

Seat No. : _____

DC-108

December-2017

B.C.A. Sem.-III

CC-205 : Statistical Computing

Time : 3 Hours]

[Max. Marks : 70

1. (A) Attempt the following :

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(1) Calculate mean, median and mode for the following data :

Marks	No. of students
Less than 10	5
Less than 20	17
Less than 30	31
Less than 40	41
Less than 50	49

(2) The following table gives the daily wages in a certain commercial organization :

Daily wages	30-32	32-34	34-36	36-38	38-40	40-42	42-44	44-46	46-48	48-50
Frequency	3	8	24	31	50	61	38	21	12	2s

Find

- 1) The no. of wage earners receiving wages between 37 and 47 per week.
- 2) The no. of wages earners receiving wages less than 35.
- 3) The no. of wages receiving wages greater than 45.

OR

(A) Attempt the following :

(1) Calculate Geometric Mean and Harmonic mean for the following data :

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Class	10-14	15-19	20-24	25-29	30-34
Frequency	4	6	8	2	2

(2) The income of 111 workers are given below. If the Median is 67.92, find missing frequencies :

Income	50-55	55-60	60-65	65-70	70-75	75-80	80-85
No of workers	6	10	?	30	?	12	15

(B) Attempt the following :

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- (1) The average daily wage of all workers in a factory is 72. The average daily wage of male and female workers is 75 and 85 respectively. Find the percentage of male and female employees in a factory.
- (2) Give the advantage of mean, median and mode.

OR

(B) Attempt the following :

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- (1) The marks obtained by three students A, B, C in physics, chemistry and mathematics out of 100 marks in each subject in a certain entrance test are

	Physics	Chemistry	Mathematics
A	60	65	70
B	75	60	50
C	55	60	65

- (a) Rank three students on the basis of their performance if equal weights are given to the subjects.
- (b) Rank the students if the weights are given below :
Physics : 30% Chemistry : 20% Mathematics : 50%
- (2) Give disadvantage of Geometric Mean and Harmonic Mean.

2. (A) Attempt the following :

- (1) Find Interquartile range, Quartile Deviation, Co-efficient of Quartile Deviation :

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Class	30-34	35-39	40-44	45-49	50-54
Frequency	5	11	26	10	8

- (2) An analysis of the monthly wages gives the following result :

	Firm A	Firm B
No. of workers	50	100
Variance	64	49
Average	54.4	50.3

Find :

- (a) Which has greater stability or consistency A or B ?
- (b) Calculate the average monthly wages of all workers taken together.
- (c) Calculate the variance of monthly wages of all workers taken together.

OR

(A) Attempt the following :

- (1) Find the mean deviation and co-efficient of mean deviation :

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Class	50-100	100-150	150-200	200-250	250-300	300-350
Frequency	11	23	44	19	8	7

- (2) The first of two samples has 100 items with mean 15 and standard deviation 3. If the whole group has 250 items with mean 15.6 and standard deviation $\sqrt{13.44}$. Find the standard deviation of second group also find variance of whole group.

(B) Attempt the following :

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- (1) The average daily wages of workers in a factory increased from 80 to 120. The s.d of daily wages increased from 2 to 2.5. Examine whether the wages have become more uniform or less uniform after the increased wages.
- (2) Find the 2nd quartile, 25th percentile and 7th decile.

X	4	5	6	8	11	13	14
F	2	4	5	7	3	2	1

OR

(B) Attempt the following :

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- (1) The Arithmetic Mean and standard deviation of a set of 9 items are 43 and 5 respectively. If an item of value 63 is added to the set find mean and standard deviation of all items.
- (2) The following are the marks secured by five students in paper 1 and 2 of English. In which paper the performance of the students is more consistent ?

Marks in Paper-1	55	45	49	62	65
Marks in Paper-2	58	55	54	60	63

3. (A) Attempt the following :

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- (1) If $P(A)=1/3$ $P(B')=1/4$ $P(A \cap B)=1/6$, find $P(A \cup B)$, $P(A' \cap B')$, $P(A/B)$, $P(\text{Exactly one of A and B occurs})$
- (2) There are three urns containing respectively 3 white and 4 black balls, 2 white and 2 black balls, 1 white and 3 black ball. One urn is selected at random and a ball is drawn from it. The ball is to be white. Find the probabilities that this ball comes from-1) second urn 2) third urn

OR

(A) Attempt the following :

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- (1) Two cards are drawn at random from a pack of 52 cards. Find the probabilities that
- One is king and other is queen
 - Both are spade
 - Both are of same suit

- (2) The problem that a student passes a physics student is $\frac{2}{3}$. Problem that he passes both physics and English is $\frac{14}{15}$. The problem that he passes at least one test is $\frac{4}{5}$. What is the probability that he passes English test?

