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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*
6. *Write any two merits of the method of least squares.*
7. *Define conditional probability.*
8. *State Baye’s theorem.*
9. *If 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.

1. *Explain the methods of collecting primary data.*
2. *Find the standard deviation of the following data.*
3. *Fit the straight line trend to the data by the method of least squares,*

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1. *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.*
2. *Calculate the correlation coefficient between X and Y*

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1. *For a certain bivariate data following results are given, find the two regression coefficients and hence the two lines of regression.*
2. *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?*
3. *Calculate the median for the following frequency distribution.*

|  |  |  |  |  |  |  |  |  |  |
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|  | *45-50* | *40-45* | *35-40* | *30-35* | *25-30* | *20-25* | *15-20* | *10-15* | *5-10* |
|  | *10* | *15* | *26* | *30* | *42* | *31* | *24* | *15* | *7* |

SECTION-C (3 x 10 = 30)

Answer ALL the questions.

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

*(Or)*

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | *0-10* | *10-20* | *20-30* | *30-40* | *40-50* | *50-60* |
|  | *12* | *18* | *27* | *20* | *17* | *6* |

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

*degree polynomial for the following.*

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
|  | *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.*

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

*values.*

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|  | *50* | *55* | *65* | *50* | *55* | *60* | *50* | *70* | *75* | *65* |
|  | *110* | *110* | *115* | *125* | *140* | *115* | *130* | *115* | *160* | *120* |

*(Or)*

*(b) If the lines of regression of a bivariate population are : Y and the variance*

*of Y is 16 then*

1. *Find the mean values of X and Y*
2. *Coefficient of correlation between X and Y.*
3. *Standard deviation of X.*
4. *Covariance of X and Y.*

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