16

Additional Question Bank

1. A coin is tossed three times. What is the probability of getting:[SM]

(i) 2 heads

(ii) at least 2 heads.

(a) 5/8, 3/2   (b) 3/8, 1/2   (c) 1/8, 3/8   (d) None

2. Two dice are thrown simultaneously. Find the probability that the sum of points on the two dice would be 7 or more. [SM]

(a) 7/12   (b) 6/12   (c) 5/12   (d) None

3. What is the chance of picking a spade or an ace not of spade from a pack of 52 cards? [SM]

(a) 3/13   (b) 2/13   (c) 4/13   (d) None

4. Find the probability that a four digit number comprising the digits 2, 5, 6 and 7 would be divisible by 4. [SM]

(a) 5/3   (b) 2/3   (c) 4/3   (d) None

5. Given P(A)= 1/2, P(B) = 1/3, P(AB) = 1/4, the value of P (A+B) is[SM]

(a) 3/4   (b) 7/12   (c) 5/6   (d) 1/6

6. Given P(A)=1/2, P(B)=1/3 , P (AB)=1/4 , the value of P (A/B) is[SM]

(a)1/2   (b)1/6   (c) 2/3   (d) 3/4

7. A card is drown from each of two well-shuffled packs of cards.The probability that at least one of them is an ace is[SM]

(a) 1/69   (b) 25/169   (c) 2/13   (d) none

8. If P (A)= 1/4 , P(B)= 2/5 , P(A+B)= 1/2 then P(AB)is equal to[SM]

(a) 3/4   (b) 2/20   (c) 13/20   (d) 3/20

9. If events A and B are independent and P(A)= 2/3 , P(B)= 3/5 then P(A+B)is equal to[SM]

(a) 13/15   (b) 6/15   (c) 1/15   (d) none

10. Which of the following set of function define a probability space on S = {a_1, a_2, a_3}[SM]

    (a) P(a_1)= 1/3, P(a_2) = 1 , P(a_3)= 1/4   (b) P(a_1) =1/3, P(a_2)= 1/6, P(a_3)= 1/2

    (c) P(a_1) =P(a_2)=2/3, P(a_3)= 1/4,   (d) None

11. If P (a_1)= 0, P(a_2)= 1/3 , P(a_3) = 2/3 then S = {a_1, a_2, a_3 } is a probability space[SM]

    (a) true   (b) false   (c) both   (d) none

12. The following data relate to the distribution of wages of a group of workers: [SM]

Wages in Rs.	50-60	60-70	70-80	80-90	90-100	100-110	110-120
No. of workers:	15	23	36	42	17	12	5

    If a worker is selected at random from the entire group of workers, what is the probability that

    (a) his wage would be less than Rs. 50?

    (b) his wage would be less than Rs. 80?

    (c) his wage would be more than Rs. 100?

    (d) his wages would be between Rs. 70 and Rs. 100?

    (a) 0, 37/75, 17/150, 19/30   (b) 0, 37/75, 17/150, 20/30

    (c) 0, 37/75, 18/150, 19/30   (d) None.

13. Three events A, B and C are mutually exclusive, exhaustive and equally likely. What is the probability of the complementary event of A? [SM]

    (a) 4/3   (b) 1/3   (c) 2/3   (d) None

14. A coin is tossed thrice. What is the probability of getting 2 or more heads? [SM]

    (a) 0.51   (b) 0.50   (c) 0.52   (d) None

15. Probability of getting a head when two unbiased coins are tossed simultaneously is [SM]

    (a) 0.25   (b) 0.50   (c) 0.20   (d) 0.75

16. If an unbiased coin is tossed twice, the probability of obtaining at least one tail is [SM]

    (a) 0.25   (b) 0.50   (c) 0.75   (d) 1.00

17. If an unbiased coin is tossed three times, what is the probability of getting more that one head? [SM]

    (a) 1/8   (b) 3/8   (c) 1/2   (d) 1/3

18. Four digits 1, 2, 4 and 6 are selected at random to form a four digit number. What is the probability that the number so formed, would be divisible by 4? [SM]

    (a) 1/2   (b) 1/5   (c) 1/4   (d) 1/3

19. A number is selected from the first 25 natural numbers. What is the probability that it would be divisible by 4 or 7? [SM]

    (a) 9/25   (b) 8/25   (c) 7/25   (d) None

20. A number is selected at random from the first 1000 natural numbers. What is the probability that it would be a multiple of 5 or 9? [SM]

    (a) 0.29   (b) 0.28   (c) 0.27   (d) None

21. The probability that an Accountant's job applicant has a B. Com. Degree is 0.85, 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? [SM]

    (a) 451   (b) 449   (c) 450   (d) None

22. If $P(A–B) = 1/5$, $P(A) = 1/3$ and $P(B) = 1/2$, what is the probability that out of the two events A and B, only B would occur? [SM]

    (a) 11/30   (b) 12/30   (c) 13/30   (d) None

23. There are three persons A, B and C having different ages. The probability that A survives another 5 years is 0.80, B survives another 5 years is 0.60 and C survives another 5 years is 0.50. The probabilities that A and B survive another 5 years is 0.46, B and C survive another 5 years is 0.32 and A and C survive another 5 years 0.48. The probability that all these three persons survive another 5 years is 0.26. Find the probability that at least one of them survives another 5 years. [SM]

    (a) .9   (b) .5   (c) .7   (d) None

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

    (a) 4/13   (b) 5/13   (c) 0.25   (d) 0.20 53.

25. A bag contains 12 balls which are numbered from 1 to 12. If a ball is selected at random, what is the probability that the number of the ball will be a multiple of 5 or 6 ? [SM]

    (a) 0.30   (b) 0.25   (c) 0.20   (d) 1/3

26. If two unbiased dice are rolled, what is the probability of getting points neither 6 nor 9? [SM]

    (a) 0.25   (b) 0.50   (c) 0.75   (d) 0.80

27. If P(A)= 3/8, P(B)= 1/3 and P(AB)= 1 then P(A^c) is equal to [SM]

    (a) 5/8   (b) 3/8   (c) 1/8   (d) none

28. If P(A)= 3/8, P(B)= 1/3 then P(B)^c is equal to[SM]

    (a) 1   (b) 1/3   (c) 2/3   (d) none

29. If P(A)= 3/8, P(B)= 1/3 and P(AB)= 1/4 then P(A + B)is[SM]

    (a) 13/24   (b) 11/24   (c) 17/24   (d) none

30. If P(A)= 1/5, P(B)= 1/2 and A and B are mutually exclusive then P(AB) is[SM]

    (a) 7/10   (b) 3/10   (c) 1/5   (d) none

31. If P (A)= 7/8 then(P(A^c) is equal to[SM]

    (a) 1   (b) 0   (c) 7/8   (d) 1/8

32. A man can kill a bird once in three shots.The probabilities that a bird is not killed is [SM]

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

33. If on an average 9 ships out of 10 return safely to a port, the probability of one ship returns safely is[SM]

    (a) 1/10   (b) 8/10   (c) 9/10   (d) none

34. If on an average 9 ships out of 10 return safely to a port, the probability of one ship does not reach safely is[SM]

    (a) 1/10   (b) 8/10   (c) 9/10   (d) none

35. If P(A) = 1/4, P(B) = 1/2, P$\left(A \cup B \right)$ = 5/8, then P $\left(A \cap B \right)$ is:

    (a) 3/8   (b) 1/8   (c) 2/8   (d) 5/8

36. Two dice are rolled simultaneously. The probability that the sum of the two numbers on the dice is a prime number is:

    (a) 7/12   (b) 5/12   (c) 1/2   (d) 1/12

37. When two dice are thrown the probability of getting 10 or 11 is:

    (a) 7/36   (b) 5/36   (c) 5/18   (d) 7/16

38. The probability of choosing at random a number that is divisible by 6 or 8 form among 1 to 90 is:

    (a) 1/6   (b) 11/90   (c) 1/30   (d) 23/90

39. Two unbiased six faced dice are thrown. The probability that the sum of the numbers on faces of them is a prime number greater than 5 is:

    (a) 1/6   (b) 1/4   (c) 2/9   (d) 4/9

40. Two dice are thrown at a time Find the probability that the sum of the numbers on them is 6.

   (a) 5/36   (b) 1/5   (c) 2/3   (d) 1/3

41. The probability of getting a total score of 7 when two unbiased dice are thrown simultaneously is:

   (a) $\frac{7}{36}$ (b) $\frac{29}{36}$ (c) $\frac{1}{6}$ (d) $\frac{5}{6}$

42. A coin is tossed 3 times. The probability of getting head once and tail 2 times is:

   (a) $\frac{1}{8}$ (b) $\frac{1}{4}$ (c) $\frac{3}{8}$ (d) $\frac{1}{2}$

43. One of the two mutually exhaustive events A and B must occur. If P (A) = 2/3 P(B), the odds in favour of B are:

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

44. The probabilities of two events A and B are 0.25 and 0.40 respectively. The probability that both A and B occur is 0.15. The probability that neither A nor B occours is:

   (a) 0.35   (b) 0.65   (c) 0.5   (d) 0.75

45. A bag contains 5 black balls, 4 white balls and 3 red balls. If a ball is selected at random, the probability that it is either red or black is:

   (a) 1/3   (b) 1/4   (c) 5/12   (d) 2/3

46. A card is drawn from a pack of 100 cards numbered 1 to 100. The probability of drawing a number which is a square is:

   (a) 1/5   (b) 2/5   (c) 1/10   (d) None of these

47. The probability that a man will live 10 more years is 1/4 and the probability that his wife will live 10 more years is 1/3. Then, the probability that neither will be alive in 10 years is:

   (a) 5/12   (b) 1/2   (c) 7/12   (d) 11/12

48. If three dice are thrown simultaneously then the probability of getting a score of 5 is

   (a) 5/216   (b) 1/6   (c) 1/36   (d) 1/72

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

   (a) 1/6   (b) 1/36   (c) 1/18   (d) 3/28

50. Two dice are thrown together. The probability that at least one will show its digit greater than 3 is:

   (a) 1/4   (b) 3/4   (c) 1/2   (d) 1/8

51. If E is an event, then P $(\bar{E})$ is equal to

   (a) P(E)   (b) 1 – P(E)   (c) – P (E)   (d) 1 + P(E)

52. A card is drawn at random from a well shuffled pack of 52 cards. The probability of getting a

heart or a diamond is:

   (a) 1/26   (b) 1/2   (c) 3/13   (d) 1

53. If there are 3. children in a family, then probability that there is a one girl in the family is:

   (a) 2/3   (b) 1/3   (c) 3/28   (d) 3/8

54. If the probability of a horse A winning a race is 1/6 and the probability of a horse B winning the same race is 1/4. What is the probability that none of them will win?

   (a) 5/12   (b) 5/8   (c) 1/12   (d) None of these

55. The chance of getting 7 or 11 in a throw of 2 dice is:

   (a) 7/9   (b) 5/9   (c) 2/9   (d) None of these

56. Two dice are thrown together. The probability of the event that the sum of numbers shown in greater than 5 is:

   (a) 13/18   (b) 15/18   (c) 1   (d) None of these

57. Probability of throwing an odd number with an ordinary six faced dice is:

   (a) 1/2   (b) 1   (c) –1/2   (d) 0.

58. Three coins are tossed together. The probabiltiy of getting exactly two heads is

   (a) 5/8   (b) 3/8   (c) 1/8   (d) None of these

59. The probability of getting a number between 1 and 100 which is divisible by 1 and itself only is:

   (a) 25/100   (b) 25/98   (c) 24/99   (d) 24/98

60. A card is drawn at random from a packet of 100 cards numbered 1 to 100. The probability of drawing a number which is a square is:

   (a) 10/100   (b) 9/100   (c) 2/100   (d) 50/100

61. A number is chosen at random among the first 120 natural numbers. The probability of the number chosen being a multiple of 5 or 15 is:

   (a) 1/8   (b) 1/7   (c) 1/6   (d) 1/5

62. With the unusual notations $P(\overline{A}) = 3/4$, $P(B) = p$, $P(A \cup B) = 1/3$, Also. A, B are mutually exclusive events. Then, $p =$

   (a) 1/12   (b) 1/4   (c) 1/2   (d) 2/3

63. In a family, there are 3 children. What is the probability that the family has no male child assuming that the chances of a child being a male or female are equal ?

   (a) 1/8   (b) 7/8   (c) 3/8   (d) 2/3

64. A salesman has a 60% chance of making a sale to each customer. The behaviour of successive

customers is independent. If two customers A and B enter, what probability that the salesman will make a sale to A or B ?

(a) 0.36   (b) 0.84   (c) 0.96   (d) 0.74

65. What is the probability that a non-leap year should have 53 Mondays?

(a) 6/7   (b) 1/7   (c) 2/7   (d) 5/7

66. A number is selected from 1, 2...., 30 at random. The probability that the number selected is prime is:

(a) 1/10   (b) 1/15   (c) 11/30   (d) 1/3

67. When a coin is tossed three times, the probability of getting exactly one tail or two tails or:

(a) 5/8   (b) 3/4   (c) 7/8   (d) 2/6

68. If $P(A) = 1/4$, $P(B) = 1/2$; $P(A \cup B) = 5/8$, then $P(A \cap B)$ is :

(a) 3/8   (b) 1/8   (c) 2/8   (d) 5/8

69. When two dice are thrown, the probability of getting equal numbers is:

(a) 3/36   (b) 1/36   (c) 6/36   (d) None of these

70. Three integers are chosen at random without replacement from the first 20 natural numbers. The probability that the product is even is:

(a) 2/19   (b) 14/19   (c) 15/19   (d) 17/19

71. 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

72. Probability of getting a head when two unbiased coins are tossed simultaneously is:

(a) 0.25   (b) 0.50   (c) 0.20   (b) 0.72

73. 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

74. When two unbiased coins are tossed. The probability of obtaining 2 heads is:

(a) 0   (b) 1/4   (c) 3/4   (d) 1/2

75. 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

76. A bag contains 12 balls which are numbered from 1 to 12. If a ball is selected at random, what is the probability that the number of the ball will be a multiple of 5 or 6?

(a) 0.30   (b) 0.25   (c) 0.20   (d) 1/3

77. Four digits 1, 2, 4 and 6 are selected at random to form a four digit number. What is the probability

that the number so formed, would be divisible by 4?

(a) 1/2   (b) 1/5   (c) 1/4   (d) 1/3

78.   If two unbiased dice are rolled, what is the probability of getting points neither 6 nor 9?

(a) 0.25   (b) 0.50   (c) 0.75   (d) 0.80

79.   Mr. Roy is selected for three separate posts. For the first post, there are three candidates, for the second, there are five candidates and for the third, there are 10 candidates. What is the probability that Mr. Roy would be selected? [SM]

(a) 12/25   (b) 13/25   (c) 11/25   (d) None

80.   The independent probabilities that the three sections of a costing department will encounter a computer error are 0.2, 0.3 and 0.1 per week respectively what is the probability that there would be [SM]

(i) at least one computer error per week?

(ii) one and only one computer error per week?

