

DF-101

December-2021

B.C.A., Sem.-III**CC-205 : Statistical Methods****Time : 2 Hours]****[Max. Marks : 50**

- Instructions :** (1) All questions in Section-I carry equal marks.
 (2) Attempt any **two** questions in Section-I.
 (3) Question-5 in Section-II is compulsory.

Section-I

1. (A) (i) In school there are total 45 employees. Their average monthly salary is 730.32. If the average monthly salary of 32 teachers is 850, find average monthly salary of the remaining employees. **10**
 (ii) The distribution of demand of an item on different days is as follows. Find the mean demand :

Demand	5-14	15-24	25-34	35-49	50-64	65-79
No. of days	4	17	19	22	18	10

- (B) (i) State characteristics of a good average. **10**
 (ii) Find the mode for the following frequency distribution :

Class	20-39	40-59	60-79	80-99	100-119	120-139
fi	7	12	25	30	14	12

2. (A) From the following distribution, find Q_1 , D_4 and P_{70} . **10**

Class	0-10	10-20	20-30	30-40	40-50	50-60
fi	4	7	11	14	9	5

- (B) (i) Find mean deviation from the following distribution : **10**

xi	2	4	6	8	10	12	14	16
fi	2	2	4	5	3	2	1	1

- (ii) Find the standard deviation of age of the persons from the following distribution of 125 persons living in a society. Also find the co-efficient of variation.

Age	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Persons	15	15	23	22	25	10	5	10

3. (A) (i) If $P(A) = 0.4$, $P(B) = 0.6$, $P(A \cup B) = 0.8$, find $P(A/B)$, $P(A \cap B')$, $P(B/A')$ and $P(A' \cap B')$. **10**
 (ii) Two dice are thrown simultaneously. Find the probability that the sum of the numbers is divisible by 3 or 4.

- (B) (i) State the probability mass function of Binomial distribution and its properties. 10
(ii) Seven coins are tossed simultaneously. Find the probability of getting five heads and at least five heads.
4. (A) (i) Find correlation coefficient by Karl Pearson's formula : 10
- | | | | | | | | | | | |
|----------|----|----|----|----|----|----|----|----|----|----|
| x | 10 | 26 | 18 | 14 | 22 | 30 | 46 | 34 | 42 | 38 |
| y | 50 | 58 | 54 | 52 | 56 | 60 | 68 | 62 | 66 | 64 |
- (ii) Find rank correlation coefficient from the following data :
- | | | | | | | | | |
|----------|----|----|----|----|----|----|----|----|
| x | 10 | 11 | 14 | 16 | 13 | 18 | 11 | 13 |
| y | 50 | 52 | 58 | 56 | 52 | 52 | 53 | 52 |
- (B) (i) Find the regression equation of age of wife on the age of husband from the following data : 10
- | | | | | | | | | | | |
|-----------------------|----|----|----|----|----|----|----|----|----|----|
| Age of Husband | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| Age of Wife | 14 | 16 | 16 | 18 | 18 | 19 | 20 | 20 | 21 | 21 |
- (ii) Estimate y when $x = 70$ from the following results :
- | | | |
|--------------------|----------|----------|
| Information | X | Y |
| Mean | 18 | 100 |
| S.D. | 14 | 20 |
- Correlation coefficient between x and $y = 0.8$

Section-II

5. Attempt any **five** : 10
- (1) If the mean of 10 observations is 15, what is the sum of observations ?
(a) 25 (b) 150 (c) 5 (d) 1.5
- (2) The sum of the deviations from mean is
(a) zero (b) one
(c) not defined (d) None of the above
- (3) If mean = 20.5 and Median = 22, find the mode.
(a) 25 (b) 17.5 (c) -17.5 (d) 24
- (4) Which of the following measures is a unit free measure ?
(a) Mean Deviation (b) Quartile Deviation
(c) Range (d) Coefficient of variation
- (5) If the geometric mean of numbers 10 and x are 15, find the value of x .
(a) 22.5 (b) 225 (c) 150 (d) 1.5
- (6) The regression line always passes through
(a) (x, y) (b) (\bar{x}, \bar{y}) (c) $(0, 0)$ (d) $(10, 10)$
- (7) If $r_{xy} = 0.8$, then what is the value of $r(x + 0.2, y + 0.2)$?
(a) 1 (b) 0.8 (c) -0.8 (d) 0
- (8) If the regression line of y on x is $\hat{y} = 15 - 1.2x$, what is the value of \bar{y} if $\bar{x} = 10$?
(a) -3 (b) 3 (c) 27 (d) None
- (9) What is the minimum value of probability $P(A)$ for any event A ?
(a) -1 (b) 1 (c) 0 (d) 0.5
- (10) What is variance of binomial probability distribution ?
(a) \sqrt{npq} (b) npq (c) pq (d) np