

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

NOVEMBER – 2018

15CAMA3B

ALLIED : STATISTICAL METHODS AND THEIR APPLICATIONS

Time : 3 Hrs

Max. Marks : 75

SECTION-A (10 x 2 = 20)

Answer ALL the questions.

1. Write any two limitations of statistics.
2. Distinguish between primary and secondary data.
3. Find the mean of first 10 natural numbers.
4. Define standard deviation and write its formula.
5. Explain the method of fitting a curve of the form $y = ax^b$.
6. Write any two merits of the method of least squares.
7. Define conditional probability.
8. State Baye's theorem.
9. If $x + y = 2, x - y = 0$ are represents the lines of regression then find mean of x and y .
10. Define negative correlation with an example.

SECTION-B (5 x 5 = 25)

Answer any FIVE of the following questions.

11. Explain the methods of collecting primary data.
12. Find the standard deviation of the following data. 240,260,290,245,255,288,272,263,277,251.
13. Fit the straight line trend to the data by the method of least squares,

years	1979	1980	1981	1982	1983	1984	1985
Output	672	824	968	1205	1464	1758	2058

14. A bag contains 4 white and 6 black balls. Two balls are drawn at random. What is the probability that
(a) both are white (b) both are black (c) one white and one black.
15. Calculate the correlation coefficient between X and Y

X	1	3	5	8	9	10
Y	3	4	8	10	12	11

16. For a certain bivariate data following results are given, $n = 25, \sum x = 125, \sum y = 100, \sum x^2 = 650, \sum y^2 = 436, \sum xy = 520$ find the two regression coefficients and hence the two lines of regression.
17. A candidate is selected for interview in three different post. There are 3 candidates for the first post, 4 for second post and 2 for the third post. What is the probability that he will be selected for one of the three posts?
18. Calculate the median for the following frequency distribution.

Marks	45-50	40-45	35-40	30-35	25-30	20-25	15-20	10-15	5-10
No of students	10	15	26	30	42	31	24	15	7

SECTION-C (3 x 10 = 30)

Answer ALL the questions.

19. (a) Explain the different types of diagrams with examples.

(Or)

(b) Calculate the mean, median, mode for the following data

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
frequency	12	18	27	20	17	6

20. (a) Explain the method of fitting second degree polynomial for a given data and also fit the second degree polynomial for the following.

Year	2003	2004	2005	2006	2007	2008	2009
production	42	49	62	75	92	122	158

(Or)

(b) (i) Two boxes contain 12 white, 18 black and 15 white, 25 black balls respectively. One box was taken at random and a ball was taken from the same. If it is black what is the probability that it is from the first box?

(ii) A company has three machines A, B, C which produces 20%, 30% and 50% of the products respectively. Their respective defectives percentages are 7, 3 and 5. From these products one is chosen and inspected. If it is defective what is the probability that it has been made by machine B.

21. (a) Obtain the rank correlation between the variables X and Y from the following pairs of observed values.

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

(Or)

(b) If the lines of regression of a bivariate population are : $Y = X + 5$, $16X - 9Y = 94$ and the variance of Y is 16 then

- (i) Find the mean values of X and Y
- (ii) Coefficient of correlation between X and Y.
- (iii) Standard deviation of X.
- (iv) Covariance of X and Y.

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