



Date: 26-10-2018
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

SECTION A

Answer ALL questions:

(10 X 2 = 20 Marks)

1. The mean of marks in statistics of 100 students of a class was 72. The mean of marks of boys was 75 while their number was 70. Find out the mean marks of girls in the class.
2. Find range for the following data: 75, 80, 98, 95, 68, 40
3. State the axioms of probability
4. **Two dice are tossed. What is the probability that the sum of the two dice is divisible by 3 or 4?**
5. **In a factory, there are 6 skilled workers and 4 unskilled workers. What is the probability that the two workers selected are skilled?**
6. State any two properties of binomial distribution.
7. Define the conditional probability.
8. Explain different types of probability sampling.
9. A random variable X has the following probability function

Value of X	-2	0	2
$P(X=x)$	0.4	0.6	0.3

Find $E(X^2)$.

10. Define normal distribution.

SECTION B

Answer any FIVE questions:

(5 X 8 = 40 Marks)

11. (a) Calculate the mean for the following data.

Class Interval	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency	10	15	12	14	16	9	5

(OR)

- (b) Find the standard deviation and coefficient of variation for the given data:

Age(Years)	25-30	30-35	35-40	40-45	45-50	50-55
No. of workers	70	51	47	31	29	22

12. (a) Find the correlation coefficient between production and sales of a factory from the data given below:

Production(in tones)	6	14	12	15	9	6	7	9	6	8
Sales (in Rs.)	4	10	6	9	6	9	8	12	9	7

(OR)

- (b) Out of 8000 graduates in a town, 800 are females and out of 1600 graduates employees 120 are female. Use chi-square test at 5% level to determine if any discrimination is made in appointment on the basis of sex.

13.(a)The life of a certain kind of electronic device has a mean of 300 hours and standard deviation 25 hours . Assuming that the distribution of life which are measured to the nearest hour can be approximated closely with a normal curve , (i) find the probability that any of these devices will have a life time of more than 350 hours , (ii) what percentage will have life time from 220 hours to 260 hours?

(OR)

(b)What is probability sampling? Explain different types of probability sampling.

14.(a) Find the mean, variance and standard deviation of the following probability distribution

Value of X	-3	-2	-1	0	1	2	3
p (x)	¼	1/ 6	1/ 5	1/ 4	1/3	1/ 7	1/2

(OR)

(b) Calculate the four moments about mean for the following data.

x	2	3	4	5	6
f	1	3	7	3	1

15.(a) Find moment generating function of the poisson distribution and hence find its mean and variance.

(OR)

(b)) Find mean and variance of the Gamma distribution.

SECTION C

Answer any TWO questions:

(2 X 20 = 40 Marks)

16.(a)The scores of two players A and B in 12 rounds are given below:

A	83	85	80	85	84	87	89	97	95	94	92	91
B	87	89	85	91	92	94	96	82	86	81	86	83

Identify the better player and the more consistent player?

(b) Find the Rank Correlation coefficient from the following data:

Sl. No.	1	2	3	4	5	6	7	8	9	10
Ranks in Statistics	1	2	3	4	5	6	7	8	9	10
Ranks in Maths	2	4	1	5	3	9	7	10	6	8

(10 +10)

17.(a) State and prove Boole's inequality.

(b).The life of a certain kind of electronic device has a mean of 300 hours and standard deviation 25 hours . Assuming that the distribution of life which are measured to the nearest hour can be approximated closely with a normal curve , (i) find the probability that any of these devices will have a life time of more than 350 hours , (ii) what percentage will have life time from 220 hours to 260 hours?

(10 +10)

8. Two random variables X and Y have the following joint probability density function

$$f(x,y) = \begin{cases} 2(x-y) ; 0 \leq x \leq 1 ; 0 \leq y \leq 1 \\ 0, \text{ otherwise} \end{cases}$$

Find (a)Marginal density function of X and Y(b).Conditional density functions (c) Var(X) and Var(Y) (d) Cov(X,Y) (20)

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