuity of ? 1,000 made annually for 7 year at interest rate of 14% compounded annually (Given that $1.14^7 = 2.5023$)
(a) ₹ 10,730.7 (b) ₹ 5,365.35 (c) ₹ 8,756 (d) ₹ 9892.34

377. A loan of ₹ 1,02,000 is to be paid back in two equal annual instalments. If the rate of interest is 4% p.a., compounded annually, then the total interest charged (in ₹) under this instalment plan is
(a) 6160 (b) 8120 (c) 5980 (d) 7560

378. If 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) 1.587 p (b) 1.921 p (c) 1.403 P (d) 2.51 p

379. If discount rate is 14% per annum, then how much a company has pay to receive ₹ 280 growing at 9% annually forever.
(a) ₹ 5,600 (b) ₹ 2,800 (c) ₹ 1,400 (d) ₹ 4,200

380. The Future value of annuity of ₹ 2,000 for 5 years at 5% compounded annually is given (in nearest ₹) as
(a) 51051 (b) 21021 (c) 15624 (d) 61254

381. Mr. X wants to accumulate ₹ 50,00,000 at the end of 10 years. Then how much amount is required to be invested every year if interest is compounded annually at 10% (Given that P(10,0.10) = 15.9374298)
(a) ₹ 3,13,726.87 (b) ₹ 4,13,726.87
(c) ₹ 3,53,726.87 (d) ₹ 4,53,726.87

382. The present value of an annuity of ₹ 25,000 to be received after 10 years at 6% per annum compounded annually is ₹ _____. $(1.06^5 = 1.33823)$
(a) ₹ 15,960 (b) ₹ 13,960 (c) ₹ 11,960 (d) ₹ 17,960

383. Find the future value annuity of ₹1,000 made annually for 7 years at interest rate 14% compounded annually. Give that $(1.14)^2=2.5023$
(a) ₹10,730.71 (b) ₹ 5,365.35 (c) ₹ 8,756 (d) ₹ 9,892.34

384. ₹ 2,500 is paid every year for 10 years to pay off a loan. What is the loan amount if interest rate be 14% p.a. compounded annually?
(a) ₹15,847.90 (b) ₹ 13,040.27 (c) ₹ 14,674.21 (d) ₹ 16,345.11

385. Raj made an investment of ₹15,000 in a scheme and at the time of maturity the amount was ₹ 25,000. If Compound Annual Growth Rate (CAGR) for this CAGR for this Investment is 8.88%. Calculate the approximate number of years for which he has invested the amount.
(a) 6 (b) 7.7 (c) 5.5 (d) 7

386. Madhu takes a loan of ₹50,000 from XYZ Bank. The rate of interest is 10% per annum. The first instalment will be paid at the end of year 5. Determine the amount (in ₹) of equal instalments, if Madhu wishes to repay the amount in five instalments.
(a) ₹ 19,510 (b) ₹19,430 (c) ₹19,310 (d) ₹19,630

387. Ramesh invests 20,000 per year in a stock index fund, which earns 9% per year, for the next ten years. What would be the closest value of the accumulated value of the investment upon payment of the last instalment? $(1.09^{10} = 2.36736)$
(a) ₹ 3,88,764,968 (b) ₹ 3,03,858.594
(c) ₹ 2,68,728.484 (d) ₹ 4,08,178.364

388. A company creates a sinking fund of ₹ 2,00,000 in a bank account for 15 years bank offers interest rate 6% per annum the yearly payment to be paid by company is approximately ↔ (if

need, use: $1.06^{14} = 2.209$)

(a) ₹ 8,945 (b) ₹ 8,145 (c) ₹ 9,345 (d) ₹ 9,645

389. How much amount is required to be invested every year so as to accumulate ₹ 5,00,000 at the end of 12 years if interest is compounded annually at 10%? (Where A (12, 0.1)= 21.384284).