(a) 0.50, 0.40   (b) 0.50, 0.41   (c) 0.51, 0.40   (d) None

81.   If for two independent events A and B, $P(A \cup B) = 2/3$ and $P(A) = 2/5$, what is $P(B)$? [SM]

(a) 4/15   (b) 4/9   (c) 5/9   (d) 7/15

82.   For three events A, B and C, the probability that only A occur is [SM]

(a) $P(A)$ (b) $P(A \cup B \cup C)$ (c) $P(A' \cap B \cap C)$ (d) $P(A \cap B' \cap C')$

83.   The probability that a card drawn at random from the pack of playing cards may be either a queen or an ace is [SM]

(a) 2/13   (b) 11/13   (c) 9/13   (d) none

84.   The chance of getting 7 or 11 in a throw of 2 dice is [SM]

(a) 7/9   (b) 5/9   (c) 2/9   (d) none

85.   Two students work independently on a problem. The probability that the first one will solve it is 3/4 and the probability that the second one will solve it is 2/3. The probability that the problem is solved is:

(a) 11/12   (b) 7/12   (c) 5/12   (d) 1/12

86.   A and B are mutually exclusive events with $P(A) = 1/2 P(B)$ and $(A \cup B) = S$, the sample space. Then $P(A) =$

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

87.   A problem in examination is given to 3 students A, B and C when chances of sloving it are

$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ repectively. The probability that the problem is solved is

(a) 3/4   (b) 1/24   (c) 1/4   (d) 23/24

88. If S is a sample space, P(A) = 1/3 P(B) and S = $(A \cup B)$, Where A, B are two mutually exclusive events, then P (A) =

(a) 1/4   (b) 1/2   (c) 3/4   (d) 3/8

89. The probability of happening an event A in one trial is 0.4. The probability that the event A happens at least once in three independent trials is:

(a) 0.626   (b) 0.784   (c) 0.802   (d) 0.316

90. One card is drawn from a pack of 52 cards, The probability that it is a king or diamond is:

(a) 3/16   (b) 3/26   (c) 4/13   (d) 4/26

91. The probability of getting a total of 5 or 6 in a single throw of 2 dice is :

(a) 1/3   (b) 1/4   (c) 1/5   (d) 1/6

92. Given two mutually exclusive events A and B, such that P (A) = 0.45 and P(B) = 0.35, then P (A or B)=

(a) 0.5   (b) 0.05   (c) 0.25   (d) 0.8

93. A coin is tossed 10 times. The probability of getting exactly six heads is

(a) 512/105   (b) 105/512   (c) 100/513   (d) $^{10}C_6$

94. A pack of cards contains 4 aces, 4 kings, 4 queens and 4 jacks. Two cards are drawn at random. The probability that at least one of them is an ace is:

(a) 1/5   (b) 3/16   (c) 7/16   (d) 1/9

95. If A and B are events, such that P (A) = 0.42, P(B) = 0.48 and P $(A \cap B)$ = 0.16, then P(A + B) is equal to

(a) 0.9   (b) 0.74   (c) 0.2016   (d) None of these

96. A problem is given to three persons and their chances of solving it are $\frac{1}{3}, \frac{1}{5}, \frac{1}{6}$ respectively. The probability that none will solve it is:

(a) $\frac{1}{3} \times \frac{1}{5} \times \frac{1}{6}$ (b) $\frac{2}{3} \times \frac{4}{5} \times \frac{5}{6}$ (c) $1 - \frac{2}{3} \times \frac{4}{5} \times \frac{5}{6}$ (d) $\frac{1}{3} + \frac{1}{5} + \frac{1}{6}$

97. If A and B are two incidencies and P (A) = 3/8, P (B) = 1/2, P $(A \cap B)$ = 1/4, then the value of P $(A \cup B)$ is :

(a) 3/8   (b) 3/4   (c) 1/4   (d) 5/8

98. The odds against an event A are 5 : 2 and odds in favour of another independent event B are

6 : 5. The changes that neither A nor B occurs is:

(a) 52/77 (b) 25/77 (c) 10/77 (d) 12/77

99. The probability that the events (independent) A and B occur are 0.2 and 0.5 respectively. The probability that both A and B occur simultaneously is 0.15. The probability that neither A nor B occurs is:

(a) 0.55 (b) 0.5 (c) 0.45 (d) 0.35

100. If the probability for A to fail in an examination is 0.2 and that for B is 0.3, then the probability that either A fails or B fails is:

(a) 0.5 (b) 0.44 (c) 0.06 (d) None of these

101. The odds in favour of one student passing a test are 3:7. The odds against another student passing it are 3 : 5. The probability that both pass is:

(a) 5/16 (b) 21/80 (c) 9/80 (d) 3/16

102. The odds in favour of one student passing a test are 3 : 7. The odds against another student passing at are 3 : 5. The probability that both fail is:

(a) 7/16 (b) 21/80 (c) 9/80 (d) 3/16

103. Find the odds against drawing 2 red balls from a bag containing 3 red and 2 voilet balls.

(a) 3 : 7 (b) 7 : 3 (c) 2 : 1 (d) 3 :2

104. Let A and B be two events, such that P(A) = 0.3 and $P\left(A \cup \overline{B}\right) = 0.8$, If A and B are independent events, then P(B) =

(a) 5/7 (b) 2/7 (c) 1/2 (d) None of these

105. Find the odds, against the sitting of two particular persons together, out of n persons seated round a circular table.

(a) 2: (n−3) (b) (n−2) : 2 (c) 2: (n−2) (d) (n−3) : 2

106. If A and B are two events, such that P (A) = 1/2 and P (B) = 2/3, then

(a) $P\left(A \cup B\right) \geq 2/3$ (b) $P\left(A \cup B\right) \leq 2/3$ (c) $P\left(A \cup B\right) \geq 1/2$ (d) $P\left(A \cup B\right) \leq 1/2$

107. The probability that a student passes a physics test is 2/3 and the probability that he passes both a physics test and an English Test is 14/45. The probability that he passes at least one test is 4/5. What is the probability that he passes the English Test?

(a) 4/9 (b) 1/20 (c) 4/5 (d) 2/6

108. The odds against A solving a problem are 8 to 6 and odds in favour of B solving the same

problem are 14 to 10. What is the probability the if both of them try the problem, it will be solved?

(a) 31/32

(b) 16/21

(c) 5/21

(d) 1/32

109.   A, B, C are three mutually independent with probabilities 0.3, 0.2 and 0.4 respectively. What is $P(A \cap B \cap C)$?

(a) 0.400

(b) 0.240

(c) 0.024

(d) 0.500.

110.   For three events A, B and C, the probability that only A occur is:

(a) P (A)

(b) P $(A \cup B \cup C)$

(c) P$(A' \cap B \cap C)$

(d) P $(A \cap B' \cap C')$

111.   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? [SM]

(a) 76/99

(b) 78/99

(c) 79/99

(d) None

112.   A pair of dice is thrown together and the sum of points of the two dice is noted to be 10. What is the probability that one of the two dice has shown the point 4? [SM]

(a) 2/3

(b) 1/3

(c) 4/3

(d) None

113.   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. [SM]

(a) 27/50

(b) 26/50

(c) 28/50

(d) None

114.   There are three boxes with the following compositions : [SM]

Colour / Box	Blue	Red	White	Total
I	5	8	10	23
II	4	9	8	21
III	3	6	7	16

One ball in drawn from each box. What is the probability that they would be of the same colour?

(a) 1051/7728 (b) 1050/7728 (c) 1052/7728 (d) None

115.   Two balls are drawn from a bag containing 5 white and 7 black balls at random. What is the probability that they would be of different colours? [SM]

(a) 35/66

(b) 30/66

(c) 12/66

(d) None of these

116.   The odds in favour of one student passing a test are 3:7.The odds against another student

passing at are 3:5.The probability that both pass is[SM]

(a) 7/16   (b) 21/80   (c) 9/80   (d) 3/16

117. The odds in favour of one student passing a test are 3:7.The odds against another student passing at are 3:5. The probability that both fail is[SM]

(a) 7/16   (b) 21/80   (c) 9/80   (d) 3/16

118. If the probability of a horse A winning a race is 1/6 and the probability of a horse B winning the same race is 1/4 , what is the probability that one of the horses will win[SM]

(a) 1/3   (b) 7/12   (c) 1/12   (d) none

119. If the probability of a horse A winning a race is 1/6 and the probability of a horse B winning the same race is 1/4 , What is the probability that none of them will win[SM]

(a) 5/12   (b) 5/8   (c) 1/12   (d) none

120. A salesman has 80 percent chances of making a sale to each customer. The behaviour of succesive customer is assumed to be independent. If 2 customers A and B enter, what is the probability that salesman will make a sale to A or B?

(a) 24/25   (b) 23/25   (c) 21/25   (d) None

121. The probability that A can solve a problem is 2/3 and that B can solve is 3/4. If both of them attempt the problem, what is the probability that the problem get solved?

(a) 11/12   (b) 7/12   (b) 5/12   (d) 9/12.

122. A and B are events and P(A) = 0.4, P $(A \cup B)$ = 0.7. If A and B are independent, then P (B) is:

(a) 0.2   (b) 0.3   (c) 0.4   (d) 0.5

123. The probability of getting qualified in IIT JEE and AIEEE by a student are respectively 1/5 and 3/5. The probability that the student gets qualified for at least one of these tests is:

(a) 3/25   (b) 17/25   (c) 22/25   (d) 8/25

124. The probability that A speaks truth is 4/5, while this probability for B is 3/4. The probability that they contradict each other when asked to speak on a fact is:

(a) 7/20   (b) 1/5   (c) 3/20   (d) 4/5

125. Seven balls are drawn simultaneously from a bag containing 5 white and 6 green balls. The

probability of drawing 3 white and 4 green balls is

(a) $\dfrac{7}{^{11}C_7}$
(b) $\dfrac{^5C_3 + {}^6C_4}{^{11}C_7}$
(c) $\dfrac{^5C_2 \cdot {}^6C_2}{^{11}C_7}$
(d) $\dfrac{^6C_3 \cdot {}^5C_4}{^{11}C_7}$

126. In a class, 30% of the students offered MATHEMATICS, 20% offered BIOLOGY and 10% offered both, If a student is selected at random, what is the probability that he has offered MATHEMATICS or BIOLOGY ?

(a) 1/3   (b) 2/3   (c) 2/5   (d) 3/5

127. A Speaks truth in 75% cases and B speaks truth in 80% cases. The proability that they contradict each other in a statement is:

(a) 7/20   (b) 13/20   (c) 3/5   (d) 2/5

128. If $P(A) = \dfrac{2}{3}$, $P(B) = \dfrac{3}{5}$ and $P(A \cup B) = \dfrac{5}{6}$ then $P\left(\dfrac{A}{B^1}\right)$ is

(a) $\dfrac{7}{12}$
(b) $\dfrac{5}{12}$
(c) $\dfrac{1}{4}$
(d) $\dfrac{1}{2}$

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

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

130. The probability of having at least one tail in 4 throws with a coin is:

(a) 15/16   (b) 1/16   (c) 1/4   (d) 1.

131. An urn contains 3 white and 3 red balls. Balls are taken out one by one at random from the urn and kept in a row. The chance that the balls are alternatively of different colours is:

(a) 1/20   (b) 1/10   (c) 9/120   (d) None of these

132. 3 mangoes and 3 apples are in a box. If 2 fruits are chosen at random, the proability that one is a mango and the other is an apple is:

(a) 3/5   (b) 5/6   (c) 1/36   (d) None of these

133. There are four letters and four envelops bearing addresses at random. The proability that the

letters are placed in correct envelops is:

(a) 23/24　　　　(b) 9/24　　(c) 1/16　　　(d) 1/24

134. From a well shuffled pack of playing cards, two cards are drawn one by one without replacement. The probability that both are aces is:

(a) 2/13　　　　(b) 1/51　　　(c) 1/221　　　(d) None of these

135. 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) 5/84　　　　(b) 3/9　　　(c) 3/7　　　(d) 7/17

136. 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 a king is:

(a) 13/4　　　　(b) 4/13　　　(c) 1/52　　　(d) 1/104

137. Let A and B be two independent events. The probability that both A and B occur is 1/2 and the probability the neither A nor B occurs is 1/2. The respective probabilities of A and B are:

(a) 1/6 and 1/2　　(b) 1/2 and 1/6　　(c) 1/3 and 1/4 or 1/4 and 1/3　(d) None

138. From a pack of cards two cards are drawn successfully at random without replacement. Find the chance that the first is a king and the second is a queen.

(a) 1/663　　　　(b) 4/663　　　(c) 2/663　　　(d) None of these

139. Three electric lamps are fitted in a room. 3 bulbs are chosen at random from 20 bulbs having 16 good bulbs. The probability that the room is lighted is

(a) 282/285　　　(b) 283/285　　(c) 284/285　　(d) 281/285

140. A five figure number is formed by the digits 4, 5, 6, 7, 8 (no digit being repeated in any number). Find the probability that the number formed is divisible by 5.

(a) 1/5　　　　(b) 4/5　　　(c) 1/30　　　(d) 1/336

141. A speaks truth in 80% cases and B in 70% cases. The probability that they will contradict each other in a single event is:

(a) 0.12　　　　(b) 0.38　　　(c) 0.36　　　(b) 0.40

142. Two balls are drawn form a bag containing 5 white and 7 black balls at random. What is the probability that they would be of different colours?

(a) 35/66　　　　(b) 30/66　　　(c) 12/66　　　(d) None of these

143. Tom speaks truth in 30% cases and Dick speaks truth in 25% cases. What is the probability

that they would contradict each other?

    (a) 0.35   (b) 0.400   (c) 0.925   (d) 0.075

144.   A , B , C are three mutually independent with probabilities 0.3 , 0.2 and 0.4 respectively. What is $P(A \cap B \cap C)$?

    (a) 0.400   (b) 0.240   (c) 0.024   (d) 0.500

145.   If events A and B are independent and P(A) = 2/3 , P(B) = 3/5 then P(A+B) is equal to (SM)

    (a) 13/15   (b) 6/15   (c) 1/15   (d) none

146.   If P(A) = 3/8 , P(B) = 1/3 and P(AB) = 1/4 then P(A+B) is

    (a) 13/24   (b) 11/24   (c) 17/24   (d) none

147.   What is the probability that 4 children selected at random would have different birthdays?

    (a) $\dfrac{364 \times 363 \times 362}{(365)^3}$ (b) $\dfrac{6 \times 5 \times 4}{7^3}$ (c) 1/365   (d) $(1/7)^3$

148.   There are two boxes containing 5 white and 6 blue balls and 3 white and 7 blue balls resectively. If one of the boxes is selected at random and a ball is drawn from it, then the probability that the ball is blue is:

    (a) 115/227   (b) 83/250   (c) 137/220   (d) 127/250

149.   Let A and B be the events with P(A)= 1/3, P(B) = 1/4 and P(AB)= 1/12 then P(A/B) is equal to[SM]

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

150.   Let A and B be the events with P(A)= 2/3, P(B)= 1/4 and P(AB)= 1/12 then P(B/A) is equal to[SM]

    (a) 7/8   (b) 1/3   (c) 1/8   (d) none

151.   A family has 2 children. The probability that both of them are boys if it is known that one of them is a boy[SM]

    (a) 1   (b) 1/2   (c) 3/4   (d) none

152.   The Probability of the occurrence of a number greater then 2 in a throw of a die if it is known that only even numbers can occur is[SM]

    (a) 1/3   (b) 1/2   (c) 2/3   (d) none

153.   A player has 7 cards in hand of which 5 are red and of these five 2 are kings. A card is drawn at random. The probability that it is a king, it being known that it is red is[SM]

    (a) 2/5   (b) 3/5   (c) 4/5   (d) none

154.   In a class 40 % students read Mathematics, 25 % Biology and 15 % both Mathematics and

Biology. One student is select at random. The probability that he reads Mathematics if it is known that he reads Biology is[SM]

(a) 2/5   (b) 3/5   (c) 4/5   (d) none

155. In a class 40 % students read Mathematics, 25 % Biology and 15 % both Mathematics and Biology. One student is select at random. The probability that he reads Biology if he reads Mathematics[SM]

