

1059
M.E. (Bio-Technology) Second Semester
MEBIO-201: Research Methodology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following:-

- a) Give one example of Clustered sampling.
- b) What are dependent variables?
- c) Type II error is defined as _____.
- d) What is p value in statistics?
- e) Null hypothesis is defined as _____.
- f) If a data distribution is approximately normal then about ____ percent of the data values are within one standard deviation of the mean
- g) _____ is an example of ordinal data.
- h) ANOVA is an acronym for _____.
- i) Differentiate between Median and Mode.
- j) When are non-parametric tests used? (10x1)

UNIT - I

- II. a) The research process is a stepwise process. Discuss the different steps involved in a research process.
- b) To narrow down a research problem it is an advantage to know what data are available. Explain the underlying idea in this statement in the context of defining a research problem. (2x5)
- III. a) Examine the merits and limitations of the telephonic interview method in collecting material. Illustrate your answer with suitable examples.
- b) Highlight the differences between an experiment and survey. (2x5)
- IV. a) Discuss the characteristics of a good research design. Why does one need to have different research design for different types of research studies?
- b) Literature review is a very important component of research. Enlist the steps and significance of literature review. (2x5)

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(2)

UNIT - II

- V. a) What is a chi square test used for? Explain the stepwise procedure to perform chi-square test.
- b) Are the following nominal, ordinal, interval or ratio data? Explain your answers.
- i) Voter card Numbers
 - ii) Length in millimeter
 - iii) Ranks in Air force
 - iv) Number of passengers on bus from Chandigarh to Manali.
 - v) Code number to prisoners
- (2x5)
- VI. Write a short note on:-
- a) Coefficient of correlation
 - b) Kurtosis
- (2x5)
- VII. a) A die is thrown 64 times with following results
- | | | | | | | |
|------------------|----|----|---|----|----|----|
| Number turned up | 1 | 2 | 3 | 4 | 5 | 6 |
| Frequency. | 14 | 10 | 8 | 10 | 12 | 10 |
- Is the die unbiased? Show statistically.
- b) What should be the size of the sample if a simple random sample from a population of 5000 items is to be drawn to estimate the per cent defective within 3 per cent of the true value with 90 per cent probability? What would be the size of the sample if the population is assumed to be infinite in the given case? Assume $p = .02$
- (2x5)

x-x-x