S.No.: 125

**BCADS 1205** 

 $8 \times 1 = 8$ 

No. of Printed Pages: 06

	No. to be filled in your Answer Book.
PAPER ID: 15808	No.

## 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:
  - (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		
90 100	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		

- 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.

 $10 \times 4 = 40$ 

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- 3. Attempt any two parts of the following:
  - (a) Find the arithmetic and geometric of the following:

(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

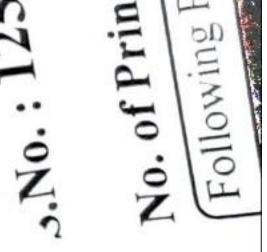
- (c) Write short notes on the following:
  - (i) Histogram
  - (ii) Pie chart
- 4. Attempt any two parts of the following:
  - (a) Find the inter-quartile range of the following distribution:

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



- (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 ist he 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 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?

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