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(Academic Year: 2022-2023)
Unit Test-II
STATISTICS

Time: 1 Hour   **Max. Marks: 30**

Division: SE B

Date:19/05/2023

Q1) a) Calculate the mean and standard deviation for the following table giving the mark distribution of 500 students.   5M

Marks	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of students	4	16	112	132	170	54	12

b) Two lines of Regression are given by $5x - 6y + 90 = 0$ and $15x - 8y = 130$.   5M
Find   i) The mean values of x &y
         ii) The correlation coefficient between x & y

c) The first four moments about the value 4 of a distribution are 2, 20, 40 and 100 respectively. Find   5M
i) first four central moments   ii) mean and standard deviation
iii) coefficient of skewness   iv) coefficient of kurtosis

OR

Q2) a) Find the quartile deviation and coefficient of quartile deviation of the following frequency distribution   5M

Marks	<10	10-20	20-30	30-40	40-50	50-60
No. of students	10	20	30	50	40	30

b) Two examiners A and B award marks to seven students as follows.   5M

Marks(A)	40	44	28	30	44	36	30
Marks(B)	32	39	26	30	28	34	28

Calculate the coefficient of correlation.

c) Runs scored in 10 matches by two batsmen A and B are tabulated as below.   5M

A	46	34	52	78	65	81	26	46	53	71
B	59	25	81	47	73	78	42	35	64	30

Decide who is better batsman and who is more consistent.

Q3) a) In a continuous distribution density function $f(x) = \lambda\, x\, e^{-x}, \quad x > 0$ 5M

Find the value of $(i)\,\lambda$ (ii) $p(2 < x < 5)$

b) A car hire firm has 2 cars which it hires out day by day. The number of   5M
demands for the car on each day is distributed as Poisson distribution with
parameter 1.5. Calculate the probability of days on which neither car is used
and for the days on which demand is refused.

c) Assuming that the diameter of 1000 brass plugs taken consecutively from   5M
machine form normal distribution with mean 0.7515cm and standard deviation
0.002.cm. How many plugs are likely to approved if acceptable diameter is
0.753±0.004cm?

(Area corresponding to 2.25 is 0.4878 and corresponding to 1.75 is 0.4599)

OR

Q4) a) A Random variable X with following probability distribution   5M

X	1	2	3	4	5	6	7
P(X)	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

Find

(i) k (ii) P $(x \geq 2)$ (iii) P $(x < 3)$ (iii) P $(2 \leq x \leq 3)$

b) On an average a box containing 10 articles is likely to have 2 defectives. If we   5M
consider a consignment of 100 boxes, how many of them are expected to have 3
or less defective?

c) Assume the mean height of soldiers to be 68.22 inches with variance 10.8   5M
inches. How many soldiers in a regiment of 10,000 would you expect to be over
6 feet tall, where the data is normally distributed.

(Given : Area corresponding to 1.15 is 0.3749)

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