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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **11MA210** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **PROBABILITY AND BIO-STATISTICS** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | State the relation between mean, median and mode. | (1) |
| 2. | Find the mode for the following data: 3,4,3,7,6,2,7,5,2,7,3,7,2,4 | (1) |
| 3. | Write down the four measures of dispersion. | (1) |
| 4. | The value of the correlation coefficient lies between \_\_\_\_\_\_\_\_\_\_\_.  a.- ∞ and ∞ b. - 1 and + 1 c. – 0.5 and + 0.5 d.1 and ∞ | (1) |
| 5. | Define is scatter diagram? | (1) |
| 6. | Write down the regression line of y on x. | (1) |
| 7. | Define Level of significance? | (1) |
| 8. | What is meant by ANOVA? | (1) |
| 9. | If A and B are mutually exclusive events then the value of P (A is\_\_\_\_\_ | (1) |
| 10. | Mean and variance of the normal distribution is \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_. | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11. | Find the arithmetic mean for the data given below:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | x | 1 | 2 | 3 | 4 | 5 | 6 | | f | 5 | 9 | 12 | 17 | 14 | 10 | | (3) |
| 12. | Calculate the third quartile for the data given below:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Marks | 0 - 5 | 5 - 10 | 10 - 15 | 15 - 20 | 20 - 25 | 25 - 30 | | No. of Students | 4 | 6 | 8 | 12 | 7 | 2 | | (3) |
| 13. | The IQ’s of a group of 6 persons were measured and they then sat for a certain examination. Their IQ’s  and examination marks were as follows:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | IQ | 110 | 100 | 140 | 120 | 80 | 90 | | Marks | 70 | 50 | 80 | 60 | 10 | 20 |   Compute Spearman’s rank correlation coefficient and interpret your result. | (3) |
| 14. | A sample of 26 bulbs gives a mean life of 990 hours with a S.D of 20 hours. The manufacturer claims that the mean life of bulbs is 1000 hrs. Is the sample not upto the standard? | (3) |
| 15. | X is normally distributed and the mean is 30 and SD is 5. Find out the probability that  P(2 40) | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. |  | The following table shows the Plant height (in cms).  40 35 42 6 13 50 60 27 8 42 53 17 25 23 24 12 26 32 28 28  31 29 30 28 21 46 22 19 20 30 31 30 36 30 40 38 30 29 31 41  Construct frequency table with six class intervals (0-10, 10-20, …, 50-60) and then draw the histogram. |  |
| (OR) | | | |
| 17. |  | The following frequency distribution gives the number of chillies per plant.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | No. of chillies /Plant | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | | No. of Plants | 8 | 10 | 23 | 29 | 18 | 12 |   Compute mean, median and mode for the above data. |  |
| 18. |  | Find the Mean deviation from median of the following distribution:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Age | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | | No. of persons | 170 | 110 | 80 | 45 | 40 | 35 | |  |
| (OR) | | | |
| 19. |  | Goals scored by two teams A and B in a football season were as follows:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | No of goals | 0 | 1 | 2 | 3 | 4 | | Team A | 27 | 9 | 8 | 5 | 4 | | Team B | 17 | 9 | 6 | 5 | 3 |   Find out which team is more consistent and more efficient. |  |
| 20. |  | Calculate the Karl Pearson’s coefficient of correlation for the following heights  (in inches) of fathers(X) and their sons(Y):   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | 65 | 66 | 67 | 67 | 68 | 69 | 70 | 72 | |  | 67 | 68 | 65 | 68 | 72 | 72 | 69 | 71 | |  |
| (OR) | | | |
| 21. |  | In partially destroyed laboratory record of an analysis of correlation data, the following  results only are legible and the following regression equations are given below:  . (i) Find the mean values of  and  (ii) Find correlation coefficient (iii) If the variance of  is 9 then find the standard deviation of. |  |
| 22. |  | The nicotine contents in milligrams in two samples of tobacco were found to be as follows.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Sample A | 24 | 27 | 26 | 21 | 25 |  | | Sample B | 27 | 30 | 28 | 31 | 22 | 36 |   Test whether the samples have come from the same normal population. |  |
| (OR) | | | |
| 23. |  | The varieties of A, B, C wheat sown in 4 plots each and the following yields in quintals per acre were obtained.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | A | 8 | 4 | 6 | 7 | | B | 7 | 5 | 5 | 3 | | C | 2 | 5 | 4 | 4 |   Test the significance of difference between the yields of the varieties using one – way ANOVA. |  |
| 24. | a | When we roll a pair of balanced dice, what are the probabilities of getting sum is  (a) Exactly 7 (b) greater than 6 (c ) neither 7 nor 11 | 9 |
| b | State and explain the properties of Normal distribution | 6 |
| (OR) | | | |
| 25. |  | The following data gives the number of seeds germinating out of 10 on damp filter for 80 sets of seeds. Fit a Binomial distribution to this data.   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | f | 6 | 20 | 28 | 12 | 8 | 6 | 0 | 0 | 0 | 0 | 0 | |  |

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