(a) 7/8   (b) 1/8   (c) 3/8   (d) none

156. A bag X contains 2 white and 3 black balls and another bag Y contains 4 white and 2 black balls. One bag is selected at random and a ball is drawn from it. Then the probability for the ball chosen be white is to

(a) 2/15   (b) 7/15   (c) 8/15   (d) 14/15

157. 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) 1/18   (b) 1/2   (c) 49/50   (d) 1/50

158. A and B are events, such that $P(A \cup B) = 3/4$, $P(A \cap B) = 1/4$, $P(\overline{A}) = 2/3$, then $P(\overline{A} \cap B)$ is:

(a) 5/12   (b) 3/8   (c) 5/8   (d) 1/4

159. Three letters are written to different persons and addresses on the envelops are also written. Without looking at the addresses, the letters are put into the envelops; the probability that letters go into right envelops is:

(a) 1/27   (b) 1/6   (c) 1/9   (d) 1/8

160. The probability that a marksman will hit a target is given as 1/5. Then, the proability of at least one hit in 10. shots is

(a) $\dfrac{1}{5^{10}}$ (b) $1 - \left(\dfrac{4}{5}\right)^{10}$ (c) $1 - \dfrac{1}{5^{10}}$ (d) $\left(\dfrac{4}{5}\right)^{10}$

161. If $P(A \cap B) = 0.15$, $P(B^C) = 0.10$, then $P(A/B)$ is

(a) 1/3   (b) 1/4   (c) 1/5   (d) 1/6

162. An urn contains 7 green and 5 yellow balls. Two balls are drawn at a time. The probability that both balls are of same colour is:

(a) 1/33   (b) 5/33   (c) 7/22   (d) 31/66

163. A and B are two events such that P(A) = 1/3, P(B) = 1/4, P(A+B) = 1/2, then P (B/A) is equal to

(a) 1/4   (b) 1/3   (c) 1/2   (d) None of these

164. The probability of the occurrence of a number greater then 2 in a throw of a dice if it is known that only even nos. can occur is:

     (a) 1/3   (b) 1/2   (c) 2/3   (d) None of these

165. A player has 7 cards in hand of which 5 are red and of these five 2 are kings. A card is drawn at random. The probability that it is a king, it being known that it is red is:

     (a) 2/5   (b) 3/5   (c) 4/5   (d) None of these

166. If $P(E) = 0.3$, $P(F) = 0.2$ and $P(E \cup F) = 0.4$, $P(\overline{E} \cup F)^c =$

     (a) 0.4   (b) 0.3   (c) 0.2   (d) 0.1

167. A bag contains 3 white, 3 black and 2 red balls. One by one, 3 balls are drawn without replacing them. For only the third ball to be red, The probability is :

     (a) 5/28   (b) 3/28   (c) 3/56   (d) 1/28

168. 6 boys and 6 girls sit in row at random. The probability that all the girls sit together is:

     (a) 1/432   (b) 12/431   (c) 1/132   (d) None of these

169. Seven boys and six girls sit in a row at random. Find the probability that no two boys and no two girls sit together.

     (a) 7/132   (b) 5/264   (c) 1/1716   (d) None of these

170. The letters of the word FAILURE are arranged at random. Find the probability that the consonants may occupy odd positions.

     (a) 1/210   (b) 4/35   (c) 6/35   (d) None of these

171. If two events A and B are such that $P(\overline{A}) = 0.3$, $P(B) = 0.4$ and $P(A \cap \overline{B}) = 0.5$, then $P(B / \overline{A} \cup \overline{B}) =$

     (a) 1/3   (b) 1/4   (c) 1/2   (d) 1/5

172. The letters of the word UNIVERSITY are arranged at random. Find the probability for I's not to come together.

     (a) 9/10   (b) 1/10   (c) 1/5   (d) 4/5

173. A single letter is selected at random from the word 'PROBABILITY'. The probability that it is a vowel is

     (a) 3/11   (b) 4/11   (c) 2/11   (d) 0.

174. For a student, the probability of getting pass in one paper is 75% and the probability of getting

pass in another paper is 60%. The probability for the student to pass in one paper (of the two papers) only is:

(a) 3/10   (b) 13/20   (c) 11/20   (d) 9/20

175. What is the probability that four S's appear consecutively in the word MISSISSIPPI assuming that the letters are arranged at random?

(a) 8/165   (b) 4/165   (c) 2/33   (d) None of these

176. 3 Students are chosen at random from a class consisting of 12 boys and 4 girls. Find the probability for 3 chosen students to be boys.

(a) 11/28   (b) 17/28   (c) 1/28   (d) 4/28

177. A, B stood along with 10 others in a row. The proability of the event of always having 3 persons between A and B is:

(a) 2/33   (b) 1/132   (c) 2/15   (d) 8/33

178. The letters of the word ARTICLE are arranged at random. Find the probability that the consonants may occupy odd places.

(a) 1/840   (b) 1/210   (c) 1/35   (d) None of these

179. The letters of the word SUCCESS are arranged at random. The probability that the vowels occupy even places is:

(a) 1/6   (b) 1/7   (c) 1/5   (d) 2/5

180. Six boys and six girls sit in a row only. The probability that the boys and girls sit alternately is:

(a) 1/132   (b) 1/462   (c) 1/480   (d) 1/12

181. The letters of the word 'TRIANGLE' are arranged at random. Find the probability that the word so formed starts with T and ends with R.

(a) 2/8!   (b) 6/8!   (c) 1/28   (d) 1/56

182. Urn A contains 6 red and 4 black balls and urn B contains 4 red and 6 black balls. One ball is drawn at random from urn A and placed in urn B. Then one ball is drawn at random from urn B and placed in urn A. If one ball is now drawn form urn A, the probability that it is found to be red is:

(a) 32/55   (b) 42/55   (c) 36/55   (d) none of these

183. A bag contains 5 red, 3 black balls and a second bag contains 4 red and 5 black balls. One of

the bags is chosen at random and a draw of two balls is made from it. Find the chance that one is red and the other is black.

(a) 15/56   (b) 5/18   (c) 275/504   (d) 229/504.

184.   There are two boxes. In the first box, there are 4 white, 5 black balls. In the second box, there are 5 white. 4 black balls. A ball at random is drawn from the first box and transferred to the second box. Then, if a ball is drawn at random from the second box, find the probabilitty for the drawn ball to be white.

(a) 2/81   (b) 59/90   (c) 49/90   (d) 41/90.

185.   Two coins are tossed simultaneously. What is the probability that the second coin would show a tail given that the first coin has shown a head?

(a) 0.50   (b) 0.25   (b) 0.75   (d) 0.125

186.   A committee of 7 members is to be formed from a group comprising 8 gentlemen and ladies. What is the probability that the committee would comprise: [SM]

(i) 2 ladies,

(ii) at least 2 ladies.

(a) 141/429, 391/429   (b) 142/429, 393/429 (c) 140/429, 392/429   (d) None

187.   In a group of 20 males and 15 females, 12 males and 8 females are service holders. What is the probability that a person selected at random from the group is a service holder given that the selected person is a male? [SM]

(a) 0.60   (b) 0.61   (c) 0.62   (d) None

188.   A lot of 10 electronic components is known to include 3 defective parts. If a sample of 4 components is selected at random from the lot, what is the probability that this sample does not contain more than one defectives? [SM]

(a) 2/4   (b) 2/3   (c) 2/5   (d) None

189.   There are two urns containing 5 red and 6 white balls and 3 red and 7 white balls respectively. If two balls are drawn from the first urn without replacement and transferred to the second urn and then a draw of another two balls is made from it, what is the probability that both the balls drawn are red? [SM]

(a) 66/726   (b) 67/726   (c) 65/726   (d) None

190. There are 3 boxes with the following composition : [SM]

Box I : 7 Red + 5 White + 4 Blue balls

Box II : 5 Red + 6 White + 3 Blue balls

Box III : 4 Red + 3 White + 2 Blue balls

One of the boxes is selected at random and a ball is drawn from it. What is the probability that the drawn ball is red?

(a) 1239/3024   (b) 1249/3024   (c) 1229/3024   (d) None

191. What is the chance of getting at least one defective item if 3 items are drawn randomly from a lot containing 6 items of which 2 are defective item? [SM]

(a) 0.30   (b) 0.20   (c) 0.80   (d) 0.50

192. If A, B and C are mutually exclusive independent and exhaustive events then what is the probability that they occur simultaneously? [SM]

(a) 1   (b) 0.50   (c) 0   (d) any value between 0 and 1

193. If P (A) = p and P (B) = q, then [SM]

(a) $P(A/B) \geq p/q$ (b) $P(A/B) \leq p/q$ (c) $P(A/B) \leq q/p$ (d) None of these

194. If P $\left(\overline{A} \cup \overline{B}\right)$ = 5/6, P(A) = ½ and P $\left(\overline{B}\right)$ = 2/3, , what is P $\left(A \cup B\right)$? [SM]

(a) 1/3   (b) 5/6   (c) 2/3   (d) 4/9

195. If variance of a ranodm variable x is 23, then what is the variance of $2x+10$?

(a) 56   (b) 33   (c) 46   (d) 92

196. If x and y are random variables having expected values as 4.5 and 2.5 respectively, then the expected value of $(x-y)$ is

(a) 2   (b) 7   (c) 6   (d) 0

197. There are 3 black and 2 white balls in a box. Two balls are taken at random from it. The expected number of white balls is:

(a) 1/5   (b) 4/5   (c) 3/5   (d) 2/5

198. There are 10 electric bulbs in a box in which 3 are defective bulbs. If 3 bulbs are selected at random from the box, then the expected number of defective bulbs is:

(a) 0.7   (b) 0.9   (c) 0.6   (d) 0.5

199. Two coins are tossed simultaneously. A person receives Rs. 8 for each head and looses Rs. 10 for each tail. The expected value of the amount gained by him (in rupees) is:

    (a) 2   (b) –2   (c) 3   (d) –4

200. A player tosses 3 fair coins. He wins Rs. 5 if 3 heads appear, Rs. 3 if 2 heads appear, Re 1 if 1 head appears. On the other hand he losses Rs. 15 if 3 tails appear. His expected gain (in rupees) is:

    (a) 0.15   (b) 0.25   (c) –0.25   (d) –0.15

201. Two tickets are taken at random from 5 tickets numbers 1 to 5. The expected value of the sum obtained on the two tickets is:

    (a) 5   (b) 3   (c) 6   (d) 7

202. There are 8 screws in a packet of which 2 are defective. If 2 screws are taken at random then the expected number of defective screws is:

    (a) 0.5   (b) 0.3   (c) 0.05   (d) 0.6

203. A random variable has the following probability distribution: [SM]

X	4	5	7	8	10
P	0.15	0.20	0.40	0.15	0.10

    Find $E[x - E(x)]^2$. Also obtain $v(3x - 4)$

    (a) 27.36   (b) 26.36   (c) 25.36   (d) None

204. If two random variables x and y are related by $y = 2 - 3x$, then the SD of y is given by [SM]

    (a) –3 × SD of x   (b) 3 × SD of x   (c) 9 × SD of x   (d) 2 × SD of x.

205. If x and y are random variables having expected values as 4.5 and 2.5 respectively, then the expected value of (x–y) is [SM]

    (a) 2   (b) 7   (c) 6   (d) 0 54.

206. If variance of a random variable x is 23, then what is the variance of 2x+10? [SM]

    (a) 56   (b) 33   (c) 46   (d) 92

207. If two random variables x and y are related as $y = -3x + 4$ and standard deviation of x is 2, then the standard deviation of y is [SM]

    (a) – 6   (b) 6   (c) 18   (d) 3.50

208. If $2x + 3y + 4 = 0$ and $v(x) = 6$ then $v(y)$ is [SM]

    (a) 8/3   (b) 9   (c) – 9   (d) 6

209. The expected number of head in 100 tosses of an unbiased coin is[SM]

    (a) 100   (b) 50   (c) 25   (d) none

210. The expected value of X, the sum of the scores, when two dice are rolled is [SM]

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

211. The probability of winning of a person is 6/11 and at a result he gets Rs. 77/-. The expectation of this person is[SM]

   (a) Rs. 35/-   (b) Rs. 42/-   (c) Rs. 58/-   (d) none

Additional Question Bank

1	b	44	c	87	a	130	a	173	b
2	a	45	d	88	a	131	b	174	d
3	c	46	c	89	b	132	a	175	b
4	d	47	b	90	c	133	d	176	a
5	b	48	c	91	b	134	c	177	c
6	d	49	b	92	d	135	a	178	c
7	b	50	b	93	b	136	c	179	b
8	d	51	b	94	c	137	c	180	b
9	a	52	b	95	b	138	b	181	d
10	b	53	d	96	b	139	c	182	a
11	a	54	b	97	d	140	a	183	c
12	a	55	c	98	b	141	b	184	c
13	c	56	a	99	c	142	a	185	a
14	b	57	a	100	b	143	b	186	c
15	b	58	b	101	d	144	c	187	a
16	c	59	b	102	b	145	a	188	b
17	c	60	a	103	b	146	b	189	c
18	d	61	d	104	b	147	a	190	b
19	a	62	a	105	d	148	c	191	c
20	a	63	a	106	a	149	a	192	c
21	c	64	b	107	a	150	c	193	b
22	a	65	b	108	b	151	d	194	c
23	a	66	d	109	c	152	c	195	d
24	a	67	b	110	d	153	a	196	a
25	d	68	b	111	c	154	b	197	b
26	c	69	c	112	a	155	c	198	b
27	a	70	d	113	a	156	c	199	b
28	c	71	a	114	c	157	c	200	b
29	b	72	b	115	a	158	a	201	c
30	d	73	a	116	d	159	b	202	a
31	d	74	b	117	b	160	b	203	a
32	b	75	b	118	a	161	d	204	b
33	c	76	d	119	b	162	d	205	a
34	a	77	d	120	a	163	a	206	d
35	b	78	c	121	a	164	c	207	b
36	b	79	b	122	d	165	a	208	a
37	b	80	a	123	b	166	c	209	b
38	d	81	b	124	a	167	b	210	d
39	c	82	d	125	c	168	c	211	b
40	a	83	a	126	c	169	c		
41	c	84	c	127	a	170	b		
42	c	85	a	128	a	171	b		
43	d	86	b	129	d	172	d		

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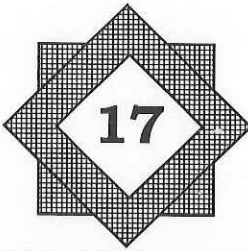
ADDITIONAL QUESTION BANK

1. In a binomial distribution, the probability of a success $p = 1/6$ and its variance is 5/12. The number of successes n is:

   (a) 5   (b) 3   (c) 7   (d) 2.

2. A binomial distribution has its mean 9 and the number of successes n = 12. The standard deviation of the distribution is:

   (a) 3/2   (b) 7/2   (c) 1/2   (d) 11/2

3. The sum and product of the mean and variance of a binomial distribution are 24 and 128 respectively. Then, the value of n is:

   (a) 32   (b) 22   (c) 27   (d) 35

4. In a binomial distribution, the sum and product of the mean and variance are 25/3 and 50/3 respectively. The value of n is:

   (a) 12   (b) 15   (c) 17   (d) 19

5. A die is thrown 5 times. Getting a number 5 on the die is considered a success. Then, the probability of zero success is:

   (a) $(5/6)^5$ (b) $(1/6)^5$ (c) $1 - (1/6)^5$ (d) None of these

6. In a binomial distribution $p = 0.1$ and $n = 500$. its standard deviation is:

   (a) 6.71   (b) 5.71   (c) 6.92   (d) 5.92

7. Three percent of a given lot of manufactured parts are defective. What is the probability that in a sample of four items none will be defective ?

