

Seat No. : _____

ME-134

March-2019

B.C.A., Sem.-III

CC-205 : Statistical Computing (Old)

Time : 2.30 Hours]

[Max. Marks : 70

Instruction : Use of Scientific Calculator is allowed.

1. (A) (i) Find Mode and Median of the following data : 7

Marks :	0-10	10-20	20-30	30-40	40-50	50-60
No. of students :	10	20	30	50	40	30

- (ii) The mean annual salaries paid to all employees of a company was ₹ 500. The mean annual salaries paid to male and female employees were ₹ 520 and ₹ 420 respectively. Determine the percentage of males and females employed by the company. 7

OR

- (i) Find missing frequencies if median is 87.5 and mean is also 87.5.

Daily Exp. (₹)	40-59	60-79	80-99	100-119	120-139	Total
No. of families	50	?	500	?	50	1,000

- (ii) Find Geometric Mean of the following data :

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	10	20	30	50	40	30

- (B) Attempt any **Four** : 4

- (1) A.M. is not independent of choice of origin and scale. [True/False]
- (2) For a set of two observations, $GM^2 = AM \times HM$ [True/False]
- (3) For a symmetrical distribution, $Median = (Q_3 + Q_1)/2$. [True/False]
- (4) In case of moderately skewed distribution, $Mode = 3 Median - 2 Mean$ [True/False]
- (5) Ascending/Descending arrangement of data is required to compute median and not any other measure of central tendency. [True/False]
- (6) The geometric mean of 9, 81, 729 is 81. [True/False]

2. (A) (i) Calculate Q_1, Q_3, D_8 and P_{10} for the following data : 7

Marks :	1-10	11-20	21-30	31-40	41-50	51-60
No. of students :	20	20	30	50	40	40

- (ii) Calculate the mean and standard deviation from the following data 7

Age	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
f	20	26	44	60	101	109	84	66	10

OR

- (i) Two batsmen A and B made the following scores in a series of cricket matches :

A	14	13	26	53	17	29	79	36	84	49
B	37	22	56	52	14	10	37	48	20	4

Who is more consistent player ?

- (ii) The mean of 5 observation is 4.4 and the variance is 8.24. If the three of five observations are 1, 2 and 6, find the other two.

(B) Attempt any **Four** :

4

- (1) The variance of a sample is (-20). [True/False]
- (2) Standard deviation of one observation is 1. [True/False]
- (3) The variance of first 13 natural number is 13. [True/False]
- (4) Standard deviation of two observations is equal to their arithmetic average. [True/False]
- (5) If each observation is increase by 10 then its Range will also increase by 10. [True/False]
- (6) Mean deviation is minimum when deviations are taken about Arithmetic Mean. [True/False]

3. (A) (i) A jar consists of 21 marbles. 12 are green and 9 are blue. Ram picked two marbles at random. Find the probability that (a) both are blue (b) one is blue and one is green. If Ram randomly took a third marble find the probability that (c) all are green ; (d) at least one of the marble is blue.

7

- (ii) In a bag there are 5 black and 3 white balls. What is the probability that if they are drawn out one after another the first ball will be black, the second white, the third black and again the fourth is white one if the ball drawn is not replaced.

7

OR

- (i) A number is selected at random from the numbers from 1 to 100. Find the probability that (a) The number is divisible by 7 or 8, (b) The number is divisible by 7 and 8.
- (ii) A company has three plants to manufacture 8,000 scooters in a month. Out of 8,000 scooters, plant-I manufactures 4,000 scooters, Plant-II manufactures 3,000 scooters and plant-III manufactures 1,000 scooters. At plant-I 85 out of 100 are rated of standard quality or better, at plant-II only 65 out of 100 are rated of standard quality or better and at plant-III 60 out of 100 scooters are rated of standard quality or better. What is the probability that the scooter selected at random came from plant-II if it is known that the scooter is of a standard quality.