(a) ₹ 23381.65 (b) ₹ 24385.85 (c) ₹ 26381.65 (d) ₹ 28362.75

390. Raju invests ₹ 20,000 every year in a deposit scheme starting from today for next 12 years. Assuming that interest rate on this deposit is 7% per annum Compounded annually. What will be the future value of this annuity? Given that $(1+0.07)^{12}=2.25219159$.

(a) ₹ 5,40,526 (b) ₹ 3,82,813 (c) ₹ 6,43,483 (d) ₹ 3,57,769

391. Mr. A invested ₹ 10,000 every year for next 3 year at the interest rate of 8ne cent per annum compounded annually. What is future value of the annuity?

(a) ₹ 32,644 (b) ₹ 32,464 (c) ₹ 34,4264 (d) ₹ 36,442

392. ₹ 5,000 is invested every month end in an account paying interest @12% per annum compounded monthly. What is the future value of this annuity just after making 11^{th} payment?

(a) ₹ 57,800 (b) ₹ 56,100 (c) ₹ 56,800 (d) ₹ 57,100

393. Sinking fund factor is the reciprocal of:

(a) Present value interest factor of a single cash flow
(b) Present value interest factor of an annuity
(c) Future value interest factor of an annuity
(d) Future value interest factor of a single cash flow

394. Find the future value of annuity of ₹500 is made annually for 7 years interest rate of 14% compound at annually. Given that $(1.14)^7 = 2.5023$

(a) ₹15635 (b) ₹10,730.74 (c) ₹16,535.35 (d) ₹16,355.35

395. Determine the present value of perpetuity 10 per month for infinite period at an effective rate of interest of 14% p.a.?

(a) ₹657 (b) ₹757 (c) ₹857 (d) ₹957

396. Which of the following statement is true?

(a) F.V of ordinary annuity < F.V of annuity due
(b) F.V of ordinary annuity > F.V of annuity due
(c) P.V of ordinary annuity > P.V of annuity due
(d) None of these

397. Suppose you deposit ₹ 900 per month into an account that pays 14.8% interest compounded monthly. How much money will you get after 9 months?

(a) ₹ 8,511 (b) ₹9,000 (c) ₹9,200 (d) ₹1,000

398. ABC Ltd. wants to lease out an asset costing ₹ 3,60,000 for a five year period. It has fixed a rental of ₹ 1,05,000 per annum payable annually starting from the end of first year. Suppose rate of interest is 14% per annum compounded annually on which money can be invested by the company. Is this agreement favourable to the company?
(a) Leasing is not favourable to the lessor.
(b) Leasing is favourable to the lessor.
(c) Both (a) and (b)
(d) None

399. A company is considering proposal of purchasing a machine either by making full payment of ₹ 4,000 or by leasing it for four years at an annual rate of ₹ 1,250. Which course of action is preferable if the company can borrow money at 14% compounded annually?
(a) Leasing is not favourable to the lessor.
(b) Leasing is favourable to the lessor.
(c) Both (a) and (b)
(d) None

400. A company may obtain a machine either by leasing it for 5 years (useful life) at an annual rent of ₹ 2,000 or by purchasing the machine for ₹ 8,100. If the company can borrow money at 18% per annum, which alternative is preferable?
(a) Leasing (b) Purchasing (c) Can't say (d) None of these

401. A person wants to lease out a machine costing ₹ 5,00,000 for a 10 year period. It has fixed a rental of ₹ 51,272 per annum payable annually starting the end of first year. Suppose rate of interest is 10% per annum, compounded annually on which money can be invested. To whom this agreement is s favourable'
(a) Favour for lessee (b) Favour for lessor
(c) Not for both (d) can't be determined

402. A machine can be purchased for 50000. Machine will contribute ` 12000 per year for the next five years. Assume borrowing cost is 10% per annum compounded annually. Determine whether machine should be purchased or not.
(a) Machine must be purchased.
(b) Machine must not be purchased.
(c) Both (a) and (b)
(d) None

