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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **15MA3022** | **Duration :** | **3hrs** |
| **Sub. Name :** | **RESEARCH METHODOLOGY AND BIOSTATISTICS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | What could be the *significance* of the literature review on the fruitful execution of research? | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Critically analyse components *research design* in terms of methodology and study setup. | CO1 | 10 |
| b. | What is “Plagiarism” in the context of scientific writing? How a researcher be possibly trained to minimize such issues? | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Explain the *nature of misconduct* attributed to “Salami” and imalas publication? Can a duplicate publication be advocated in science? | CO1 | 10 |
| b. | Discuss the different conflict of interests that may arise from intra- or inter-institutional research group? | CO1 | 10 |
| (OR) | | | | |
| 4. |  | Identify the different aspect of *method validity* pertinent to research. Examine how a confounding pattern of the variable might be resolved in the design of experiments? | CO1 | 20 |
|  |  |  |  |  |
| 5. |  | Evidence of side effects of a medication under study is measured in blood-glucose level. Typical blood-glucose levels are normally distributed, with *mean 90 mg/dL and standard deviation of 38 mg/dL*. If the normal range is 65−120 mg/dL, then what percentage of values will fall in the normal range? | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Estimating concentration (μg/mL) of a specific dose of ampicillin in the urine is evaluated with 25 volunteers who have a *mean concentration of 7.0 μg/mL with a standard deviation of 2.0 μg/ml*. Assume the underlying population distribution of concentrations is  normally distributed. Find a 95% CI for the population mean concentration. | CO2 | 20 |
|  |  |  |  |  |
| 7. |  | The mean serumcreatinine level measured in 12 patients after they received a newly proposed antibiotic was 1.2 mg/dL. If the mean and standard deviation of serum creatinine in the *general population are 1.0 and 0.4 mg/dL*, respectively, then, using a significance level of 0.05, test whether the mean serum-creatinine level in this group is different from that of the general population. | CO2 | 20 |
| (OR) | | | | |
| 8. |  | The analytical laboratory uses the fact that amount of light absorbed is related with protein concentration. We are having following data for the same. Determine the coefficient of determination, is it a reasonable way to estimate protein concentration? When light absorbed is 1.5, predict protein content with 90% CI.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Protein (mg/L) | 2 | 16 | 30 | 46 | 55 | | Absorbance | 0.44 | 0.82 | 1.2 | 1.64 | 1.83 | | CO2 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Describe the workflow in the peer-review process. | CO3 | 10 |
| b. | How different aspect of “conflict of interest” may arise in the publication and related process. | CO3 | 10 |