Q. P. Code: 24774

(3 hours)   **[Total Marks-80]**

N.B.   (1) Attempt any four questions out of six questions
         (2) Assume any additional data if necessary and state it clearly
         (3) Explain answers with neat sketches wherever necessary

a)   How Principle Research method different from Methodology? Give example to   [10]
justify the difference.

b)   Show the classification of research characteristics and discuss at least two classified   [10]
characteristics with suitable example.

a)   Are quantitative and qualitative research types inter-related with each other? Justify   [10]
your answer.

b)   What are the methods for analyzing date in quantitative research?   [10]

a)   Show the significance of Sample design and describe essential steps to achieve   [10]
good sampling design.

b)   A car manufacturer claims that his cars will run for an average of 20,000 miles   [10]
before needing their first repair. To prove this claim, you have tracked a test where
you took random sample of 21 cars. It found that the sample average number of
miles before repair was 18,700, with a standard deviation of 8,600 miles. If you
have been asked to draw the random sample test analysis for this manufacturer
what significant test limitations you can suggest or recommend to manufacturer
while taking random sample of cars?

a)   There are various stages of scientific research process. Suppose you will have the   [10]
opportunity to learn how to negotiate solutions to open engineering design problem
using systematic design methods. What stages of scientific research process you
will follow? Briefly discuss every stage that you like to consider.

b)   What is the characteristic of Good Hypothesis? Explain type I and II errors, level of   [10]
significance and variables in hypothesis.

a)   Identify any research area you are interested in. What procedural steps you will   [10]
follow to formulate any research problem in this research area. Be specific to steps
you follow and provide relevant description.

b)   Summarize the difference between qualitative and quantitative two data collection   [10]
methods.

a)   Discuss the validity of research thoroughly.   [10]

b)   "Ethics in research is the need of the hour". Justify the statement.   [10]

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