   (a) $(0.97)^4$ (b) $(0.03)^4$ (c) $1 - (0.97)^4$ (d) none of these

8. A student obtained the following answer to a certain problem given to him.

   Mean = 2.4; Variance = 3.2 for a binomial distribution. the result is :

   (a) constant   (b) inconsistant   (c) data incomplete   (d) none of these

9. Four coins are tossed simultaneously. What is the probability of getting 2 heads and 2 tails ?

   (a) 7/8   (b) 5/8   (c) 3/8   (d) 1/8

10. Four coins are tossed simultaneously. The probability of getting at lest one head is:

(a) 15/16   (b) 1/16   (c) 13/16   (d) 7/16

11. The mean of a binomial distribution is 12 and its standard deviation is 2, then the value of n is:

(a) 10   (b) 12   (c) 18   (d) 16

12. The mean of a binomial distribution is 40 and standard deviation is 6. The value of n and q is:

(a) (400, 0.1)   (b) (400, 0.9)   (c) (200, 0.9)   (d) (200, 0.1).

13. If the standard deviation of the binomial distribution $(q + p)^{16}$ is 2, the mean is:

(a) 6   (b) 8   (c) 10   (d) None of these

14. An experiment succeeds twice as often as it fails. Find the probability that in the next 6 trials, there will be at least 5 successes

(a) 496/729   (b) 250/729   (c) 256/729   (d) none of these

15. If the mean and variance of binomial a distributon are 15/14 and 15/16 respectively. The number of trials is:

(a) 5   (b) 4   (c) 16   (d) 20.

16. A binomial random variable satisfies the relation $9P(X=4) = P(X=2)$ for n = 6. The value of the parameter p is:

(a) 1/6   (b) 1/5   (c) 1/3   (d) 1/8

17. An experiment succeeds thrice as after it fails. If the experiment is repeated 5 times, what is the probability of having; no success at all?

(a) 1/824   (b) 1/924   (c) 1/1024   (d) 1/1124

18. 7 coins are tossed 128 times. The distribution function of the binomial is:

(a) $^{128}C_x$ (b) $^{7}C_x$ (c) $^{128}C_7$ (d) none of these

19. The mean of a binomial distribution is 4 and its standard deviation is $\sqrt{3}$. The value of p is:

(a) 0.5   (b) 0.25   (c) 0.75   (d) 0.6

20. The probability of getting at least two heads when tossing a coin three times is:

(a) 1/2   (b) 1/4   (c) 1/8   (d) 3/8

21. The incidence of occupational disease in an industry is such that the workmen have a 10% chance of suffering from it. What is the probability that out of 5 workmen, 3 or more will contract the disease?

(a) 0.0076   (b) 0.0086   (c) 0.0081   (d) 0.0091

22. Find the probability of a success for the binomial distribution satisfying the following relation $4 P (x = 4) = P (x = 2)$ and having the other parameter as six.

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

23. A fair coin is tossed a fixed number of times. If the probability of getting 7 heads is equal to that of 8 heads, then the probability of getting 2 heads is:

(a) $105/2^{15}$ (b) $2/2^{15}$ (c) $105/2^{14}$ (d) none of these

24. If the mean and the variance of a binomial variate X are 2 and 1 respectively, then the probability that X takes a value greater than 1 is equal to:

(a) 5/16   (b) 3/16   (c) 11/16   (d) 13/16

25. Probabilitty of happening of an event in an experiment is 0.4. If the experiment is repeated 3 times under similar conditions, find the probability of the happening of the event atleast once.

(a) 98/125   (b) 27/125   (c) 99/125   (d) 26/125

26. Six coins are tossed once and getting a tail on the coin is considered a success. The probability of getting exactly 4 successes is:

(a) 5/32   (b) 27/32   (c) 15/64   (d) 49/64

27. The probability that bomb dropped from a plane stirkes the target is 1/5. The probability out of six bombs dropped at least 2 bombs striks the target is:

(a) 0.345   (b) 0.246   (c) 0.543   (d) 0.426

28. In a binomial distribution, $n = 400$, $p = 1/5$. Its standard deviation is:

(a) $\sqrt[10]{2}$ (b) 1/800   (c) 4   (d) 8.

29. 6 dice are thrown 729 times. How many times do you expect atleast 4 dice to show a 4 or 5.

(a) 233   (b) 73   (c) 72   (d) 61

30. When 7 coins are tossed, the probability of getting exactly 3 heads is:

(a) 35/128   (b) 93/128   (c) 7/128   (d) 21/128

31. In a binomial distribution, mean is 5 and variances is 4. Then, the number of trials is:

(a) 20   (b) 30   (c) 25   (d) 35

32. A random variable X takes the values –1, 0, 1. Its mean is 0.6. If $P (X = 0) = 0.2$, then $P (X = 1) =$

(a) 0.5   (b) 0.7   (c) 0.6   (d) 0.8

33. In a binomial distribution, $n = 20$, $q = 0.75$. Its mean =

(a) 5   (b) 15   (c) 3   (d) none of these

34. X is a binomial variable such that 2 P (X=2) = P (X = 3) and mean of X is known to be 10/3. What would be the probability that X assumes at most the value 2?

    (a) 16/81   (b) 17/81   (c) 47/243   (d) 46/243

35. What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously?

    (a) 0.50   (b) 0.25   (c) 0.3125   (d) 0.6875

36. X is a binomial variable with n = 20. What is the mean of X if it is known that X is symmetirc?

    (a) 5   (b) 10   (c) 2   (d) 8

37. If X is a binomial variable with parameter 15 and 1/3, what is the value of mode of the distribution

    (a) 5 and 6   (b) 5   (c) 5.50   (d) 6

38. If $X \sim B(n, p)$. What would be the least value of the variance of X when n = 16 ?

    (a) 2   (b) 4   (c) 8   (d) $\sqrt{5}$

39. In a binomial distribution consisting of 5 independent trials, the prababilities of 1 and 2 sucesses are 0.4096 and 0.2048 respectively. The value of the parameter P is:

    (a) 0.2   (b) 0.3   (c) 0.4   (d) 0.5

40. In an experiment the success is twice that of failure. If the experiment is repeated 6 times, the probability that at least 4 times favourable is:

    (a) 64/779   (b) 192/779   (c) 240/779   (d) 496/729

41. 6 unbiased coins are tossed. The probability of getting at least 4 heads is:

    (a) 7/32   (b) 11/32   (c) 27/32   (d) 21/32

42. The mean and variance of random variable X having binomial distribution are 4 and 2 respectively. Then, P(X>6) is:

    (a) 9/256   (b) 7/256   (c) 19/256   (d) 21/256

43. The probability of gettting exactly 4 heads in 6 tosses of a coin is:

    (a) 15/60   (b) 15/64   (c) 13/64   (d) 10/64

44. The probability of a man hitting the target is 1/4. If he fires 7 times, the probability of hitting the target at least twice is:

    (a) $1 - \left(\frac{5}{2}\right)\left(\frac{3}{4}\right)^6$ (b) $1 - \frac{15}{2}\left(\frac{3}{4}\right)^6$ (b) $1 - \frac{5}{6} \cdot 3^5$ (d) $1 - \left(\frac{3}{4}\right)^6$

45. A fair die is tossed 8 times. The probability that a third six is observed on the eighth throw is:

(a) $\dfrac{^{7}C_{2} \times 5^{5}}{6^{6}}$ (b) $\dfrac{^{7}C_{2} \times 5^{5}}{6^{7}}$ (c) $\dfrac{^{7}C_{2} \times 5^{5}}{6^{8}}$ (d) None of these

46. The probability that a man can hit a target is 3/4. He tries 5 times. Find the probability that he hits the target at least 4 times.

(a) 81/256   (b) 81/28   (c) 5/128   (d) none of these

47. An unbiased coin is tossed n times. Let X denote the number of times head occurs. If $P(X = 4)$, $P(X = 5)$, $P(X = 6)$ are in A.P., then n=

(a) 7 only   (b) 14 only   (c) 7, 10 only   (d) 7, 14 only

48. If x denotes the number of sixes in four consecutive throws of a dice, then $P_{x = 4}$ is:

(a) 1/1296   (b) 4/6   (c) 1   (d) 1295/1296

49. If the mean of a binomial distribution is 25, then its standard deviation lies in the intervel

(a) [0, 5)   (b) (0, 5]   (c) [0, 25)   (d) (0,25]

50. Five unbiased coins are tossed simultaneously. If the probability of getting at most n heads is 0.5. The value of n is:

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

51. The probability of having a atleast one tail in five throws with a coin is:

(a) 31/32   (b) 1/32   (c) 1/5   (d) 1

52. In eight throws of a die 1 or 3 is considered a success. Then, the standard deviation of sucess is:

(a) 16/9   (b) 8/3   (c) 4/3   (d) 2/3

53. A die is thrown 100 times. If getting an even number is considered a success, then the variance of the number of sucesses is:

(a) 50   (b) 25   (c) 10   (d) 100

54. A die is tossed 5 times. Getting an odd number is considered a success. Then, the variance of distribution of number of sucesses is:

(a) 8/3   (b) 3/8   (c) 4/5   (d) 5/4

55. 8 coins are tossed simultaneously. The chance that head on at least five of them is:

(a) $^{8}C_{5}$ (b) $^{8}C_{5}\left(\dfrac{1}{2}\right)^{8}$ (c) $\dfrac{93}{256}$ (d) none of these

56. The average % of failure in a certain examination is 40. The probability that out of a group of 6 candidates, at least 4 pass in the examination is:

(a) 0.545   (b) 0.445   (c) 0.345   (d) 0.645

57. The odds in favour of A winning a game of chess against B are 5 : 2. If three games are to be played, then the probablity of odds in favour of A's winning at least one game is:

   (a) 225/343   (b) 325/343   (c) 325/326   (d) 341/343

58. 3% of a given lot of manufactured parts are defective. The probability that in a sample of four items none be defective is:

   (a) 0.825   (b) 0.855   (c) 0.885   (d) 0.785

59. A sample of 10 pieces was examined out of a large consignment which has 5% defective pieces. Give the probability of 1 defective in the sample of 10.

   (a) $^{10}C_1(0.85)(0.95)^7$ (b) $^{10}C_1(0.05)(0.95)^9$ (c) $(0.05)(0.95)^7$ (d) $(0.05)(0.95)^9$

60. In tossing 10 coins, the probability of getting exactly 5 heads is:

   (a) 9/28   (b) 63/256   (c) 1/2   (d) 193/256

61. The binomial distribution with mean 20 and S.D. 4 is:

   (a) $\left(\frac{1}{5}+\frac{4}{5}\right)^{100}$ (b) $\left(\frac{4}{5}+\frac{1}{5}\right)^{100}$ (c) $\left(\frac{4}{5}+\frac{1}{5}\right)^{50}$ (d) none of these

62. The mean of binomial distribution is 80 and standard deviation 8. Then, the value of n is:

   (a) 200   (b) 300   (c) 400   (d) 250

63. The binomial distribution whose mean is 6 and variance 4 is:

   (a) $\left(\frac{1}{3}-\frac{2}{3}\right)^{18}$ (b) $\left(\frac{1}{3}+\frac{2}{3}\right)^{18}$ (c) $\left(\frac{2}{3}-\frac{1}{3}\right)^{18}$ (d) None of these

64. The mode of the distribution for which mean = 10 and S.D. $=\sqrt{5}$ is :

   (a) 10   (b) 11   (c) 9   (d) 12

65. The probability that a marksman will hit a target is given as 1/5. Then, the probability of at least one hit in 10 shots is:

   (a) $1/5^{10}$ (b) $1-(4/5)^{10}$ (c) $1-1/5^{10}$ (d) $(4/5)^{10}$

66. The mean of the binomial distribution is given by:

   (a) $1-np$ (b) $1-nq$ (c) $1+pq$ (d) np

67. If mean of a binomial distribution is 3 and its variance is 3/2, then number of trials is:

   (a) 6   (b) 2   (c) 12   (d) None of these

68. Out of 1,000 families of 3 children each, how many families would you expect to have two boys and one girl assuming that boys and girls are equally likely?

   (a) 275   (b) 175   (c) 375   (d) 475.

69. A sample of 10 pieces was examined out of a large consignment which has 5% defective pieces. Give the probability of 1 defective in the sample of 10.

    (a) $^{10}C_1(0.85)(0.95)^7$ (b) $^{10}C_1(0.05)(0.95)^9$ (c) $(0.05)(0.95)^7$ (d) $(0.05)(0.95)^9$

70. In tossing 10 coins, the probability of getting exactly 5 heads is:

    (a) 9/28 (b) 63/256 (c) 1/2 (d) 193/256

71. The binomial distribution with mean 20 and S.D. 4 is:

    (a) $\left(\frac{1}{5}+\frac{4}{5}\right)^{100}$ (b) $\left(\frac{4}{5}+\frac{1}{5}\right)^{100}$ (c) $\left(\frac{4}{5}+\frac{1}{5}\right)^{50}$ (d) none of these

72. The mean of binomial distribution is 80 and standard deviation 8. Then, the value of n is:

    (a) 200 (b) 300 (c) 400 (d) 250

73. The binomial distribution whose mean is 6 and variance 4 is:

    (a) $\left(\frac{1}{3}-\frac{2}{3}\right)^{18}$ (b) $\left(\frac{1}{3}+\frac{2}{3}\right)^{18}$ (c) $\left(\frac{2}{3}-\frac{1}{3}\right)^{18}$ (d) None of these

74. The mode of the distribution for which mean = 10 and S.D. = $\sqrt{5}$ is :

    (a) 10 (b) 11 (c) 9 (d) 12

75. The probability that a marksman will hit a target is given as 1/5. Then, the probability of at least one hit in 10 shots is:

    (a) $1/5^{10}$ (b) $1-(4/5)^{10}$ (c) $1-1/5^{10}$ (d) $(4/5)^{10}$

76. The mean of the binomial distribution is given by:

    (a) $1-np$ (b) $1-nq$ (c) $1+pq$ (d) np

77. If mean of a binomial distribution is 3 and its variance is 3/2, then number of trials is:

    (a) 6 (b) 2 (c) 12 (d) None of these

78. Out of 1,000 families of 3 children each, how many families would you expect to have two boys and one girl assuming that boys and girls are equally likely?

    (a) 275 (b) 175 (c) 375 (d) 475.

79. A die is thrown three times. Getting a 5 or 6 is considered a success. Then, the probability of three successes will be:

    (a) 1/27 (b) 26/27 (c) 2/9 (d) none of these

80. A die is thrown 4 times, Probability of getting almost two 6 is:

    (a) 0.984 (b) 0.721 (c) 0.802 (d) 0.621

81. The mean and S.D. of a binomial distribution are respectively 10 and 2. Then, the value of q is:

    (a) 1 (b) 0.8 (c) 0.6 (d) 0.4

82. The probability that a person will hit a target in shooting practice is 0.3. If he shoots 10 times, then the probability of his shooting the target is:

    (a) 1   (b) $1- (0.7)^{10}$ (c) $(0.7)^{10}$ (d) $(0.3)^{10}$

83. If X denotes the number of sixes in four consecutive throws of a die, then P (X = 4) is:

    (a) 1/1296   (b) 4/6   (c) 1   (d) 1295/1296

84. The mean number of 'sixes' in two tosses of a die is:

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

85. If x and y are two independent binomial variables with parameters 6 and 1/2 and 4 and 1/2 respectively, what is p $(x + y \geq 1)$?

