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**D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1**  
**SEMESTER EXAMINATIONS**

**NOVEMBER – 2017**

**15CAMA3B**

**ALLIED : STATISTICAL METHODS AND THEIR APPLICATIONS**

**Time : 3 Hrs**

**Max. Marks : 75**

**SECTION-A (10 x 2 = 20)**

Answer ALL the questions.

1. What are the four types of classification of data?
2. Distinguish between primary data and secondary data?
3. Find median for the set of observations  
27 36 28 18 35 26 20 35 40 26
4. Write the merits of standard deviations.
5. Write the normal equation of second degree parabolic curve.
6. Write the demerits of method of least squares.
7. A coin is tossed twice. Find the probability of getting atleast one head.
8. If  $P(A) = \frac{1}{3}$ ,  $P(B) = \frac{1}{2}$ ,  $P(A/B) = \frac{1}{6}$  find  $P(B/A)$ .
9. What is positive correlation?
10. State the regression line for Y on X.

**SECTION-B (5 x 5 = 25)**

Answer any FIVE of the following questions.

11. State the limitations of statistics.
12. Find the arithmetic mean for the following frequency distribution

Class limits	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Frequency	5	9	14	20	25	15	8	4

13. Find the standard deviation for the following data giving wages of 20 persons.

Wages in (Rs.)	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150
No. of persons	12	18	35	42	50	45	20	8

14. A group of 5 students took test before and after training and obtained the following scores.

Scores before training	3	4	4	6	8
Scores after training	4	5	6	8	10

Find by the method of least squares the straight line of best fit.

15. A candidate is selected for interview in three different posts. There are 3 candidates for the first post, 4 for the second post and 2 for the third post. What is the probability that he will be selected for one of the posts?
16. State and prove addition theorem.
17. Find the co-efficient of correlation for the following data

x	35	40	60	79	83	95
y	17	28	30	32	38	49

18. Find the two regression coefficients  $b_{yx}$  and  $b_{xy}$  and hence find the correlation coefficient for the following data.

$$\sum x = 24, \sum y = 214, \sum xy = 306, \sum x^2 = 164, \sum y^2 = 576, N = 4$$

**SECTION-C (3 x 10 = 30)**

Answer ALL questions.

19. (a) Represent the following data by a sub-divided bar diagram.

Commodities (In Rs.)		
	A	B
Price per unit	3	2
Quantity sold	75	100
Value of raw material	175	150
Other production expenses	30	25
Profits	20	25

(Or)

(b) Calculate the mode from the following series

Size of the items	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Frequency	20	24	32	28	20	16	34	10	8

20. (a) Fit a parabolic curve of regression of  $y$  on  $x$  to the nine pairs of values:

$x:$	1	2	3	4	5	6	7	8	9
$y:$	2	6	7	8	10	11	11	10	9

(Or)

(b) The Probabilities of 3 students A,B, C solving a problem in Statistics are  $1/2$ ,  $1/3$  and  $1/4$ .

A problem is given to all the 3 students. What is the probability that,

- i) No one will solve the problem,
- ii) Only one will solve the problem,
- iii) Atleast one will solve the problem?

21. (a) Find the rank correlation coefficient for the percentage of marks secured by a group of 8 students in Economics and Statistics.

Marks in Economics	50	60	65	70	75	40	70	80
Marks in Statistics	80	71	60	75	90	82	70	50

(Or)

(b) The following table gives age(X) in years of cars and annual maintenance cost Y (in hundreds)

X	1	3	5	7	9
Y	15	18	21	23	22

Estimate the maintenance cost for a 4 year old car after finding the regression equations.

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