

[This question paper contains 4 printed pages.]

Your Roll No.

Sr. No. of Question Paper : 283

Unique Paper Code : 2373010014

Name of the Paper : Research Methodology (NEP-UGCF)

Name of the Course : **B.Sc. (H) Statistics**

Semester : VI

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all. Question no. 1 is compulsory.
3. **All** questions carry equal marks.
4. Use of non-programmable scientific calculator is allowed

1. (a) Fill in the blanks :

- (i) _____ test applied to both variables and attributes.
- (ii) _____ is a way to systematically solve the research problem.

P.T.O.

- (iii) A hypothesis that states no difference between groups is called _____ .
 - (iv) Data collected through experiments is termed _____ data.
 - (v) Data collected by someone else and used by the researcher is known as _____ data.
 - (vi) Any characteristic or measure of sample items is known as _____ .
- (b) Differentiate between Longitudinal and Time series data.
- (c) What are the criteria of good quality research?
- (d) Give your understanding of non-parametric methods explaining their important characteristics.
- (e) What is the purpose of literature review?
- (f) Discuss briefly about sampling and non-sampling errors. (6×0.5,3,3,3,3,3)
2. (a) Write short notes on the following :
- (i) Probability and non-probability sampling.
 - (ii) Conceptual and Empirical Research.
 - (iii) Outline of a technical report.

- (b) What are the guiding considerations in the designing of questionnaire? Explain the difference between collection of data through questionnaires and schedules. (9,9)
3. (a) "Interpretation is a fundamental component of research process". Explain this statement. Describe the precautions that the researcher should take while interpreting findings. What is the layout of a research report?
- (b) Explain the term "research ethics". Describe the ethical principles and its need in conduct of research. (9,9)
4. (a) What do you mean by research? Briefly describe the different steps involved in a research process.
- (b) A study has been made to compare the nicotine contents of two brands of cigarettes. Ten cigarettes of Brand A had an average nicotine content of 3.1 milligrams with a standard deviation of 0.5 milligram, while eight cigarettes of Brand B had an average nicotine content of 2.7 milligrams with a standard deviation of 0.7 milligram. Assuming that the two sets of data are independent random samples from normal population with equal variances. Construct a 95% confidence interval for difference between the mean nicotine contents of the two brands of cigarettes. (Given Tabulated value at 5% level of significance is 2.12) (9,9)

5. (a) Why tabulation is considered essential in a research study? Narrate the characteristics of a good table.
- (b) The following are the average weekly losses of work-hours due to accidents in 10 industrial plants before and after a certain safety program was put into operation :
- 45 and 36, 73 and 60, 46 and 44, 124 and 119, 33 and 35, 57 and 51, 83 and 77, 34 and 29, 26 and 24, 17 and 11. Formulate the appropriate null and alternative hypothesis, and test whether the safety program is effective at 5% level of significance. (Given Tabulated value at 5% level of significance is 2.262). (9,9)
6. (a) Discuss the mode of literature surveys. What do you mean by impact factor of a journal? Mention three referencing styles and their uses.
- (b) Discuss the four types of measurement scales. Point out the possible sources of measurement errors. What you understand by research design and describe some of the important research design used in experimental hypothesis testing research analysis. (9,9)