    (a) 1023/1024   (b) 923/102   (c) 823/1024   (d) none of these

86. If in a binomial distribution n = 4, P (X = 0) = 16/81, them P (X = 4) is:

    (a) 3/8   (b) 1/27   (c) 1/81   (d) 1/16

87. If 15 dates are selected at random, then the probability of getting two Sundays is:

    (a) 0.29   (b) 0.39   (c) 0.49   (d) 0.23

88. In a box containing 100 bulbs, 10 are defective. What is the probability that out of a sample of 5 bulbs none is defective?

    (a) 10^{-5} (b) $(1/2)^5$ (c) $(9/10)^5$ (d) 9/10.

89. If the overall percentage of success in an examiantion is 60, what is the probability that out of a group of 4 students, at least one has passed?

    (a) 0.6525   (b) 0.9744   (c) 0.8704   (d) 0.0256

90. If it is known tha the probability of a missile hitting a target is 1/8, what is the probability that out of 10 missiles fired, at least 2 will hit the target?

    (a) 0.4258   (b) 0.3968   (c) 0.5238   (d) 0.3611

91. If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given: $e^5 = 0.007$]

    (a) 0.1823   (b) 0.1723   (c) 0.1623   (d) 0.1923

92. If a random variable X follows Poisson distribution, such that P (X = 1) = P (X = 2), then the mean of the distribution is:

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

93. If X is a Poisson variate with parameter m = 1, then P (3 < X < 5), [Given : e^{-1} = 0.36783] is:

    (a) 0.01233   (b) 0.01333   (c) 0.01533   (d) 0.2

94. If 5% of the families in Delhi do not use gas as a fuel, what will be the probability of selecting 10 families in a random sample of 100 families who do not use gas as a fuel? You may assume Poisson distribution. [Given : e^{-5} = 0.0067]

    (a) 0.018   (b) 0.028   (c) 0.038   (d) 0.008

95. If the probability of getting a defective transistor in a consignment is 0.01, find the mean and standard deviation of the number of defective transistors in a large, consignment of 900 transistors?

    (a) (4, 2)   (b) (9, 3)   (b) (4, 2)   (d) (2, 3)

96. It is known from past experience that in a certain plant there are on the average 4 industrial accidents per month. Then, the probability that in a given year there will be less than 4 accidents. [Given : e^{-4} = 0.0183]

    (a) 0.3332   (b) 0.4332   (c) 0.5332   (d) 0.632

97. If 2% of electric bulbs manufactured by a certain company are defective, find the probability that in a sample of 200 bulbs less than 2 bulbs are defective. [Given : e^{-4} = 0.0183]

    (a) 0.082   (b) 0.072   (c) 0.092   (d) 0.062

98. If a random variable X has a Poisson distribution, such that P (X = 1) = P (X = 2), its mean and variance are:

    (a) 1, 1   (b) 2, 2   (c) 2, $\sqrt{3}$ (d) 2, 4.

99. A random variable X has Poisson distribution with mean 2. Then , P (X > 1.5) equals

    (a) $\frac{2}{e^2}$ (b) 0   (c) $1 - \frac{3}{e^2}$ (d) $\frac{3}{e^2}$

100. If X is a random Poisson variate, such that α = P (X = 1) = P (X = 2), then P (X = 4) is:

    (a) 2α (b) $\alpha/3$ (c) αe^{-2} (d) αe^2

101. If the mean of a Poisson's distribution is λ, then is standard with mean m is:

    (a) λ (b) $\lambda 2$ (c) $\sqrt{\lambda}$ (d) $\frac{1}{\lambda}$

102. If the mean of a Poisson variable X is 1, what is P (X = at lest one) ?

    (a) 0.456   (b) 0.821   (c) 0.632   (d) 0.254

103. If the standard deviation of a Poisson variate X is 2, what is P (1.5<X<2.9) ?

    (a) 0.231   (b) 0.158   (c) 0.15   (d) $8e^{-4}$

104. A car hire firm has 2 cars which is hired out everyday. The number of demands per day for a car follows Poisson distribution with mean 1.20. What is the proportion of days on which some demand is refused ? (Given $e^{1.20} = 3.32$)

    (a) 0.25   (b) 0.3012   (c) 0.12   (d) 0.03

105. The standard deviation of x where x is a Poisson variate satisfying the condition $P(X=2) = P(X=3)$ is:

    (a) $\sqrt{3}$ (b) 2   (c) $\sqrt{5}$ (d) 1.5

106. The probability that a random variable X following Poisson distribution would assume a positive value $(1 - e^{-27})$. The mode of the distribution is:

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

107. The standard deviation of a Poisson variate is 1.732. What is the probability that the variate lies between −2.3 to 3.68?

    (a) 0.65   (b) 0.75   (c) 0.55   (d) 0.45

108. A discrete random variable X follows Poisson distribution. The value of $P(X \leq 2 / P X \geq 1)$. [Given $E(X) = 2.20$ and $e^{-2.20} = 0.1108$] is :

    (a) 0.58   (b) 0.48   (c) 0.68   (d) 0.38

109. If 2 % of electric bulbs manufactured by a company are known to be defective, what is the probability that a sample of 150 electric blubs taken from the production process of that comapny would contain more than 2 defective bulbs?

    (a) 0.48   (b) 0.58   (c) 0.68   (d) 0.42

110. The manufacturer of a centrain electric component is certain that 2 % of his product is defective. He sells the components in boxes of 120 and guarantees that not more than two % in any box will be defective. Find the probability that a box, selected at random, would fail to meet the guarantee? Given that $e^{-2.40} = 0.0907$

    (a) 0.48   (b) 0.58   (c) 0.78   (d) 0.40.

111. In a certain factory turning out blades, there is a 0.2% probability for any blade to be defective. Blades are supplied in packets of 10. Using Poisson distribution, find the approximate number of packets containing, one defective blade in a consignment of 20,000 packets: [Given : $e^{-0.02} = 0.9802$] is

    (a) 392   (b) 292   (c) 492   (d) 592

112. If 2% of electric bulbs manufactured by a certian company are defective, then the probability that in a sample of 200 bulbs more than 3 bulbs are defective. [Given: $e^{-4} = 0.0183$]

(a) 0.5669   (b) 0.4669   (c) 0.6469   (d) 0.7219

113. The probability that at most 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. [Take $e^{-4} = 0.0183$]

(a) 0.6845   (b) 0.5845   (c) 0.7845   (d) 0.5672

114. The probability that a man aged 45 years will die within a year is 0.012. what is the probability that of 10 such men at least 9 will reach their 46 th birthday ? [Given : $e^{-0.12} = 0.88692$]

(a) 0.954   (b) 0.994   (c) 0.924   (d) 0.914

115. The number of accidents in a year attributed to taxi drivers in a locality follows Poisson distribution with an average 2. Out of 500 taxi direvers of that area, what is the number of drivers with at least 3 accidents in a year?

(a) 162   (b) 180   (c) 201   (d) 190

116. A book contains 100 misprints distributed randomly throughout its 100 pages. what is the probability that a page. What is the probability that a page observed at random contains at least two misprints. Assume Poisson distribution.

(a) 0.264   (b) 0.364   (c) 0.164   (d) 0.274

117. It is given that 3% of electric bulbs manufactured by a company are defective. Using the Poisson approximation, the probability that a sample of 100 bulbs will contain exactly one defective is:

(a) 0.25   (b) 0.15   (c) 0.26   (d) 0.36

118. It is known from past experience that in a certain plant there are on the average 4 accidents per month. The probability that in a given year there will be less than 4 accidents is :

(a) 0.334   (b) 0.434   (c) 0.534   (d) 0.234

119. If the two quartiles of N (μ, σ^2) are 14.6 and 25.4 respectively, what is the standard deviation of the distribution?

(a) 9   (b) 6   (c) 10   (d) 8

120. 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) 4.86

121. If the mean deviation of a normal variable is 16, what is the quartile deviation ?

(a) 10.00   (b) 13.34   (c) 15.00   (d) 12.05

122. If the 1st quartile and mean deviation about median of a normal distribution are 13.25 and 8 respectively, then the mode of the distribution is:

   (a) 20   (b) 10   (c) 15   (d) 12

123. If X and Y are 2 independent normal variables with mean as 10 and 12 and S.D. as 3 and 4, then (X + Y) is normally distributed with

   (a) mean = 22 and S.D. = 7   (b) mean = 22 and S.D. = 25

   (c) mean = 22 and S.D. = 5   (d) mean = 22 and S.D. = 49

124. If the two quartiles of a normal distribution are 47.30 and 52.70 respectively, The mean deviation about median of this distribution is :

   (a) 3.20   (b) 2.40   (c) 0.80   (d) 4.20

125. If a random variable x follows normal distribution with mean as 120 and standard deviation as 40, what is the probability that $P(X \leq 150 / X > 120)$? Given that the area of the normal curve between $Z = 0$ to $Z = 0.3734$.

   (a) 0.65   (b) 0.75   (c) 0.55   (d) 0.85

126. A sample of 100 dry battery cells tested to find the length of life produced the follwoing results : $\overline{X} = 12$, hours, $\sigma = 3$ hours. Assuming the data to be normally distributed, what percentage of battery cells are expected to have life less than 6 hours.

   (a) 2.1%   (b) 2.28%   (c) 3.28%   (d) 4.28%

127. Find the probability that the standard normal variate lies between 0 to 1.5.

   (a) 0.5332   (b) 0.4332   (c) 0.332   (d) 0.632

128. Find the area under the nomal curve for $Z = 1.64$

   (a) 0.4484   (b) 0.5484   (c) 0.6484   (d) 0.3484

129. Find the area to the right of $Z = 0.25$

   (a) 0.3013   (b) 0.4013   (c) 0.5023   (d) 0.6023

130. A sample of 100 dry battery cells tested to find the lenght of life produced the following results : $\overline{X} = 12$ hours, $\sigma = 3$ hours, Assuming the data to be normally distributed, what percentage of battery cells are expected to have life more than 15 hours.

   (a) 15.87%   (b) 15.27%   (c) 14.87%   (d) 16.87%

131. If the weekly wages of 5000 workers in a factory follows normal distribution with mean and S.D. as Rs. 700 and Rs. 50 respectively, what is the expected number of workers with wages between Rs. 660 and Rs. 720?

   (a) 2.050   (b) 2.200   (c) 2.218   (d) 2,300

132. In a sample of 120 workers in a factory the mean and standard deviation of wages were Rs. 11.35 and Rs. 3.03 respectively. Find the percentage of workers gettting wages between Rs. 9 and Rs. 17 in the whole factory assuming that the wages are normally distributed.

   (a) 70.1   (b) 75.1   (c) 60.1   (d) 65.1

133. If the standard deviation of the binomial distribution $(q + p)^{16}$ is 2, the mean is:

   (a) 6   (b) 8   (c) 10   (d) None of these

134. An experiment succeeds twice as often as it fails. Find the probability that in the next 6 trials, there will be at least 5 successes.

   (a) 496/729   (b) 250/729   (c) 256/729   (d) none of these

135. If the mean and variance of binomial a distributon are 15/14 and 15/16 respectively. The number of trials is:

   (a) 5   (b) 4   (c) 16   (d) 20.

136. A binomial random variable satisfies the relation $9P(X=4) = P(X=2)$ for n = 6. The value of the parameter p is:

   (a) 1/6   (b) 1/5   (c) 1/3   (d) 1/8

137. An experiment succeeds thrice as after it fails. If the experiment is repeated 5 times, what is the probability of having; no success at all?

   (a) 1/824   (b) 1/924   (c) 1/1024   (d) 1/1124

138. 7 coins are tossed 128 times. The distribution function of the binomial is:

   (a) $^{128}C_x$ (b) ^7C_x (c) $^{128}C_7$ (d) none of these

139. The mean of a binomial distribution is 4 and its standard deviation is $\sqrt{3}$. The value of p is:

   (a) 0.5   (b) 0.25   (c) 0.75   (d) 0.6

140. The probability of getting at least two heads when tossing a coin three times is:

   (a) 1/2   (b) 1/4   (c) 1/8   (d) 3/8

141. The incidence of occupational disease in an industry is such that the workmen have a 10% chance of suffering from it. What is the probability that out of 5 workmen, 3 or more will contract the disease?

   (a) 0.0076   (b) 0.0086   (c) 0.0081   (d) 0.0091

142. Find the probability of a success for the binomial distribution satisfying the following relation $4P(x=4) = P(x=2)$ and having the other parameter as six.

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

143. A fair coin is tossed a fixed number of times. If the probability of getting 7 heads is equal to that of 8 heads, then the probability of getting 2 heads is:

  (a) $105/2^{15}$ (b) $2/2^{15}$ (c) $105/2^{14}$ (d) none of these

144. If the mean and the variance of a binomial variate X are 2 and 1 respectively, then the probability that X takes a value greater than 1 is equal to:

  (a) 5/16   (b) 3/16   (c) 11/16   (d) 13/16

145. Probabilitty of happening of an event in an experiment is 0.4. If the experiment is repeated 3 times under similar conditions, find the probability of the happening of the event atleast once.

  (a) 98/125   (b) 27/125   (c) 99/125   (d) 26/125

146. Six coins are tossed once and getting a tail on the coin is considered a success. The probability of getting exactly 4 successes is:

  (a) 5/32   (b) 27/32   (c) 15/64   (d) 49/64

147. The probability that bomb dropped from a plane stirkes the target is 1/5. The probability out of six bombs dropped at least 2 bombs striks the target is:

  (a) 0.345   (b) 0.246   (c) 0.543   (d) 0.426

148. In a binomial distribution, n = 400, p = 1/5. Its standard deviation is:

  (a) $\sqrt[10]{2}$ (b) 1/800   (c) 4   (d) 8.

149. 6 dice are thrown 729 times. How many times do you expect atleast 4 dice to show a 4 or 5.

  (a) 233   (b) 73   (c) 72   (d) 61

150. When 7 coins are tossed, the probability of getting exactly 3 heads is:

  (a) 35/128   (b) 93/128   (c) 7/128   (d) 21/128

151. In a binomial distribution, mean is 5 and variances is 4. Then, the number of trials is:

  (a) 20   (b) 30   (c) 25   (d) 35

152. A random variable X takes the values –1, 0, 1. Its mean is 0.6. If $P(X=0) = 0.2$, then $P(X=1)=$

  (a) 0.5   (b) 0.7   (c) 0.6   (d) 0.8

153. In a binomial distribution, n = 20, q = 0.75. Its mean =

  (a) 5   (b) 15   (c) 3   (d) none of these

154. X is a binomial variable such that $2P(X=2) = P(X=3)$ and mean of X is known to be 10/3. What would be the probability that X assumes at most the value 2?

  (a) 16/81   (b) 17/81   (c) 47/243   (d) 46/243

155. What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously?

(a) 0.50   (b) 0.25   (c) 0.3125   (d) 0.6875

156. X is a binomial variable with n = 20. What is the mean of X if it is known that X is symmetirc?

(a) 5   (b) 10   (c) 2   (d) 8

157. If X is a binomial variable with parameter 15 and 1/3, what is the value of mode of the distribution

(a) 5 and 6   (b) 5   (c) 5.50   (d) 6

158. If $X \sim B\,(n, p)$. What would be the least value of the variance of X when n = 16 ?

(a) 2   (b) 4   (c) 8   (d) $\sqrt{5}$

159. In a binomial distribution consisting of 5 independent trials, the prababilities of 1 and 2 sucesses are 0.4096 and 0.2048 respectively. The value of the parameter P is:

(a) 0.2   (b) 0.3   (c) 0.4   (d) 0.5

160. If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given: $e^5 = 0.007$]

(a) 0.1823   (b) 0.1723   (c) 0.1623   (d) 0.1923

161. If a random variable X follows Poisson distribution, such that P (X = 1) = P (X = 2), then the mean of the distribution is:

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

162. If X is a Poisson variate with parameter m = 1, then P (3 < X < 5), [Given : $e^{-1} = 0.36783$] is:

(a) 0.01233   (b) 0.01333   (c) 0.01533   (d) 0.2

163. If 5% of the families in Delhi do not use gas as a fuel, what will be the probability of selecting 10 families in a random sample of 100 families who do not use gas as a fuel? You may assume Poisson distribution. [Given : $e^{-5} = 0.0067$]

(a) 0.018   (b) 0.028   (c) 0.038   (d) 0.008

164. If the probability of getting a defective transistor in a consignment is 0.01, find the mean and standard deviation of the number of defective transistors in a large, consignment of 900 transistors?

