Seat No. : _____

DE-102

December-2022

B.C.A., Sem.-III

CC-205 : Statistical Methods

(New)

Time : 2½ Hours] **[Max. Marks : 70**

Instruction : Use of Scientific Calculator is allowed.

1. (A) Find the Median and mode of monthly earnings for the following distribution : 7

Monthly earnings (in ₹)	0-200	200-400	400-600	600-800	800-1000	1000-1200
Frequency	80	165	230	80	32	13

(B) You take a trip which entails travelling 900 miles by train at an average speed of 60 m.p.h., 300 miles by boat at an average of 25 m.p.h., 400 miles by plane at 350 m.p.h. and finally 15 miles by taxi at 25 m.p.h. What is your average speed for the entire distance ? 7

OR

(A) Calculate Mean and Median for the following data : 7

X	Less than 10	Less than 20	Less than 30	Less than 40	Less than 50
f	5	15	55	75	100

(B) The following incomplete table gives the number of students in different age-groups of a town. If the median of the distribution is 11 years, find the missing frequencies. 7

Age Group	0-5	5-10	10-15	15-20	20-25	25-30	Total
No. of Students	15	125	?	66	?	4	300

2. (A) Calculate the mean deviation from mean and its coefficient of the marks of 39 students in Statistics given below : 7

Marks	0-5	5-10	10-15	15-20	20-25	25-30
No. of Students	4	6	8	12	7	2

(B) Calculate Standard deviation and its coefficient of variation from the following data : 7

Class	0-5	5-10	10-15	15-20	20-25
Frequency	4	1	10	3	2

OR

(A) The mean and Standard deviation of 200 items are found to be 60 and 20 respectively. If at the time of calculation, two items were wrongly recorded as 3 and 67 instead of 13 and 17, find the correct mean and Standard deviation. 7

(B) Following are the observations showing the one-day sales of a shopping mall, where we determine the frequency of the first 50 customers of different age group. Now, we need to calculate the quartile deviation and coefficient of quartile deviation. 7

Age in years	40-44	45-49	50-54	55-59	60-64	65-69
Customers	5	8	11	10	9	7

3. (A) A bag contains 8 blue balls and 6 black balls. Three balls are drawn one by one (i) with replacement and (ii) without replacement. What is the probability that all the 3 balls are black ? 7

(B) In a bolt factory, machine A, B and C manufacture 25 percent, 35 percent and 40 percent of the total output respectively. Of the total of their output, 5, 4 and 2 percent are defective bolts. A bolt is drawn at random and found to be defective. What is the probability that it was manufactured by machine B ? 7

OR

(A) The incidence of a certain disease is such that on an average 20% of workers suffer from it. If 10 workers are selected at random find the probability that (i) exactly 2 workers suffer from disease (ii) not more than 2 workers suffer from disease. 7

(B) A machine has three parts, A, B and C, whose chances of being defective are 0.02, 0.10 and 0.05 respectively. The machine stops working if any one of the parts becomes defective. What is the probability that the machine will not stop working ? 7

4. (A) Calculate correlation coefficient from the following data using Karl Pearson's method : 7

x	100	102	104	107	105	112	103	99
y	15	12	13	11	12	12	19	26

(B) The following data relate to the scores obtained by 9 salesmen of a company in an intelligence test and their weekly sales (in ₹ 1000's) : 7

Salesman :	A	B	C	D	E	F	G	H	I
Test scores	50	60	50	60	80	50	80	40	70
Weekly sales:	30	60	40	50	60	30	70	50	60

Obtain the regression equation of sales on intelligence test scores of the salesmen. If the intelligence test score of a salesman is 65, what would be his expected weekly sales.

OR

(A) Obtain the rank correlation coefficient between variable x and y from the following pairs of observed values : 7

x	50	55	65	50	55	60	50	65	70	75
y	110	110	115	125	140	115	130	120	115	160

(B) Two random variables have the regression equations : $3x + 2y - 26 = 0$ and $6x + y - 31 = 0$.

Find (i) mean values of x and y and coefficient of correlation between x and y.

(ii) If the variance of x is 25, then find the standard deviation of y from the data. 7

5. Attempt any **seven**. 14

(1) If all the values in a series are same, then :

(a) A.M = G.M. = H.M. (b) A.M. ≠ G.M. ≠ H.M.

(c) A.M. > G.M. > H.M. (d) A.M. < G.M. < H.M.

(2) If a = 5 and b = –5, then their harmonic mean is :

(a) –5 (b) 5

(c) 0 (d) ∞

(3) Change of origin and scale is used for calculation of the :

(a) Arithmetic Mean (b) Geometric Mean

(c) Weighted Mean (d) Lower and Upper Quartile

(4) In a more dispersed (spread out) set of data :

(a) difference between the mean and median is greater

(b) value of the mode is greater

(c) standard deviation is greater

(d) inter-quartile range is smaller

(5) If the quartile range is 36 then quartile deviation is

(a) 18 (b) 36

(c) 24 (d) 72

(6) Rohan bowled 7 games last weekend. His scores are : 155, 165, 138, 172, 127, 193 and 142. What is the range of Rohan's scores ?

(a) 193 (b) 127

(c) 60 (d) 66

(7) If the regression equation is equal to Y = 23.6 – 54.2X, then 23.6 is _____ and (–54.2) is _____ of the regression line.

(a) slope, intercept (b) intercept, slope

(c) slope, regression coefficient (d) radius, intercept

(8) The geometric mean of the two-regression coefficient, bxy and byx is equal to :

(a) r (b) r2

(c) 1 (d) None of these

(9) There is a high inverse association between measures 'overweight' and 'life expectancy'. A correlation coefficient consistent with the above statement is :

(a) r = 0.80 (b) r = 0.20

(c) r = – 0.20 (d) r = – 0.80

(10) Mutually Exclusive events _____.

(a) all sample points

(b) contain all common sample points

(c) does not contain any sample point

(d) does not contain any common sample point

(11) A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball, then the number of blue balls in a bag is :

(a) 5 (b) 10

(c) 15 (d) 20

(12) In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither blue nor green ?

(a) 2/3 (b) 8/21

(c) 3/7 (d) 9/22