A-3735

Second Year B. C. A. (Sem. III) (CBCS) Examination
March / April – 2015
301 : Statistical Methods

Time : Hours]   [Total Marks : 70

Instructions :

(1)

(2) All the questions are compulsory.

(3) Figures to the right indicates full marks.

(4) Mention your options clearly.

1 Do as directed : (any **seven**)   **14**

(1) Compute the mean from the following data :
68, 61, 60, 66, 65, 66, 63

(2) If two variables are having ranks in reverse order, write the value of r.

(3) If $byx = 0.52$ and $bxy = 2.5$. Is it true ?

(4) If the ranks of two variables are equal then correlation coefficient $r =$ _____.

(5) A regression equation given by $2x + 4y = 18$, If $y = 2$ then find x.

(6) If $cov(x, y) = 8$ and $\sigma_x = -2$ and $\sigma_y = 6$ then find the correlation coefficient between x and y.

(7) What is meant by "correlation" ? Distinguish between positive, negative and zero correlation.

(8) What is variance ?

(9) If the mean = 80, mode = 30.5 and c.v. = 63 then median = _____.

(10) What is the measure of central tendency ?

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(a) In an examination of 675 candidates, the examines supplied the following information :

Marks obtained (percentage)	No. of Candidate
Less than 10	7
Less than 20	39
Less than 30	95
Less than 40	201
Less than 50	381
Less than 60	545
Less than 70	631
Less than 80	675

Calculate the mean percentage of marks obtained.

(b) The length of time taken by each of 18 workers to complete a specific job was observed to be the following :

Time (in min.) :	5-9	10-14	15-19	20-24	25-29
No. of workers :	3	8	4	2	1

Calculate a median time.

(c) Calculate the simple mean price per tonne of coal purchased by a company for the half year account for different between the two :

Month	Jan	Feb	Mar	April	May	June
Price/tone	4205	5125	5000	5200	4425	5400
Tones purchased	25	30	40	52	10	45

3 Attempt any two : 14

(a) The petrol filling station has recorded the following data for litres of petrol sold per automobile in a sample of 680 automobiles.

Petrol sold : (litres)	0-4	5-9	10-14	15-19	20-24	25-29
Frequency :	74	192	280	105	23	6

Compute the mean and standard deviation for the data.

(b) The mean and the standard deviation of a sample of 10 sizes were found to be 9.5 and 2.5 respectively, lates on, an additional observation become available. This was 15.0 and was included in the original sample. Find the mean and standard deviation of 11 observations.

(c) The number of employees, average daily wages per employee and the variance of daily wages per employee for two factories age given below :

	Factory A	Factory B
Number of employees :	50	100
Average daily wages (Rs.)	120	85
Variance of daily wage (Rs.)	9	16

In which factory is these grates variation in the distribution of daily wages per employee ?

4 Attempt any **two** : 14

(a) In an office some keyboard operators, who where already ranked on their speed, were also ranked on accuracy by their supervisor. The result were as follows :

Operators :	A	B	C	D	E	F	G	H	I	J
Speed :	1	2	3	4	5	6	7	8	9	10
Accuracy :	7	9	3	4	1	6	8	2	10	5

Calculate the appropriate correlation coefficient between speed and accuracy.

(b) Find the co-efficient of correlation between age and the sum assured (in 1000 Rs.) from the following table :

Age Group	Sum Assured (Rs.)				
(years)	10	20	30	40	50
20-30	4	6	3	7	1
30-40	2	8	15	7	1
40-50	3	9	12	6	2
50-60	8	4	2	-	-

(c) Calculate the co-efficient of correlation from the following data

x :	100	200	300	400	500	600	700
y :	30	50	60	80	100	110	130

5 Attempt any **two** : 14

(a) The following calculations have been made for prices of twelve stock (x) at the Calcutta Stock Exchange. On a certain day along with the volume of sales in thousands of shares (y). From these calculations, find the regression equation of price of stocks on the volume of sales of shares.

$\Sigma x = 580, \ \Sigma y = 370, \ \Sigma xy = 11494, \Sigma x^2 = 41658, \ \Sigma y^2 = 17206$

(b) The following data give the experience of machine operators and their performance ratings given by the number of good parts turned out per 100 pieces :

Operators :	1	2	3	4	5	6	7	8
Experience (x) :	16	12	18	4	3	10	5	12
Performance (y) :	87	88	89	68	78	80	75	83

Calculate the regression lines of performance ratings on experience and estimate the probable performance if an operator has 7 years experience.

(c) You are given below the following information about advertisement expenditure and sales.

	Adv. Exp. (x) (Rs. in core)	Sales (y) (Rs. in core)
Mean	20	120
S.D.	5	25

Correlation coefficient 0.8

Calculate the two regression equation.