(a) (4, 2)   (b) (9, 3)   (b) (4, 2)   (d) (2, 3)

165. It is known from past experience that in a certain plant there are on the average 4 industrial accidents per month. Then, the probability that in a given year there will be less than 4 accidents. [Given : $e^{-4} = 0.0183$]

(a) 0.3332   (b) 0.4332   (c) 0.5332   (d) 0.632

166. If 2% of electric bulbs manufactured by a certain company are defective, find the probability that in a sample of 200 bulbs less than 2 bulbs are defective. [Given : $e^{-4} = 0.0183$]

    (a) 0.082   (b) 0.072   (c) 0.092   (d) 0.062

167. If a random variable X has a Poisson distribution, such that $P(X=1) = P(X=2)$, its mean and variance are:

    (a) 1, 1   (b) 2, 2   (c) $2, \sqrt{3}$ (d) 2, 4.

168. A random variable X has Poisson distribution with mean 2. Then, $P(X > 1.5)$ equals

    (a) $\dfrac{2}{e^2}$ (b) 0   (c) $1 - \dfrac{3}{e^2}$ (d) $\dfrac{3}{e^2}$

169. If X is a random Poisson variate, such that $\alpha = P(X=1) = P(X=2)$, then $P(X=4)$ is:

    (a) 2α (b) $\alpha/3$ (c) αe^{-2} (d) αe^2

170. If the mean of a Poisson's distribution is λ, then is standard with mean m is:

    (a) λ (b) $\lambda 2$ (c) $\sqrt{\lambda}$ (d) $\dfrac{1}{\lambda}$

171. If the mean of a Poisson variable X is 1, what is $P(X = $ at lest one$)$?

    (a) 0.456   (b) 0.821   (c) 0.632   (d) 0.254

172. If the standard deviation of a Poisson variate X is 2, what is $P(1.5 < X < 2.9)$?

    (a) 0.231   (b) 0.158   (c) 0.15   (d) $8e^{-4}$

173. A car hire firm has 2 cars which is hired out everyday. The number of demands per day for a car follows Poisson distribution with mean 1.20. What is the proportion of days on which some demand is refused ? (Given $e^{1.20} = 3.32$)

    (a) 0.25   (b) 0.3012   (c) 0.12   (d) 0.03

174. The standard deviation of x where x is a Poisson variate satisfying the condition $P(X=2) = P(X=3)$ is:

    (a) $\sqrt{3}$ (b) 2   (c) $\sqrt{5}$ (d) 1.5

175. The probability that a random variable X following Poisson distribution would assume a positive value $(1 - e^{-27})$. The mode of the distribution is:

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

176. The standard deviation of a Poisson variate is 1.732. What is the probability that the variate lies between −2.3 to 3.68?

    (a) 0.65   (b) 0.75   (c) 0.55   (d) 0.45

177. A discrete random variable X follows Poisson distribution. The value of $P(X \leq 2 / P X \geq 1)$. [Given $E(X) = 2.20$ and $e^{-2.20} = 0.1108$] is :

(a) 0.58 (b) 0.48 (c) 0.68 (d) 0.38

178. If 2 % of electric bulbs manufactured by a company are known to be defective, what is the probability that a sample of 150 electric blubs taken from the production process of that comapny would contain more than 2 defective bulbs?

(a) 0.48 (b) 0.58 (c) 0.68 (d) 0.42

179. The manufacturer of a centrain electric component is certain that 2 % of his product is defective. He sells the components in boxes of 120 and guarantees that not more than two % in any box will be defective. Find the probability that a box, selected at random, would fail to meet the guarantee? Given that $e^{-2.40} = 0.0907$

(a) 0.48 (b) 0.58 (c) 0.78 (d) 0.40.

180. If 3% electric bulbs manufactured by a company are defective, find the probability that in a sample of 100 bulbs, exactly 5 bulbs are defective

(a) $9/40\ e^2$ (b) $27/40\ e^3$ (c) $81/40\ e^3$ (d) $81/40\ e^2$

181. In a certain factory turning out blades, there is a 0.2% probability for any blade to be defective. Blades are supplied in packets of 10. Using Poisson distribution, find the approximate number of packets containing, one defective blade in a consignment of 20,000 packets:

[Given : $e^{-0.02} = 0.9802$] is

(a) 392 (b) 292 (c) 492 (d) 592

182. If 2% of electric bulbs manufactured by a certian company are defective, then the probability that in a sample of 200 bulbs more than 3 bulbs are defective. [Given: $e^{-4} = 0.0183$]

(a) 0.5669 (b) 0.4669 (c) 0.6469 (d) 0.7219

183. The probability that at most 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. [Take $e^{-4} = 0.0183$]

(a) 0.6845 (b) 0.5845 (c) 0.7845 (d) 0.5672

184. X is a Poisson variate and $P(X = 0) = 0.2$, then the variance of the Poisson distribution is:

(a) $\log(0, 2)$ (b) $\log e^5$ (c) $\log 5$ (d) $\log 10$.

185. The probability that a man aged 45 years will die within a year is 0.012. what is the probability that of 10 such men at least 9 will reach their 46 th birthday ? [Given : $e^{-0.12} = 0.88692$]

    (a) 0.954   (b) 0.994   (c) 0.924   (d) 0.914

186. The number of accidents in a year attributed to taxi drivers in a locality follows Poisson distribution with an average 2. Out of 500 taxi direvers of that area, what is the number of drivers with at least 3 accidents in a year?

    (a) 162   (b) 180   (c) 201   (d) 190

187. A book contains 100 misprints distributed randomly throughout its 100 pages. what is the probability that a page. What is the probability that a page observed at random contains at least two misprints. Assume Poisson distribution.

    (a) 0.264   (b) 0.364   (c) 0.164   (d) 0.274

188. It is given that 3% of electric bulbs manufactured by a company are defective. Using the Poisson approximation, the probability that a sample of 100 bulbs will contain exactly one defective is:

    (a) 0.25   (b) 0.15   (c) 0.26   (d) 0.36

189. It is known from past experience that in a certain plant there are on the average 4 accidents per month. The probability that in a given year there will be less than 4 accidents is :

    (a) 0.334   (b) 0.434   (c) 0.534   (d) 0.234

190. X is a Poisson variate satisfying the following relation : $P(X=2) = 9(X=4) + 90P(X=6)$. Then the standard deviation of X is:

    (a) 1   (b) 1.5   (c) 2   (d) 2.5

191. If the two quartiles of $N(\mu, \sigma^2)$ are 14.6 and 25.4 respectively, what is the standard deviation of the distribution?

    (a) 9   (b) 6   (c) 10   (d) 8

192. 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) 4.86

193. If the mean deviation of a normal variable is 16, what is the quartile deviation ?

    (a) 10.00   (b) 13.34   (c) 15.00   (d) 12.05

194. If the 1st quartile and mean deviation about median of a normal distribution are 13.25 and 8 respectively, then the mode of the distribution is:

    (a) 20   (b) 10   (c) 15   (d) 12

195. If X and Y are 2 independent normal variables with mean as 10 and 12 and S.D. as 3 and 4, then (X + Y) is normally distributed with

(a) mean = 22 and S.D. = 7

(b) mean = 22 and S.D. = 25

(c) mean = 22 and S.D. = 5

(d) mean = 22 and S.D. = 49

196. If the two quartiles of a normal distribution are 47.30 and 52.70 respectively, The mean deviation about median of this distribution is :

(a) 3.20

(b) 2.40

(c) 0.80

(d) 4.20

197. If a random variable x follows normal distribution with mean as 120 and standard deviation as 40, what is the probability that $P(X \leq 150 / X > 120)$? Given that the area of the normal curve between $Z = 0$ to $Z = 0.3734$.

(a) 0.65

(b) 0.75

(c) 0.55

(d) 0.85

198. A sample of 100 dry battery cells tested to find the length of life produced the follwoing results: $\overline{X} = 12$, hours, $\sigma = 3$ hours. Assuming the data to be normally distributed, what percentage of battery cells are expected to have life less than 6 hours.

(a) 2.1%

(b) 2.28%

(c) 3.28%

(d) 4.28%

199. Find the probability that the standard normal variate lies between 0 to 1.5.

(a) 0.5332

(b) 0.4332

(c) 0.332

(d) 0.632

200. Find the area under the nomal curve for $Z = 1.64$

(a) 0.4484

(b) 0.5484

(c) 0.6484

(d) 0.3484

201. Find the area to the right of $Z = 0.25$

(a) 0.3013

(b) 0.4013

(c) 0.5023

(d) 0.6023

202. A sample of 100 dry battery cells tested to find the lenght of life produced the following results : $\overline{X} = 12$ hours, $\sigma = 3$ hours, Assuming the data to be normally distributed, what percentage of battery cells are expected to have life more than 15 hours.

(a) 15.87%

(b) 15.27%

(c) 14.87%

(d) 16.87%

203. If the weekly wages of 5000 workers in a factory follows normal distribution with mean and S.D. as Rs. 700 and Rs. 50 respectively, what is the expected number of workers with wages between Rs. 660 and Rs. 720?

(a) 2.050

(b) 2.200

(c) 2.218

(d) 2,300

204. In a sample of 120 workers in a factory the mean and standard deviation of wages were Rs. 11.35 and Rs. 3.03 respectively. Find the percentage of workers getting wages between Rs. 9 and Rs. 17 in the whole factory assuming that the wages are normally distributed.

(a) 70.1   (b) 75.1   (c) 60.1   (d) 65.1

205. A discrete random variable x follows uniform distribution and takes the values 6, 8, 10, 12, 18 The probability of $P(x < 12)$ is[SM]

(a) 1/5   (b) 4/5   (c) 3/5   (d) none

206. A discrete random variable x follows uniform distribution and takes the values 5, 7, 12, 15, 18 The probability of $P(x > 10)$ is[SM]

(a) 3/5   (b) 2/5   (c) 4/5   (d) none

207. In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x = 9)$ is[SM]

(a) 2/6   (b) 1/7   (c) 1/5   (d) 1/6

208. In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x = 12)$ is[SM]

(a) 1/6   (b) 0   (c) 1/7   (d) none

209. In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x < 15)$ is[SM]

(a) 1/2   (b) 2/3   (c) 1   (d) none

210. In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x > 15)$ is[SM]

(a) 2/3   (b) 1/3   (c) 1   (d) none

211. Fit a Binomial Distribution to the following Data

X	0	1	2	3	4
F	28	62	46	10	4

(a) $n = 4; N = 150; P = \frac{1}{3} \quad q = \frac{2}{3}$ (b) $n = 4; N = 160; P = \frac{1}{3} \quad q = \frac{2}{3}$

(c) $n = 4; N = 170; P = \frac{1}{3} \quad q = \frac{2}{3}$ (d) $n = 4; N = 175; P = \frac{1}{3} \quad q = \frac{2}{3}$

212. If a binomial distribution is fitted to the following data :

x :	0	1	2	3	4
f :	16	25	32	17	10

then the sum of the expected frequencies for x = 2 , 3 and 4 would be

(a) 58   (b) 59   (c) 60   (d) 61

213. A Typist commits the following mistakes per page in typing 100 pages fit a Poission Distribution and calculate theoretical frequencies.

Mistakes Per page (X)	0	1	2	3	4	5
Frequencies (f)	42	33	14	6	4	1

You are given that $e^{-1} = 0.3679$

(a)
No. of mis.	0	1	2	3	4	5
Frequencies	37	37	18	6	2	0

(b)
No. of mis.	0	1	2	3	4	5
Frequencies	37	37	18	5	2	0

(c)
No. of mis.	0	1	2	3	4	5
Frequencies	37	36	18	6	2	0

(d)
No. of mis.	0	1	2	3	4	5
Frequencies	37	37	18	6	3	0

214. If a Poisson distribution is fitted to the following data :

Mistake per page	0	1	2	3	4	5
No. of pages	76	74	29	17	3	1

Then the sum of the expected frequencies for x = 0 , 1 and 2 is

(a) 150   (b) 184   (c) 165   (d) 148

215. If diameter of rings manufactured by a machine are normally distributed with $\overline{X}$ = 7c.m. and S.D. = 2cm. Find the number of rings having diameter between 4cm and 5.5 cm when the total number of rings are 500. 0 < z < 1.5 = .4332 and 0 < z < .75 = .2734

(a) 80 Rings   (b) 82 Rings   (c) 81 Rings   (d) 90 Rings

216. Net profit of 400 companies is normally distributed with a mean profit of Rs. 150 lakhs and a standard deviation of Rs. 20 lakhs. Given $0 < z < 1.1 = .3643$ and $0 < z < 1.25 = .3944$, $0 < z < 2.5 = .4938$, $0 < z < .6 = .2257$, area $0 < z < 1.04 = .3508$ Find the number of companies whose profits(Rs. lakhs) are

(i) less than 128

    (a) 54   (b) 55   (c) 56   (d) 57

(ii) more than 175

    (a) 43   (b) 41   (c) 40   (d) 42

(iii) between 100 and 138. Also

    (a) 103   (b) 102   (c) 107   (d) 104

(iv) find the minimum profit of top 15% companies.

    (a) 175   (b) 171   (c) 174   (d) 172

217. The mean and standard deviation of a graduation examination following normal distribution are 500 marks & 100 marks respectively . If 550 Students are to be passed out of 674 students, what would be the minimum passing marks? $0 < z < .9 = .316$

    (a) 415   (b) 410   (c) 420   (d) 425

218. The mean and standard deviation of a graduation examination following normal distribution are 250 and 50 respectively. If 275 students are to be passed out of 337 students, what would be the minimum passing marks?

    (a) X = 208   (b) X = 207   (c) X = 205   (d) X = 206

219. The wages of 5000 workers were found to be normally distributed with mean Rs. 2000 p.m. and standard deviation Rs. 120. What was the lowest wages among the richest 500 workers? $0 < z < 1.29 = .4$

    (a) 1154.80   (b) 2154.80   (c) 2254.80   (d) 2144.80

220. In a normal distribution, 31% of items are under 45 and 8% are over 64, find the mean & S.D. and of the distribution.

    (a) $\overline{X} = 40,\ \sigma = 10$ (b) $\overline{X} = 30,\ \sigma = 10$ (c) $\overline{X} = 50,\ \sigma = 11$ (d) $\overline{X} = 50,\ \sigma = 10$

221. In a large group of men, 5% are under 60 inches in height and 40% are between 60 and 65 inches. Assuming a normal distribution, find the mean height and standard deviation.

(a) $\overline{X} = 65.44$, $\sigma = 3.3$

(b) $\overline{X} = 62.44$, $\sigma = 3.3$

(c) $\overline{X} = 65.34$, $\sigma = 3.1$

(d) $\overline{X} = 65.54$, $\sigma = 3.2$

222. Assuming that height of a group of men is normal, find the mean and S.D., given that 84% of men have height less than 65.2 inches and 68% have heights between 65.2 and 62.8 inches.

