**TEMPLATE 6**

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| **University of Kerala** | | |
| Discipline: STATISTICS |  | Time: 1 Hour (60 Mins) |
| Course Code: UK1MDCSTA101 |  | Total Marks: 28 |
| Course Title: EXPERIMENTAL DESIGNS FOR SCIENCE |  |  |
| Type of Course: MDC |  |  |
| Semester: 1 |  |  |
| Academic Level: 100-199 |  |  |
| Total Credit: 3, Theory: 2 Credit, Practical: 1 Credit |  |  |

Part A. 4 Marks. Time: 5 Minutes Objective Type. 1 Mark Each. Answer All Questions (Cognitive Level: Remember/Understand)

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| **Qn. No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 1. | which of the following is a positional average?  (a) mean (b) mode (c) mean deviation (d) mode | Remember | CO2 |
| 2. | 1. Which of the following is/are scientific experiment/s?  (a) comparing effects of two medicines  (b) determining the effect of a learning method using pre-post trials.  (c) comparison of three varieties of crops using the yield they produced  (d) all the above | Remember | CO1 |
| 3. | In a normal distribution, the mean, median and mode are \_\_\_\_\_\_\_\_. | Understand | CO2 |
| 4. | A graphical procedure for assessing normality of a given data set is:  (a) Shapiro Wilks test (b) Q-Q Plot (c) Pie chart (d) none of these  . | Understand | CO2 |

Part B. 8 Marks. Time: 15 Minutes  
Short Answer. 2 Marks Each. Answer All Questions (Cognitive Level: Understand/Apply)

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| **Qn. No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 5. | What are the basic principles of experimental design? | Understand | CO1 |
| 6. | What do you mean by measure of central tendency? What are the various measures of central tendency? | Understand | CO2 |
| 7. | What is dispersion? Give any two measures of dispersion | Apply | CO2 |
| 8. | What do you mean by sampling distributions? Give an example. | Understand | CO3 |

Part C. 16 Marks. Time: 40 Minutes

Long Answer. 4 Marks Each. Answer all 4 Questions, choosing among options within each question.

(Cognitive Level: Apply/Analyse/Evaluate/Create).

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| **Qn. No.** | **Question** | **Cognitive Level** | **Course Outcome (CO)** |
| 9. | A. Explain the need of experimental designs in science.  OR  B. Explain various designs of Designs of experiment | Apply | CO1 |
| 10. | A.A pharmaceutical company claims that the average time for a new medication to reduce fever is 30 minutes. A researcher conducts a study to test whether the actual average time is different from 30 minutes. Describe how you would test this claim.  OR  B. A nutritionist wants to determine if there is an association between dietary habits (vegetarian, non-vegetarian) and the incidence of high cholesterol (high, normal). A study is conducted, and data is collected. How would you test whether dietary habits and cholesterol levels are independent of each other? | Analyze | CO3 |
| 11. | A. Evaluate the symmetry of the data using mean, median and mode  150, 80, 200, 100, 125, 180, 112, 500, 480, 320, 750, 600, 540  OR  B. Evaluate of the sd of the data  12,17,21,24,16,17,12,13,21,20 | Evaluate | CO2 |
| 12. | A. Evaluate the symmetry of the data using histogram   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Class** | **0-15** | **15-30** | **30-45** | **45-60** | **60-75** | **75-90** | **90-105** | | Frequency | 10 | 20 | 15 | 12 | 8 | 5 | 3 |   OR  B. Draw a Box plot of the data  12,13,17,12,21,19,21,17,21,17 | Evaluate | CO3 |

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| **Cognitive Level** | **Marks** | **Percentage** |
| Remember | 2 | 7.1 |
| Understand | 8 | 28.6 |
| Apply | 6 | 21.4 |
| Analyse | 4 | 14.3 |
| Evaluate | 8 | 28.6 |
| Create |  |  |
| **TOTAL** | 28 | 100.0 |