(B) Attempt any Three :

3

- (1) The probability of selecting three balls from a bag having three balls is _____.
- (a) 1 (b) 0
(c) $1/3$ (d) None of these
- (2) A number between 0 and 1 that is use to measure uncertainty is called _____.
- (a) Random Variable (b) Trial
(c) Simple event (d) Probability
- (3) A letter is chosen from the word "Statistics". The probability of getting a vowel is
- (a) $1/10$ (b) $2/10$
(c) $3/10$ (d) $4/10$
- (4) When n dice are rolled, the possible outcomes are
- (a) 6^n (b) 6
(c) 1 (d) 18
- (5) If we select two books from four different books, the number of outcomes in a sample space of this experiment is
- (a) 8 (b) 6
(c) 4 (d) None of these

4. (A) (i) The following table gives the age of cars of a certain make and annual maintenance costs. Obtain the regression equation for cost related to age. 7

Age of cars in years	2	4	6	8
Maintenance cost in ₹ ('00)	10	20	25	30

- (ii) Calculate Pearson's coefficient of correlation from the following data. 7

X	2500	1700	3100	6500	4200
Y	-5.2	-3.5	+4.1	-6.2	+2.8

OR

- (i) Regression equation of two lines are $5X - 145 = (-10Y)$ and $14Y - 208 = (-8X)$. Calculate the mean values of x and y and the correlation coefficient between x and y.
- (ii) Obtain the rank correlation coefficient from the following data.

X	50	55	65	50	55	60	50	65	70	75
Y	110	110	115	125	140	115	130	120	115	160

(B) Attempt any **Three** :

3

- (1) Which of the following is NOT a possible value of the correlation coefficient ?
 - (a) Negative 0.9
 - (b) Zero
 - (c) Positive 0.15
 - (d) Negative 1.5
 - (2) All data points falling along straight line is called:
 - (a) Linear relationship
 - (b) Nonlinear relationship
 - (c) Residual
 - (d) Scatter diagram
 - (3) In simple regression equation, the numbers of variables involved are :
 - (a) 0
 - (b) 1
 - (c) 2
 - (d) 3
 - (4) If one regression coefficient is greater than one, then other will be :
 - (a) More than one
 - (b) Equal to one
 - (c) Less than one
 - (d) Equal to minus one
 - (5) The correlation coefficient is the ____ of two regression coefficients:
 - (a) Geometric Mean
 - (b) Harmonic Mean
 - (c) Arithmetic Mean
 - (d) Median
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ME-134

March-2019

B.C.A., Sem.-III**CC-205 : Statistical Methods
(New)****Time : 2.30 Hours]****[Max. Marks : 70****Instruction :** Use of Scientific Calculator is allowed.

1. (A) (i) Find Mean and Median of the following data :
- 7

Over time hours :	10-15	15-20	20-25	25-30	30-35	35-40
No. of workers :	11	20	35	20	8	6

- (ii) Calculate the A.M., G.M. and H.M. of the following observations and show that
- $A.M > G.M. > H.M.$
- 32,35,36,37,39,41,43
- 7

OR

- (i) Find missing frequencies if median is 25 :

Daily Exp. (₹)	0-10	10-20	20-30	30-40	40-50
No. of families	14	?	27	?	15

- (ii) A man travelled by car for 3 days. He covered 480 km each day. On the first day he drove 10 hrs at 48 km an hour, on the second day he drove for 12 hours at 40 km an hour, and on the last day he drove for 15 hours at 32 km per hour. What was his average speed? Also write advantages and disadvantages of suitable measure of central tendency.

- (B) Attempt any
- Four**
- :
- 4

- (1) The relationship between A.M, G.M. AND H.M. is :

- (a) $G.M. = A.M. \times H.M.$ (b) $(G.M.)^2 = A.M. \times H.M.$
(c) $G.M. = (A.M. \times H.M.)^2$ (d) None of these

- (2) The arithmetic mean of first n natural number is _____.

- (a) $n/2$ (b) $(n+1)/2$
(c) $n(n+1)/2$ (d) None of these

- (3) For given set of observations 1,4,4,4 and 7 it can be said that the

- (a) mean is larger than either median or mode
(b) mean = median = mode
(c) mean \neq median \neq mode
(d) none of these

- (4) If the mean and geometric mean of two values are 5 and 4 respectively. The values are respectively_____.
- (a) 6, 4 (b) 7, 3
(c) 9, 1 (d) 2, 8
- (5) Give name of two positional averages.
- (6) Name the average which is 0 when the value of series is 0.

