M.C.A.(Sem-I) April-2023

Time: 3 Hours **Total marks: 80**

N.B: (1) **Question No. 1** is compulsory

(2) Attempt any **Three Questions between Questions No.2 to Question No.6**

Q1 A) Attempt any 4 **[20]**

1. Explain Skewness and its types.
2. Discuss properties of regression.
3. Write a short note on correlation.
4. Explain random variable.
5. Following data gives the ranks assigned to eight workers by two different supervisors. Find the Rank correlation coefficient.

Rank by supervisor I	**I**		**5**	**7**	**1**	**2**	**8**	**6**	**4**
Rank by supervisor II	**II**	**2**	**1**	**4**	**5**	**7**	**6**	**3**	**8**

Q2 A) Calculate the karl Pearson's coefficient of Skewness for the following data: **[10]**

Daily wages	400-500	500-600	600-700	700-800	800-900
No of Workers	8	16	20	17	3

B) Find the coefficient of correlation for the following data: **[10]**

X	14	8	10	11	9	13	5
Y	14	9	11	13	11	12	4

Q3 A) Find the regression equations for the following data and hence **[10]**

estimate y when x = 15

x:	10	12	14	19	8	11	17
y:	20	24	25	21	16	22	20

B) The two regression lines between x and y are **[10]**

given below. Find mean value of x and y and correlation coefficient (rxy)

$100y - 45x - 1400 = 0$

$4y - 5x + 200 = 0$

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Q4 A) A box contains 20 tickets numbered from 1 to 20**.** **[10]**

A ticket is drawn randomly from the box. Find the probability that the number on the ticket is

i. Divisible by 5
ii. Not divisible by 2
iii. Divisible by 3 and 4.
iv. Divisible by 3 or 4.

B) A committee of 6 students is to be formed from a group of **[10]**

7 boys and 5 girls. Find the probability that it consists of

(i) all boys, (ii) only 1 boy (iii) atleast 4 girls.

Q5 A) Two independent A and B events are such that, P (A) = 0.3 **[10]**

and P (B) = 0.4. Find the probability that (i) both A and B will occur

(ii) only A occurs, (iii) only B will occur, (iv) at least one will occur,

(v) none will occur.

B) A random variable X has the following probability **[10]**

distribution.

Value of variable X :	-2	-1	0	1	2	3
P(x) :	0.1	k	0.2	2k	0.3	k

Find the value of k , hence find $P(x < 1)$, $P(x \geq 1)$

Q6 A) Investigate the association between the darkness of eye **[10]**

color of father and son from the following table.

	Color of Father's Eye	
Color of Son's Eye	Dark	Not Dark
Dark	91	62
Not Dark	69	98

(Use chi-square test of significance at 5% l.o.s, Chi-square (table) =3.84).

B) Explain properties of Binomial Distribution. **[10]**

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