(a) $\overline{X} = 64$, $\sigma = 1.1$

(b) $\overline{X} = 34$, $\sigma = 0.2$

(c) $\overline{X} = 64$, $\sigma = 1.2$

(d) $\overline{X} = 64$, $\sigma = 0.2$

223. The following data gives the result of students of b.Com IInd.

Marks	Students
under 35	10
35-50	20
50-60	15
60 and over	5
	N =50

using Normal Distribution, find Mean & S.D.

(a) Mean = 44.93 S.D = 11.60

(b) Mean = 44.93 S.D = 11.61

(c) Mean = 44.93 S.D = 11.68

(d) Mean = 44.93 S.D = 11.62

Additional Question Bank

1	b	47	d	93	c	139	b	185	b
2	b	48	a	94	a	140	a	186	a
3	a	49	a	95	d	141	b	187	a
4	b	50	c	96	b	142	a	188	b
5	a	51	a	97	c	143	a	189	b
6	a	52	c	98	b	144	c	190	a
7	a	53	b	99	c	145	a	191	d
8	b	54	d	100	b	146	d	192	d
9	c	55	c	101	c	147	a	193	d
10	a	56	a	102	c	148	c	194	a
11	c	57	b	103	d	149	a	195	c
12	b	58	c	104	b	150	a	196	a
13	b	59	d	105	a	151	c	197	b
14	b	60	b	106	a	152	b	198	b
15	a	61	b	107	a	153	a	199	b
16	b	62	c	108	a	154	b	200	a
17	c	63	b	109	b	155	c	201	b
18	b	64	a	110	b	156	b	202	d
19	b	65	d	111	a	157	b	203	c
20	a	66	b	112	a	158	a	204	d
21	b	67	a	113	c	159	a	205	c
22	a	68	c	114	b	160	a	206	a
23	a	69	b	115	a	161	b	207	d
24	c	70	b	116	a	162	c	208	b
25	a	71	b	117	b	163	a	209	a
26	b	72	c	118	b	164	b	210	b
27	a	73	b	119	d	165	b	211	a
28	c	74	a	120	d	166	c	212	b
29	a	75	d	121	d	167	b	213	d
30	a	76	d	122	a	168	c	214	b
31	c	77	a	123	c	169	b	215	a
32	b	78	c	124	a	170	c	216	(i)a
33	a	79	a	125	b	171	c		(ii)d
34	b	80	a	126	b	172	d		(iii)c
35	c	81	d	127	b	173	d		(iv)b
36	b	82	b	128	a	174	a	217	b
37	b	83	a	129	b	175	a	218	c
38	a	84	b	130	d	176	a	219	b
39	a	85	a	131	c	177	a	220	d
40	d	86	c	132	d	178	b	221	a
41	b	87	a	133	b	179	b	222	c
42	c	88	c	134	b	180	c	223	c
43	b	89	b	135	a	181	a		
44	a	90	d	136	b	182	a		
45	c	91	a	137	c	183	c		

Space For Notes

Space For Notes

ADDITIONAL QUESTION BANK
Part-1

1. If the coefficient of correlation between two variables is –0.9, when the coefficient of determination is:

   (a) 0.9   (b) 0.81   (c) 0.1   (d) 0.19

2. If cov $(x, y) = 15$ what restrictions should be put for the standard deviations of x and y ?

   (a) No restrication

   (b) The product of the standard deviations should be more than 15.

   (c) The product of the standard deviations should be less than 15.

   (d) The sum of the standard deviations should be less than 15.

3. If the rank correlation coefficient between marks in management and mathematics for a group of student is 0.6 and the sum of squares of the differences in ranks is 66, what is the number of students in the group?

   (a) 10   (b) 9   (c) 8   (d) 11

4. If the sum of squares of 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

5. For 10 pairs of observations, the number of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation?

   (a) $\sqrt{0.2}$ (b) $-\sqrt{0.2}$ (c) 1/3   (d) –1/3.

6. While computing rank correlation coefficient between profit and investment for the last 6 years of a company, the difference in rank for a year was taken 3 instead of 4. What is the rectified rank correlation coefficient if it is known that the original value of rank correlation coefficient was 0.4?

   (a) 0.3   (b) 0.2   (c) 0.25   (d) 0.28

7. What is the value of rank correlation coefficient between the following marks in Physics and Chemistry:

Roll No:	1,	2,	3,	4,	5,	6
Marks in Physics:	25,	30,	46,	30,	55,	80
Marks in Chemistry:	30,	25,	50,	40,	50,	78

   (a) 0.782   (b) 0.696   (b) 0.932   (d) 0.857

8. If X and Y are independent variables, then Cov (X,Y) equals:

 (a) 1 (b) –1 (c) 0 (d) None of these

9. The coefficient of correlation of r(x, y), when

$$\sum dx = 14, \quad \sum dx^2 = 56, \quad \sum dy = 0 \quad \sum dy^2 = 84 \quad \sum dxdy = 0 \text{ is :}$$

 (a) 1 (b) –1 (c) 0 (d) 0.5

10. The value of covariance of two variables x and y is 148/3 and the variance of $x = 272/3$ and the variance of y is 131/3. Then the coefficient of correlation is:

 (a) 0.78 (b) 0.87 (c) 0.48 (d) None of these

11. If the sum of the product of deviations of x and y series from their means is zero, the correlation coefficient will be:

 (a) 1 (b) –1 (c) 0 (d) None of these

12. The coefficient of correlation between x and y is 0.28; covariance between x and y is 7.6 and the variance of x is 9, then the S.D. of y series is:

 (a) 9.8 (b) 10.1 (c) 9.05 (d) 10.05

13. The coefficient of correlation between two variables x and y is 0.5; their covariance is 16 and S.D. of x is 4, then the S.D. of y is:

 (a) 4 (b) 8 (c) 16 (d) 64

14. If D is the difference between the corresponding ranks given by two judge in a beauty compeletion of 12 contestants and $\sum D^2 = 416$. Then coefficient of rank correlation is :

 (a) –0.4545 (b) –0.3545 (c) 0.4545 (d) 0.3545

15. If the sum of the squares of rank difference in the marks of 10 students in two subject is 4, then the coefficient of rank correlation is :

 (a) 0.85 (b) 0.95 (c) 0.75 (d) 0.5

16. If p(X, Y) = 0.5, Cov (X,Y) = 16 and $\sigma_x = 4$, then $\sigma_y =$

 (a) 4 (b) 8 (c) 16 (d) 64

17. The coefficient of correlation between X and Y is 0.6 U and V are two variables defined as $U = \dfrac{X-3}{2}$, $V = \dfrac{Y-2}{3}$, then the coeficient of correlation between U and V is:

 (a) 0.6 (b) 0.3 (c) 0.2 (c) 1

18. Two variables x and y are connected by the relation $ax + by + c = 0$, where $ab < 0$, then $p(x,y) =$

 (a) $\dfrac{a}{b}$ (b) $\dfrac{b}{a}$ (c) –1 (d) 1

19. If two variables X and Y are connected by the relation $2x + y = 3$, then $p(X,Y)$ is equal to:

 (a) 1 (b) –1 (c) –2 (d) none of these

20. With usual notation: N = 10, C = 7, then the coefficient of concurrent deviation is:

    (a) 0.75   (b) 0.65   (c) −0.65   (d) −0.75

21. If standard deviations for two variables X and Y are 3 and 4 respectively and their covariance is 8, then correlation coefficient between is:

    (a) $\dfrac{2}{3}$ (b) $\dfrac{8}{3\sqrt{2}}$ (c) $\dfrac{9}{8\sqrt{2}}$ (d) $\dfrac{2}{9}$

22. If x and y are related as $y - 4x = 3$, then the nature of correlation between x and y is :

    (a) Perfect positive   (b) Perfect negative   (c) No correlation   (d) None of these

23. Coefficient of correlation between the observation $(1, 6), (2, 5), (3, 4), (4, 3), (5, 2) (6, 1)$ is:

    (a) 1   (b) −1   (c) 0   (d) none of these

24. The coefficient of rank correlation is calculated by the formula:

    (a) $r = 1 - \dfrac{2\sum D^2}{n^2 - n}$ (b) $r = 1 - \dfrac{3\sum D^2}{n^2 - n}$ (b) $r = 1 - \dfrac{4\sum D^2}{n^3 - n}$ (d) $r = 1 - \dfrac{6\sum D^2}{n^3 - n}$

25. If the sum of squares of the rank difference in Mathematics and Physics marks of 10 students is 22, then the coefficient of rank correlation is:

    (a) 0.133   (b) .95   (c) 0.867   (d) none of these

26. In a correlation analysis, the value of the Karl Person's coefficient of correlation and its probable error were found to be 0.90 and 0.04 respectively. The value of n is:

    (a) 10   (b) 11   (c) 9   (d) 8

27. If C = 0, N = 7, then coefficient of concurrent deviation is:

    (a) +1   (b) −1   (c) 0.5   (d) −0.5

28. The sum of the squares of difference in the ranks of 18 students in two subject is 46, then the value of rank correlation is:

    (a) 0.62   (b) 0.72   (c) 0.82   (d) 0.52

29. The rank according to two atributes in a sample are given below:

    R_1 :   1   2   3   4   5

    R_2 :   5   4   3   2   1

    The Spearman's rank correlation coefficient is:

    (a) 1   (b) −1   (c) 0.5   (d) −0.5

30. If the coefficient of correlation between x and y is −0.92, then the coefficient of correlation between U = 2x + 6, V = 3y − 15 is:

    (a) −0.46   (b) −0.92   (c) −0.31   (d) none of these

31. If the relation between the two variables is 2x + 3y = 4, then the correlation coefficient between them is:

    (a) −1   (b) 1   (c) −2/3   (d) None of these

32. For a bivariate data: [(x, y)] = [(20, 5), (21, 4), (22, 3)], the correlation coefficient between x and y is:

(a) 1   (b) −1   (c) 0.5   (d) 0.

33. The coefficient of concurrent deviation is given by:

(a) $\sqrt{\dfrac{n+2c}{n}}$ (b) $-\sqrt{\dfrac{2c-n}{n}}$ (c) $-\sqrt{\dfrac{n-2c}{n}}$ (d) None of these

34. The coefficient of correlation between two variables X and Y is 0.38. Their covariance is 10.2. The variance of X is 16. The standard deviation of Y series is:

(a) 5.71   (b) 6.71   (c) 7.71   (d) 8.71

35. The covariance between two variates X and Y of five items is 6 and their standard deviation are 2.45 and 2.6 respectively. The coefficient of correlation between them is:

(a) 0.94   (b) −0.84   (c) 0.87   (d) −0.94

36. Given that the correlation between x and y is 0.5, then the correlation between 2x − 4 and 3 − 2y is:

(a) 0.5   (b) −0.5   (c) +1   (d) −1

37. Given the following data : n = number of pairts of observations = 10; C = Numbers of pairs of deviations having sign = 9. The coefficient of concurrent deviation is:

(a) 0.79   (b) −0.79   (c) 0.89   (d) −0.89

38. The coefficient of correlation between two varities X and Y is 0.8 and their covariance is 20. Also $\sigma_x = 4$, Then the standard deviation of Y is:

(a) 6.25   (b) 2.25   (c) 4.25   (d) 7.25

39. Given C = 9, r = 0.89, then the number of pairs of deviation n is:

(a) 11   (b) 10   (c) 7   (d) 6

40. If dx = X − 17.5, dy = Y - 50, $\sum dx = 3$, $\sum dx^2 = 19$, $\sum dy = 40$, $\sum dy^2 = 850$, N=6, then the value of r is:

(a) −0.59   (b) 0.59   (c) −0.47   (d) 0.47

41. If r = 0.3, N = 10, then the probable error of r is:

(a) 0.194   (b) 0.174   (c) 0.184   (d) 0.124

42. If r = 0.7 and n = 5, Then the probable error is:

(a) 0.25   (b) 0.15   (c) 0.5   (d) 0.10

43. If P.E. = 0.2, n = 9, then the value of r is:

(a) 0.332   (b) 0.222   (c) 0.232   (d) zero.

44. If the coefficient of correlation between X and Y is 0.65, then the coefficient of determination is:

(a) 0.48   (b) 0.52   (c) 0.42   (d) 0.32

45. If the coefficient of correlation r between X and Y is 0.25, then the coefficient of non-determination between them is:

(a) 0.84   (b) 0.94   (c) 0.74   (d) 0.64

46. Given is the following information:

	X	y
Arithmetic mean	6	8
Standard deviation	5	40/3.

Coefficient of correlation between X and Y is 8/15. The most likely value of Y when X = 100 is:

(a) 140.67   (b) 141.67   (c) 241.68   (d) 94.68

47. Given : Unexplained variation = 19.22, explained variation = 19.70, then the coefficient of correlation, is:

(a) $\pm$ 0.71   (b) $\pm$ 0.75   (c) $\pm$ 0.61   (d) $\pm$ 0.65

48. If x and y are related by $y = mx + c$, m and c being constants, then coefficient of correlation r between them is:

(a) 1   (b) 0   (c) 2   (d) None of these

49. If $\sum x = 52$, $\sum y = 64$, $\sum xy = 300$, n = 11, then Cov (x, y) is :

(a) – 0.23   (b) – 0.33   (c) – 0.43   (d) – 0.53

50. The coefficient of correlation between x and y where [SM]

x:	64	60	67	59	69
y:	57	60	73	62	68 is :

(a) 0.655   (b) 0.68   (c) 0.73   (d) 0.758

51. What is the coefficient of correlation between the ages of husbands and wives from the following data ? [SM]

Age of husband (year):	46	45	42	40	38	35	32	30	27	25
Age of wife (year):	37	35	31	28	30	25	23	19	19	18

(a) 0.58   (b) 0.98   (c) 0.89   (d) 0.75

52. The coefficient of correlation between cost of advertisements and sales of a product on the basis of the following data : [SM]

Ad cost (000 Rs):	75	81	85	105	93	113	121	125
Sales (000 000 Rs):	35	45	59	75	43	79	87	95

(a) 0.85   (b) 0.89   (c) 0.95   (d) 0.98

53. The following results relate to bivariate data on (x , y) : [SM]

$\sum xy = 414, \sum x = 120, \sum y = 90, \sum x^2 = 600, \sum y^2 = 300, n = 30$. Later or , it was known that two pairs of observations (12,11) and (6,8) were wrongly taken , the correct pairs of observations being (10 , 9) and (8 , 10) . The corrected value of the correlation coefficeint is

(a) 0.752   (b) 0.768   (c) 0.846   (d) 0.953

54. What is the value of correlatioin coefficient due to Pearson on the basis of the following data[SM]

x:	-5	-4	-3	-2	-1	0	1	2	3	4	5
y:	27	18	11	6	3	2	3	6	11	18	27

(a) 1   (b) -1   (c) 0   (d) -0.5

Part-2

1. If the line Y = 13 -3X /2 is the regression equation of y on x then byx is[SM]

   (a) 2/3   (b) –2/3   (c) –3/2   (d) –3/2

2. In the line Y = 19 - 5X/2 is the regresson equation x on y then bxy is,[SM]

   (a) 19/2   (b) 5/2   (c) –5/2   (d) –2/5

3. The line X = 31/6 - Y/6 is the regression equation of[SM]

   (a) Y on X   (b) X on Y   (c) both   (d) we can not say

4. In the regression equation x on y, X = 35/8 - 2Y /5, bxy is equal to[SM]

   (a) -2/5   (b) 35/8   (c) 2/5   (d) 5/2

5. The regression equation of Y on X is, 2x + 3Y + 50 = 0. The value of b_{YX} is[SM]

   (a) 2/3   (b) - 2/3   (c) -3/2   (d) none

6. In the line Y = 19 – (5/2) X, b_{yx} is equal to :

   (a) 5/2   (b) 15/2   (c) –5/2   (d) None of these

7. In the equation X = 35/8 – (2/5) Y, b_{xy} is equal to:

   (a) –2/5   (b) 2/5   (c) 7/12   (d) 5/2

8. For the regression equation of Y on X, 2X + 3Y + 50 = 0. The value of b_{yx} is:

   (a) 2/3   (b) -2/3   (c) –3/2   (d) None of these

9. If b_{yx} = 0.8, b_{xy} = 0.46, then r is:

   (a) 0.61   (b) 0.51   (c) 0.60   (d) None of these

10. If the correlation coefficient between two variables X and Y is 0.4 and the regression coefficient of X on Y is 0.2, then the regression coefficient of Y on X is:

    (a) 0.4   (b) ± 0.8   (c) 0.8   (d) None of these

11. Reression equation of Y on X is $8x - 10y + 66 = 0$ and $\sigma_x = 3$. Hence Cov (X, Y) is equal to:

    (a) 11.25   (b) 7.2   (c) 2.4   (b) None of these

12. If p (x, y) = 0.4 and b_{xy} = 0.2, then b_{yx} is equal to:

    (a) –0.8   (b) 0.2   (c) 0.8   (d) ± 0.8

13. Out of the two lines of regression given by $x + 2y - 4 = 0$ and $2x + 3y - 5 = 0$, the regression line of x on y is:

    (a) $2x + 3y - 5 = 0$ (b) $x + 2y = 4$

    (c) $x + 2y = 0$ (d) The given lines can't be regression lines.

