Seat No. : _____

NJ-109

December-2015

BCA., Sem.-III

CC-205 : Statistical Computing

Time : 3 Hours] **[Max. Marks : 70**

1. (A) (I) Calculate Mean and Median from the following data : **5**

Marks	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45
No. of Students	7	10	16	30	24	17	10	5	1

(II) Calculate Geometric Mean from the following distribution. **3**

Salary in lacs	1	2	3	4	5	6
No. of employees	10	8	17	7	5	3

OR

(A) (I) Calculate Median and Mode from the following data : **5**

Employees	10-20	10-30	10-40	10-50	10-60	10-70	10-80	10-90
Companies	4	16	56	97	124	137	146	150

(II) Calculate Geometric mean and Harmonic mean from the following series of data : **3**

5, 10, 15, 20, 25, 30

(B) (I) Write any one use of Mean, Median and Mode. **3**

(II) If Arithmetic mean and Geometric mean of two values are 5 and 4 respectively, find Harmonic mean. **3**

OR

(B) (I) Arithmetic mean of 100 items was found to be 50.8. It was later discovered, one item 47 was wrongly taken as 67. Find the correct mean. **3**

(II) The mean age of 100 children of nursery school is 7 years. Among these 100 children, 40 are boys and the rest girls. If the mean age of boys is 8 years, find mean age of girls. **3**

2. (A) (I) From the following distribution, calculate Quartile Deviation and Coefficient of Quartile Deviation. Also find Inter Quartile Range. **5**

Daily Wages in ₹	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120
No. of Workers	13	33	46	35	19	18	18	18

(II) From the following data, calculate mean Deviation and Coefficient of Mean Deviation. **3**

Class	12-16	17-21	22-26	27-31	32-36
Frequency	2	3	14	8	3

OR

(A) (I) Two brands of tyres are tested with the following results : **5**

Life (in '000 miles)	No. of Tyers Brand	
	X	Y
0-10	1	0
10-20	24	21
20-30	55	62
30-40	12	14
40-50	8	3

(a) Which brand of tyres have greater average life ?

(b) Compare the variability and state which brand of tyres would you use on your car ?

(II) Which are the measures of dispersion ? **3**

(B) (I) Calculate Range and Inter Quartile Range from the following data : **3**

Marks	5	10	15	20	25	30
No. of Students	3	7	18	12	8	2

(II) For some distribution of data, Coefficient of Variance is 20.5% and the value of the Arithmetic Mean is 5.5. Find the value of Standard Deviation. **3**

OR

(B) (I) Standard Deviation of two series are 10 and 20 and their Coefficient of Variance are 50% and 80% respectively. Find Arithmetic Mean of these two series. **3**

(II) Find 1st Quartile and 25th Percentile from the following series of data : **3**

91, 75, 61, 101, 43, 104

3. (A) (I) A bag contains 5 red flowers, 3 yellow flowers and 4 white flowers. A flower is drawn out of the bag at random. What is the probability that the flower drawn is, **5**

(a) White

(b) Red

(c) yellow

(d) Red or yellow

(e) Red or yellow or White

(II) What is the probability that a leap year will have 53 Thursday ? **3**

OR

(A) (I) Two unbiased dice are tossed simultaneously. What is the probability that the sum of the number on the two faces is **5**

(a) Less than 2

(b) Greater than 10

(c) Divisible by 5

(d) Neither 11 nor 12

(e) Neither divisible by 11 nor by 12

(II) Two balls are drawn at random from a bag containing 6 red, and 4 black balls. Find the probability that both balls are of different colours. **3**

(B) (I) A pair of fair dice is thrown. If the two numbers appearing are different, find the probability that the sum is 5 or less. **3**

(II) A die is tossed twice. Find the probability of getting a prime number on each toss. **3**

OR

(B) (I) In a class 30% of the students are poor, 25% are meritorious and 15% are both poor and meritorious. One student is selected at random. Find the probability that he is poor, if it is known that he is meritorious. **3**

(II) Three cards are drawn without replacement from a well shuffled deck of 52 cards. Find the probability of getting atleast one king. **3**

4. (A) (I) Calculate the Correlation Coefficient in each of the following cases : **5**

    (a) $b_{XY} = 0.09$ and $b_{YX} = 9$.