(B) Attempt the following :

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- (1) If A, B and C are mutually exclusive events. $P(A) = \frac{1}{2} P(B)$, $P(B) = \frac{2}{3} P(C)$. Find $P(A)$, $P(B)$ and $P(C)$
- (2) A bag contains 8 red and 5 white balls. Two successive draws of 3 balls are made without replacement. Find the probability that first drawing will give 3 white balls and the second 3 red balls.

OR

(B) Attempt the following :

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- (1) A sum is given to five students A, B, C, D and E. Their respective chances of solving it are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{4}, \frac{1}{5}$. What is the probability that atleast one of the students solves the sum?
- (2) A husband and wife appear in an interview for two vacancies in the same post. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is the probability that
- Both of them will be selected
 - only one of them will be selected
 - None of them will be selected

4. (A) Attempt the following :

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- (1) Find Correlation co-efficient between X and Y :

X	48	49	50	51	52	53	54	55	56
Y	98	100	88	102	95	125	120	110	125

- (2) The rank correlation co-efficient between ranks in mathematics and English of 10 students is 0.5. It was later observed that the difference in marks of one student was taken as 3 instead of 7. Find the correct value of rank correlation co-efficient.

OR

(A) Attempt the following :

- (1) Find Correlation co-efficient using concurrent deviation method :

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X	28	27	26	35	39	42	40	37	32
Y	40	42	38	49	42	50	36	44	45

- (2) The correlation co-efficient between two variables x and y is 0.48 and covariance between them is 36. If variance of x is 16. Find variance of y .

(B) Attempt the following :

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- (1) Find the appropriate regression line for each cases :

a) $\bar{X} = 72, \bar{Y} = 15, \sigma_x = 12, \sigma_y = 4, r = 0.66$

b) $n = 10, \Sigma x = 130, \Sigma y = 220, \Sigma x^2 = 2288, \Sigma xy = 3467$

- (2) The regression equation of profit(x) on sale(y) of a certain firm is $3y - 5x + 108 = 0$. The average sale of the firm was ₹ 44,000 and the variance of profit is $9/16^{\text{th}}$ of the variance of sale. Find the average profit and co-efficient of correlation between sales and profits.

OR

(B) Attempt the following :

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- (1) The points (10, 42) and (20, 44) lie on the regression line of y on x . Obtain the equation of regression line and estimate the value of y when $x = 5$.
- (2) The regression equations of two variables are :
 $5y = 9x - 22$
 $20x = 9y + 350$, find 1) means of x and y 2) correlation co-efficient.

5. Attempt the following :

14

- (1) The sum of the deviation from mean is

- (a) 0 (b) 1
(c) 2 (d) None of these

- (2) Relationship between M.D, Q.D and S.D.
- (3) If b_{yx} and b_{xy} both are negative then correlation co-efficient is
- (a) Negative
 - (b) positive
 - (c) zero
 - (d) None of these
- (4) In a regression line y on $xy = a + bx$; b is called
- (a) slope
 - (b) intercept
 - (c) both
 - (d) neither (a) nor (b)
- (5) If $P(A/B) =$
- (a) A is dependent on B
 - (b) B is dependent on A
 - (c) both are independent
 - (d) None of these
- (6) If A , B and C are mutually exclusive events $P(A) + P(B) + P(C) = \underline{\hspace{1cm}}$
- (a) 0
 - (b) 1
 - (c) -1
 - (d) 3
- (7) If A.M and G.M is 3 and 5 find H.M.
- (8) The range of correlation co-efficient is ?
- (9) Variance is always positive. (T/F)
- (10) $C.V = \bar{X} = 22.5\% = 7.5$ find 6.

(11) $r = 0.7$, $n = 5$ Probable error ?

(12) Define : Event

(13) State Baye's theorem

(14) In correlation co-efficient $\Sigma d^2 = 0$ then $r =$ _____

(a) 1

(b) -1

(c) 0

(d) 2
