

S.No. : 125

BCADS 1205

No. of Printed Pages : 06

Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 15808

Roll
No.

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BCA Examination 2021-22

(Even Semester)

STATISTICAL MATHEMATICS

Time : Three Hours]

[Maximum Marks : 60

Note :— Attempt all questions.

SECTION – A

1. Attempt all parts of the following : $8 \times 1 = 8$

- (a) What do you mean by central tendency?
- (b) What is graphical presentation of data?
- (c) What is range?
- (d) Define the term correlation.
- (e) What do you mean by experiment in probability concept?

- (f) Give the classical definition of probability.
- (g) An unbiased coin is tossed. What is the probability that it is a head?
- (h) What is mutually exclusive event in probability?

SECTION – B

2. Attempt any two parts of the following : $2 \times 6 = 12$

- (a) The table given below, the number of candidate obtain X or higher marks in certain examination:

No. of Students	Marks (X)
10	140
20	130
30	118
40	100
50	75
60	45
70	25
80	9
90	2
100	0

Calculate the median marks obtained by a student.

- (b) Find the mean deviation about mean from the following frequency distribution :

Heights	Frequency
60 – 62	5
63 – 65	18
66 – 68	42
69 – 71	27
72 – 74	8

- (c) There are two identical boxes containing respectively 4 white and 3 red balls and 3 white and 7 red balls. A box is selected at random and a ball is drawn from it. If the ball is white, what is the probability that it is from the first box?
- (d) Find 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 using Poisson distribution.

SECTION – C

Note :- Attempt all questions from this section.

$$10 \times 4 = 40$$

[P. T. O.]

3. Attempt any two parts of the following :

- (a) Find the arithmetic and geometric of the following :

15, 25, 35, 12, 14, 9, 18, 20

- (b) The average weight of the following distribution is 58.5. Find the value of x :

Weight (in kg)	50	55	60	$x+12.5$	70
Frequency	1	4	2	2	1

- (c) Write short notes on the following :

- (i) Histogram
(ii) Pie chart

4. Attempt any two parts of the following :

- (a) Find the inter-quartile range of the following distribution :

X	Frequency
20 – 25	5
25 – 30	70
30 – 35	100
35 – 40	180
40 – 45	150
45 – 50	120

- (b) The mean and standard deviation of a sample of 100 observations were calculated as 40 and 5.1 respectively, by a student who took by mistake 50 instead by 40 for 1 observation. Calculate correct mean and standard deviation.
- (c) Calculate the Karl Pearson's coefficient of correlation from the following data :

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

5. Attempt any two parts of the following :

- (a) Explain the following terms with a suitable example for each :
- (i) Events
 - (ii) Equally likely events
 - (iii) Exhaustive set of events
- (b) Two cards are drawn from the pack of 52 cards each being replaced before the next one is drawn. Compute the probability that all are :
- (i) Spate
 - (ii) Red

[P. T. O.]

- (c) If a player, plays a game of chance where he can win ₹ 5,000 with probability 0.6, win ₹ 2,500 with probability 0.3 and loose ₹ 15,000 with probability 0.1. What is the expected gain in one play of the game?

6. Attempt any two parts of the following :

- (a) A coin is tossed four times. What is the probability of getting :
- (i) At least two heads
 - (ii) More than two heads
- (b) If the probability of a defective bulb be $\frac{1}{5}$. Find the mean and standard deviation for the binomial distribution of defective bulb in a total of 400 bulbs.
- (c) Define normal distribution. Under what conditions can a normal distribution be applied?