14. For a bivariate data, the two lines of regression are $4x-5y+33=0$ and $2x-9y+127=0$. For this data r=

    (a) 2/9   (b) 4/5   (c) 5/4   (d) $\sqrt{10}/6$

15. If $\bar{x}=10$, $\bar{y}=50$, $\sigma_x=3$, $\sigma_y=15$, p=0.9, then the estimated value of x corresponding to y = 100 is:

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

16. If $\bar{x}=15$, $\bar{y}=80$, $\sigma_x=2$, the $\sigma_y=16$, $\rho=0.75$, then the estimated value of y corresponding to $x=25$ is:

    (a) 150   (b) 140   (c) 130   (d) 145

17. Given the following data : $b_{xy}=2.33$, $b_{yx}=0.39$, then the value of correlation coefficient r is:

    (a) 0.39   (b) 0.79   (c) 0.95   (d) 0.85

18. Given the following data of a bivariate distribution : $b_{xy}=1.36$, $b_{yx}=0.613$, then the coefficient of determination is given by:

    (a) 0.634   (b) 0.834   (c) 0.734   (d) 0.534

19. Given the following data for a bivariate distribution : $b_{xy}=0.756$, $b_{xy}=0.659$, then the coefficient of non-determination is given by:

    (a) 0.502   (b) 0.402   (c) 0.602   (d) 0.702

20. For the following data of a bivariate distribution (x,y) : $(\sigma_x/\sigma_y)=2/3$, $b_{xy}=3/5$ the coefficient of determination is:

    (a) 0.9   (b) 0.79   (c) 0.83   (d) 0.81

21. The two lines of regression are $x+2y=7$ and $2x+y=7$. The regression equation of Y on X is:

    (a) $2x+y=7$ (b) $x+2y=7$ (c) $x+2y=0$ (d) $2x+y=0$

22. The two lines of regression are $2x-7y+6=0$ and $7x-2y+1=0$. What is the correlation coefficient between x and y ?

    (a) –2/7   (b) 2/7   (c) 4/49   (d) None of these

23. If the two lines of regression are $3x-y-5=0$ and $2x-y-4=0$ then $\bar{x}$ and $\bar{y}$ respectively, are:

    (a) 1 and –2   (b) –1 and 2   (c) 2 and –1   (d) –2 and –1

24. You are given the following data : $\bar{x}=36$, $\sigma_x=11$; $\bar{Y}=85$, $\sigma_y=8$ and correlation coefficient between X and Y is 0.66. Find value of X when Y = 75.

    (a) 26.53   (b) 25.93   (c) 26.93   (d) 27.93

25. The following relsults were obtained from the analysis of data on two variables X and Y : $\bar{X}=20$, $\bar{Y}=15$, Standard deviation of X = 4, Standard deviation of Y = 3; r = the coefficient of correlation = 0.7. The likely value of Y, when X = 24 is:

    (a) 17.9   (b) 17.8   (c) 17.1   (d) 16.1

26. In a partially destroyed laboratory record of an analysis of correlation data, only the following results are legible: Variance of X = 9

Regression equations :

$8X - 10Y + 66 = 0$ ....(1)

$40X - 18Y = 214$ ....(2)

On the basis of the above information the value of σ_y is :

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

27. From the following data: $\sigma_x = 3$, $b_{xy} = 0.85$ and $b_{yx} = 0.89$, the value of σ_y is:

(a) 3.57   (b) 3.07   (c) 3.97   (d) 2.07

28. For some bivariate data, te following results were obtained; Mean of variable X = 53.2 and of Y = 39.5; Regression coefficient of Y on X = – 1.5 and of X on Y = – 0.38. What should be the most likely value of X when Y = 50?

(a) 39.21   (b) 49.21   (c) 48.21   (d) 59.21

29. The lines of regression of a bivariate distribution are as follows: $5X - 145 = -10Y$; $14Y - 208 = -8X$. The mean values $(\overline{X}\,\overline{Y})$ is :

(a) (5, 12)   (b) (12, 5)   (c) (12, 3)   (d) (3, 12)

30. The regression coefficient b_{xy} between X and Y for the following data:

$\Sigma x = 30$, $\Sigma y = 42$, $\Sigma xy = 199$, $\Sigma x^2 = 184$, $\Sigma y^2 = 318$, N = 6 is:

(a) 2.2   (b) –1.24   (c) 2.1   (d) –2.4

31. The regression coefficient b_{yx} between x and y for the following data:

$\Sigma x = 24$, $\Sigma y = 44$, $\Sigma xy = 306$, $\Sigma x^2 = 164$, $\Sigma y^2 = 574$, N = 4 is:

(a) –0.46   (b) 2.3   (c) 2.1   (d) – 2.1

32. For the following data, $b_{yx} = 1.24$ $b_{xy} = 0.36$, $\overline{x} = 5.5$, $\overline{y} = 8.8$, the regression line y on x is:

(a) $y = 1.24x + 1.98$ (b) $y = -1.24x + 1.98$ (c) $x = 0.3y + 2.86$ (d) None of these

33. If $4x + 6y - 1 = 0$ is the regression line of y on x, then b_{yx} is equal to :

(a) –(3/2)   (b) –(2/3)   (c) $-(2/\sqrt{(13)})$ (d) None of these

34. For the following data, $\overline{x} = 36$, $\overline{y} = 85$, $\sigma_x = 11$, $\sigma_y = 8$, r = 0.66 the regression line y on x is:

(a) $y = 0.48x - 67.72$ (b) $y = 0.48x - 67.72$ (c) $y = 0.91y - 41.14$ (d) None of these

35. If the coefficient of correlation between X and Y is 0.28, covariance between X and Y is 7.6 and the variance of X is 9, then the S.D. of Y series is:

(a) 9.05   (b) 9.1   (b) 9.08   (d) 10.05.

36. If the two lines of regression are $x + 4y = 3$ and $3x + y = 15$, then the value of x for $y = 3$ is:

(a) –4   (b) 4   (c) –3   (d) 3

37. Let $\overline{x} = 15$, $\overline{y} = 80$, $\sigma_x = 12$, $\sigma_y = 12$, r=0.75. Then estimated value of y corresponding to $x = 55$ is :

    (a) 110   (b) 120   (c) 100   (d) none of these

38. Two random variables have the regression lines $3x + 2y = 26$ and $6x + y = 31$. The coefficient of correlation between x and y is given by:

    (a) -0.5 (b) 0.5   (c) 0.25   (d) None of these

39. $3x+4y-7=0$ and $4x+y-5=0$ are the equations of two regression lines. The correlation coefficient between x and y is:

    (a) 0.43   (b) -0.43 (c) 0.34   (d) -0.34

40. Given $\sigma_x = 3$, and the two regression lines : $8x-10y+66=0$, and $40x-18y=214$ then $\sigma_y =$

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

41. In a bivariate distribution $b_{xy} = 0.64$ and $b_{yx} = 0.83$, then the coefficient of determination is given by:

    (a) 0.413   (b) 0.513   (c) 0.523   (d) 0.423

42. In a bivariate data $b_{xy} = 0.24$ and $b_{yx} = 0.58$, then the coefficient of non-determination is given by:

    (a) 0.2   (b) 0.02   (c) 0.002   (d) 0.03

43. If the two line of regression are $y = 3x-5$ and $y = 2x-4$, then $\rho(X,Y)$ is equal to :

    (a) $\sqrt{2/3}$ (b) $\sqrt{1/6}$ (c) $\sqrt{3/2}$ (d) None of these

44. If b_{yx} and b_{xy} are regression coefficients of Y on X, and X on Y respectively, then which of the following statements is true?

    (a) $b_{xy} = 1.5$, $b_{yx} = 1.4$ (b) $b_{xy} = 1.5$, $b_{yx} = 0.9$ (c) $b_{xy} = 1.5$, $b_{yx} = 0.8$ (d) $b_{xy} = 1.5$, $b_{yx} = 0.6$

45. Given the following data, $b_{xy} = -3/2$, $b_{yx} = -1/2$, $r^2 = 0.75$ then the value of σ_y^2 is:

    (a) 2   (b) 4   (c) 9   (d) 12

46. If $\sigma_x = 6.4$, $\sigma_y = 8.0$ and $b_{xy} = 0.4$, then the value of r is:

    (a) 0.56   (b) 0.46   (c) 0.36   (d) 0.76

47. If $\sigma_x = 6.4$, $b_{xy} = 0.4$ and r = 0.56, then the value of σ_y^2 is

    (a) 56   (b) 49   (c) 64   (d) 36

48. If $\sigma_x = 6.4$, $\sigma_y = 8$ and r = 0.56, then the value of b_{yx} is :

    (a) 0.7   (b) 0.40   (c) -0.7 (d) 0.49

49. The regression line of y on x is :

    $y = 109.21 - 1.245x$. The estimated value of y for $x = 62$ is:

    (a) 42   (b) 52   (c) 32   (d) 26

50. Given the following data for two variables x and y : $\overline{x} = 25.5$, $\overline{y} = 40$, $\sigma_x = 24$, $\sigma_y = 6$, r = 0.8. The regression line of y on x is:

    (a) $y = 11 + 2x$ (b) $y = 2x - 11$ (c) $x = 11 + 2y$ (d) None

51. If $b_{xy} = 4/5$, r = 0.73, $\sigma_y = 2.74$, then the variance of x is:

   (a) 3   (b) 6   (c) 9   (d) 12

52. In a random sample of size 28; $b_{xy} = -1.5$, $(\sigma_y^2 / \sigma_x^2) = 0.25$, then the value of r_{xy} is :

   (a) –0.75   (b) 0.75   (c) 0.95   (d) 0.85

53. If $y = 3x + 4$ is the regression line of 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

54. The two lines of regression are given by $8x + 10y = 25$ and $16x + 5y = 12$ respectively. If the variance of x is 25, what is the standard deviation of y ?

   (a) 4   (b) 8   (c) 16   (d) 6

55. The regression equation of y on x for the following data :[SM]

x	41	82	62	37	58	96	127	74	123	100
y	28	56	35	17	42	85	105	61	98	73

   Is given by

   (a) y = 1.2x - 15   (b) y = 1.2x + 15   (c) y = 0.93x - 14.64   (d) y = 1.5x - 10.89

56. The following data relate to the heights of 10 pairs of fathers and sons: [SM]

   (175 , 173) , (172 , 172) , (167 , 171) , (168 , 178) , (172,173) , (171,170) , (174,173) (176,175) (169, 170) , (170 , 173).

   The regression equation of height of son on that of father of given by

   (a) y = 100 + 5x   (b) y = 154.03 + .1095x   (c) y=89.653 + 0.582   (d) y=88.758+0.562x

57. The two regression coefficients for the following data :[SM]

x :	38	23	43	33	28
y :	28	23	43	38	8

   (a) 1.2 and 0.4   (b) 1.6 and 0.8

   (c) 1.7 and 0.8   (d) 1.8 and 0.3

58. For y = 25 , what is the estimated value of x , from the following data:[SM]

x:	11	12	15	16	18	19	21
y:	21	15	13	12	11	10	9

   (a) 15   (b) 13.926   (c) 6.082   (d) 14.986

59. Calculate the (i) two regression coefficient, (ii) coefficient of correlation, and (iii) the two regression equations from the following data :[SM]

N = 10, $\sum X = 320$, $\sum Y = 380$, $\sum (X - 32)^2 = 140$,

$\sum (Y - 38)^2 = 398$, (Y - 38) = -93

$\sum (X - 32)$

(a) bxy = -0.3331, byx = -0.5643
   r = -0.294
   X_c = 40.981 - 0.13374
   Y_c = 59.2576 - 0.6693x

(b) bxy = -0.2337, byx = -0.6643
   r = -0.394
   X_c = 40.881 - 0.23374
   Y_c = 59.2576 - 0.6693x

(c) bxy = -0.7337, byx = -0.6643
   r = -0.393
   X_c = 40.881 - 0.23374
   Y_c = 59.2576 - 0.6693x

(d) bxy = -0.8337, byx = -0.6643
   r = -0.394
   X_c = 40.881 - 0.23374
   Y_c = 59.2076 - 0.6693x

60. For a bivariate data, you are given the following information :[SM]

$\sum (X - 44) = -5$, $\sum (X - 44)^2 = 255$

$\sum (Y - 26) = -6$, $\sum (Y - 26)^2 = 704$

$\sum (X - 44)(Y - 26) = -306$

Number of pairs of observation = 12

Find out (i) the two regression equations, and (ii) the coefficient of correlation between X and Y-series.

(a) X_c = 54.80 - 0.44Y
   Y_c = 78.67 - 1.219X
   r = -0.733

(b) X_c = 64.80 - 0.44Y
   Y_c = 78.67 - 1.209X
   r = -0.733

(c) X_c = 84.70 - 0.44Y
   Y_c = 78.66 - 1.219X
   r = -0.733

(d) X_c = 74.80 - 0.44Y
   Y_c = 78.64 - 1.219X
   r = -0.733

61. By using the following data, find out the two lines of regression and from them compute the Karl Pearson's coefficient of correlation.[SM]

$\sum X = 250$, $\sum Y = 300$, $\sum XY = 7900$

$\sum X^2 = 6500$ $\sum Y^2 = 10000$ N = 10

(a) X_c = 13 + .4Y, Y_c = -10 + 1.6X, r = 0.80

(b) X_c = 23 + .4Y, Y_c = -09 + 1.6X, r = 0.80

(c) X_c = 33 + .4Y, Y_c = -08 + 1.6X, r = 0.80

(d) X_c = 43 + .4Y, Y_c = -07 + 1.6X, r = 0.80

Additional Question Bank

Part-I

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

Part-2

1	d	14	d	27	b	40	a	53	a
2	d	15	a	28	b	41	b	54	c
3	b	16	b	29	b	42	b	55	c
4	a	17	c	30	a	43	a	56	b
5	b	18	b	31	c	44	d	57	a
6	c	19	a	32	a	45	b	58	c
7	a	20	d	33	b	46	a	59	b
8	b	21	b	34	b	47	c	60	a
9	a	22	b	35	a	48	a	61	a
10	c	23	a	36	b	49	c		
11	b	24	c	37	a	50	a		
12	c	25	c	38	a	51	c		
13	a	26	c	39	b	52	a		

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