2. (A) (i) Calculate Q_1 , Q_3 , D_5 and P_{75} for the following data :

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Class	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180	180-190
Frequency	4	0	3	7	11	8	5	0	2

- (ii) Calculate the mean and standard deviation from the following data :

7

Age	21-25	26-30	31-35	36-40	41-45	46-50	51-55
f	5	15	28	42	15	12	3

OR

- (i) The share prices of a company in Mumbai and Kolkata markets during the last 10 months are recorded below :

Month	January	February	March	April	May	June	July	August	September	October
Mumbai	105	120	115	118	130	127	109	110	104	112
Kolkata	108	117	120	130	100	125	125	120	110	135

Determine in which market are the share prices more stable ?

- (ii) Find Mean Deviation from Mean and its coefficient value. Also write advantages and disadvantages of Mean Deviation.

Sales :	50-100	100-150	150-200	200-250	250-300	300-350
No. of days :	11	23	44	19	8	7

- (B) Attempt any **Four** :

4

- (1) Which of the following measures of dispersion is least affected by extreme values of observations in a data set ?
- (a) Range (b) Quartile deviations
(c) Mean deviation (d) Standard deviation
- (2) If the first and third quartiles are 22.16 and 56.36, respectively, then the quartile deviation is _____.
- (a) 17.1 (b) 34.2
(c) 51.3 (d) None of these

- (3) If the mean deviation is 8, then value of the standard deviation is _____.
- (a) 15 (b) 12
(c) 10 (d) None of these
- (4) The standard deviation of two values 2 and 12 is _____.
- (a) 5 (b) 8
(c) 10 (d) None of these
- (5) Name the measure of central tendency which is used in Standard deviation.
- (6) The variance of a set of 10 observations is -10. [True\False]

3. (A) (i) Two computers A and B are to be marketed. A salesman who is assigned the job of finding customers for them has 60% and 40% chances respectively of succeeding in case of computer A and B. The computers can be sold independently. Given that he was able to sell at least one computer, what is the probability that computer A has been sold ? 7
- (ii) One bag contains 4 white and 2 black balls. Another contains 3 white and 5 black balls. If one ball is drawn from each bag find the probability that (a) both are white (b) both are black (c) one is white and one is black. 7

OR

- (i) A purse contains 2 silver coin and 4 copper coins. A second purse contains 4 silver and 3 copper coins. If a coin is pulled out at random from one of the two purses, what is the probability that it is a silver coin ?
- (ii) The probability that India wins a cricket- match against Sri Lanka is given to be $\frac{1}{3}$. If India and Sri Lanka play three one day matches, what is the probability that :
- (a) India will lose all the three matches.
(b) India will win at least one test match.
- (B) Attempt any **Three** : 3
- (1) If A and B are mutually exclusive events, then $P(AB) = \underline{\hspace{2cm}}$
- (2) What is the probability that two different persons has different birthdates in a non-leap year ?
- (3) If event A is impossible event then, then what is the value of $P(A)$?
- (4) Three unbiased coins are tossed. What is the probability of getting at most two heads ?
- (5) 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 red nor green ?

4. (A) (i) Calculate the rank coefficient from the data of sales and advertising expenses of 10 firms as given below : 7

Sales(X)	50	50	50	60	65	65	65	60	60	50
Expenses(Y)	11	13	14	16	16	15	15	14	14	13

- (ii) Regression equations of two variables X and Y are as follows : 7

$$8X - 10Y = 64 \quad \text{and} \quad 40X - 18Y = 320.$$

Find :

- (a) the means
- (b) the regression coefficients and
- (c) the coefficient of correlation between X and Y.

OR

- (i) What is the correlation between these two variables :

Stress	4	10	12	5	7	6	2	14
Sense of humor	2	8	11	3	8	7	3	13

- (ii) The sales of a company (in million dollars) for each year are shown in the table below.

X(Year)	2005	2006	2007	2008	2009
Y (Sale)	12	19	29	37	45

- (a) Find the least square regression line $y = ax + b$.
- (b) Use the least squares regression line as a model to estimate the sales of the company in 2012.

- (B) Attempt any **Three** : 3

- (1) Give Formulae to find Correlation Coefficient for bivariate data.
- (2) The regression equation is the line with slope a passing through _____.
 - (a) The point (\bar{x}, \bar{y})
 - (b) The point (x, y)
 - (c) The point (y, x)
 - (d) The point (\bar{y}, \bar{x})
- (3) The value of coefficient of correlation lies between _____.
- (4) The correlation coefficient r is independent of change of _____ and _____.
- (5) State the type of correlation between Intelligence and shoe size.