DATA ANALYSIS AND STATISTICAL TECHNIQUES (BCA 404)

Duration: 2 hours   **Total Marks: 50**

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

1. Explain the following with an example.   **Marks(1 X 5)**
  i.   Mutually exhaustive events
  ii. Range
  iii. Null hypothesis
  iv. Sample Space
  v.   Measure of central tendency.

b. Answer the following questions.   **Marks(1 X 5)**
  i.   State the Addition theorem on probability
  ii. If $P(A \cup B) = \frac{17}{24}$, $P(A \cap B) = \frac{1}{4}$, $P(\bar{A}) = \frac{5}{8}$ then find P(B).
  iii. Find the harmonic mean of 20,24 and 30.
  iv. Explain simple random sampling.
  v.   Find the probability that the total number when two die are rolled is 10.

2. Answer the following (Any two)   **Marks(5 X 2)**
  a. Calculate the standard deviation for the following distribution giving 300
     telephone calls

Duration (in secs)	0-30	30-60	60-90	90-120	120-150	150-180	180-210
	9	17	43	82	81	44	24

  b. Find the quartiles for the following data

Wages (in Rs)	200-250	250-300	300-350	350-400	400-450	450-500
No. of workers	11	13	27	25	18	6

  c. Calculate the mean deviation from the mean of the following data:

Height (in cms)	150-154	154-158	158-162	162-166	166-170
No. of persons	5	8	21	10	6

3. Answer the following (Any two)   **Marks(5 X 2)**
  a. Four cards are drawn at random from a pack of 52 cards.
     Find the probability that
     (i) they are a king, a queen ,a jack and an ace.
     (ii) two are kings and two are queens.
     (iii) two are black and two are red

b. A variable follows poisson's distribution with mean 6.
   (Given that e^{-6} =0.00248)
   Calculate (i) P(x=0), (ii)P(x=1), P(x>2)

c. The probability that a lecturer taking up an employment in a college will leave within 12 months is 0.4.What is the probability that out of 5 lecturers entering the college (i)no lecturer, (ii)one lecturer, (iii) at least one lecturer will leave within twelve months.

4. Answer the following (Any two)   Marks(5 X 2)

a. A sample of 64 students yield a mean age at the time of their post graduation as 24 years with a standard deviation of 2.6 years. Find the (i) 95% and (ii) 99% confidence limits.

b. A coin is tossed 900 times and head appears 490 times .Does it support the hypothesis that the coin is unbiased?

c. An automatic can filling machine on an average fills 180 ml of milk .Find the probability that the average volume of milk filled in 100 cans from a lot is (i)at most 180.2ml, (ii)between 179.9ml and 180.1 ml.

5. Answer the following (Any two)   Marks(5 X 2)

a. Calculate Karl Pearson's coefficient of correlation from the following data given below

x	5	7	3	1	9	12	8	3
y	8	9	5	4	9	13	7	9

b. Compute Rank correlation coefficient for the following data

x	52	34	47	65	52	34	52	65
y	65	59	65	68	60	68	57	68

c. Obtain the equation of the regression line of y on x and find the missing value for the following data:

x	16	14	13	18	10	15
y	15	16	20	?	14	25

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