403. Assuming that the discount rate is 7% per annum, how much would you pay to receive ₹ 50, growing at 5%, annually, forever?
(a) ₹ 1500 (b) ₹ 2000 (c) ₹ 2500 (d) ₹ 3000

404. Assuming that the discount rate is 7% per annum, how much would you pay to receive ₹200, growing at 5%, annually, forever?
(a) ₹ 2500 (b) ₹ 5000 (c) ₹ 7500 (d) ₹ 10000

405. If a person bought a house by paying ₹ 45, 00,000 down payment and ₹ 80,000 at the end of each year till the perpetuity, assuming the rate of interest as 16%, the present value of house (in₹) is given as

(a) ₹ 47,00,000 (b) ₹ 45,00,000 (c) ₹ 57,80,000 (d) ₹ 50,00,000

406. If discount rate is 14% per annum, then how much a company has pay to receive ₹ 280 growing at 9% annually forever.

(a) ₹ 5,600 (b) ₹ 2,800 (c) ₹ 1,400 (d) ₹ 4,200

407. Suppose the revenues of a company for four years (t) in the above formula, have been

Year	2013	2014	2015	2016
Revenues	100	120	160	210

Calculate Compound annual Growth Rate.

(a) 27.74 (b) 20 (c) 30 (d) None

408. Let the operating profit of a manufacturer for five years is given as:

Year	1	2	3	4	5	6
Operating profit(in Lakh ₹)	90	100	106.4	107.14	120.24	157.35

Then the operating profit of Compound Annual Growth Rate (CAGR) for year 6 with respect to year 2 is given at

(a) 9% (b) 12% (c) 11% (d) 13%

Index Number :

409. If $\sum P_0Q_0 = 116, \sum P_0Q_1 = 140 \sum P_1Q_0 = 97, \sum P_1Q_1 = 117$ then Fisher's ideal index number is _____

(a) 184 (b) 83.59 (c) 119.66 (d) 120

410. Find the Paasche's Index number for price from the following data taking 1970 as the base year.

Commodity	1970		1975	
	Price	quantity	Price	quantity
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

411. Net monthly of an employees was ₹ 3,000. The consumer price index number in 1985 is 250 with rightly compensated then the additional dear- ness allowance to be paid to the employee is:

(a) ₹4,000 (b) ₹4,800 (c) ₹5,500 (d) ₹4,500

412. Time Reversal Test is satisfied by _____
(a) Fisher's ideal index (b) Dorbish Bowley's index
(c) Laspeyre's index (d) None of these

413. Bowley's Index Number = 150, Laspeyre's index = 180 then Paasche's index number is
(a) 120 (b) 130 (c) 105 (d) None

414. In 2005 price index is 286 with base 1995 then how much price in- creased in 2005 with base 1995?
(a) 286% (b) 386% (c) 86% (d) 186%

415. The index number for the year 2012 taking 2011 as base using simple average of price relatives method from data given below is:

Commodity	A	B	C	D	E
Price in 2011(P_0)	115	108	95	80	90 $\sum P_0 = 488$
Price in 2012 (P_1)	125	117	108	95	95 $\sum P_1 = 540$

(a) 112 (b) 117 (c)120 (d) 111

416. An index time series is a list of _____ numbers for two or more periods of time
(a) Index (b) absolute (c) Relative (d) None

417. Monthly salary of an employee was ₹10,000 in the year 2000 and it was increased to ₹20,000 in the year 2013 while the consumer price index number is 240 in year 2013 with the base year 2000, what should be his salary in comparison of consumer price index in the year 2013?
(a) 2,000 (b) 16,000 (c) 24,000 (d) None

418. $\sum p_1q_0 = 1180, \sum p_0q_0 = 1170, \sum p_1q_1 = 1064, \sum p_0q_1 = 1100,$ then Fisher ideal index number is
(a) 96.73 (b) 98.795 (c) 98.77 (d) 100.8