    (b) $b_{XY} = 0.6$, $\sigma_X = 3$, $\sigma_Y = 4$.

    (c)   Regression equation Y on X is $45X - 5Y + 15 = 0$ and Regression equation X on Y is $9Y - 100X + 30 = 0$.

Where b_{XY} and b_{YX} stands for coefficient of regression X on Y and Y on X respectively and σ_X and σ_Y stands for Standard deviation of variables X and Y respectively.

(II) From the following data calculate Coefficient of Correlation. **3**

X	1	2	3	4	5
Y	10	20	30	50	40

OR

(A) (I) Explain the meaning of Regression. How does it differ from correlation ? **5**

(II) Compute the appropriate regression for the following data : **3**

X (Independent Variable)	2	4	5	6	8	11
Y (Dependent Variable)	18	12	10	8	7	5

(B) (I) From the following information, calculate the value of N (no. of observations) :

$\Sigma X = 15$, $\Sigma Y = 150$, $b_{YX} = 9$ and Y intercept = 3. **3**

(II) The two regression lines obtained from certain data were $Y = X + 5$ and $16X = 9Y - 94$. If Variance of Y is 16, find the variance of X. **3**

OR

(I) For a given set of information, the following results were obtained. **3**

$\overline{X} = 53$, $\overline{Y} = 28$ and $b_{YX} = 9$

Find the most probable value of Y when X = 60.

(II) Calculate the Coefficient of correlation from the following data by the method of rank difference. **3**

Rank of X	10	4	2	5	8	5	6	9
Rank of Y	10	0	2	5	8	4	5	9

5. Do as Directed. **14**

(1) For any series of data $\sum(X - \bar{X})$ = _____.

   (a) 0   (b) 1

   (c) n   (d) None of these

(2) Mean of the first n positive integer is equal to _____.

   (a) n/2   (b) (n + 1)/2

   (c) (n − 1)/2   (d) None of these

(3) The relation between Mean, Median and Mode is Mean = Median = Mode, if the distribution of data is symmetric. (True/False)

(4) If the mean of the series of data $\{x_1, x_2, \ldots, x_n\}$ is 10, the mean of the series $\{x_1 + 10, x_2 + 10, \ldots, x_n + 10\}$ is equal to _____.

   (a) 100   (b) 10

   (c) 20   (d) None of these

(5) If the first Quartile is 5 and Quartile deviation is 10, the third quartile is equal to _____.

   (a) 15   (b) 10

   (c) 5   (d) None of these

(6) A small Standard Deviation means a high degree of uniformity in the observations. (True/False)

(7) What is the probability of selecting three balls from a bag having three balls ?

(a)   1   (b)   0

(c)   1/3   (d)   None of these

(8) What is the probability of an event happening 100% ?

(a)   0   (b)   1

(c)   1/2   (d)   None of these

(9) What is the probability of selecting a red ball from a bag having ten black balls ?

(a)   0   (b)   1

(c)   1/2   (d)   None of these

(10) If we select two books from four different books, the number of outcomes in a Sample Space of this experiment is equal to _____.

(a)   8   (b)   6

(c)   4   (d)   None of these

(11) Range of Correlation Coefficient is _____.

(a)   (0, 1)   (b)   [0, 1]

(c)   [–1, 1]   (d)   (–1, 1)

(12) If there is no correlation between two variables X and Y, the value of the Correlation Coefficient is equal to _____.

(a)   0   (b)   1

(c)   – 1   (d)   None of these

(13) Signs of Regression Coefficients b_{XY} and b_{YX} are _____ and _____ respectively.

    (a) +, –
            (b) –, +

    (c) –, –
            (d) +, +

(14) The value of Correlation Coefficient between two series X = {1, 2, 3, 4, 5} and Y = {10, 20, 30, 40,. 50} is equal to _____.

    (a) 0
            (b) 1

    (c) 10
            (d) None of these

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