KUMARAGURU
college of technology
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Register Number:…………….…

M.E/M.TECH DEGREE EXAMINATIONS: DEC 2022

(Regulation 2018)

First Semester

COMMON TO AT / BIO / DS / EST / CS / IE BRANCHES

P18INT0001 **:** Research Methodology and Statistics

COURSE OUTCOMES

CO1: Understand and apply the concepts of research

CO2: Apply statistical and other research tools to analyze and interpret data

CO3: Demonstrate skills in writing research topics

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Identify the correct sequence of the research process from the following.   CO1   [K_2]

    1.Data Analysis

    2. Problem definition

    3. Data collection

    4. Research design

    5. Validation of results

    6. Interpretation of results

    a)   2-4-3-1-5-6   b)   2-4-3-1-6-5

    c)   2-4-1-3-6-5   d)   2-4-1-3-5-6

2. While defining the problem, which of the following is to be defined clearly?   CO1   [K_1]

    a)   Basic assumptions   b)   Methodology

    c)   Testing methods   d)   Mathematical tools

3. Which of the following is defined as the difference between the values of extreme   CO2   [K_1]

    items of a series?

    a)   Mean   b)   Median

    c)   Mode   d)   Range

4. Matching type item with multiple choice code   CO2 [K₂]

List I	List II
A. Mean	i. Divides data into two equal parts
B. Standard deviation	ii. Frequently occurring element
C. Median	iii. Statistical average
D. Mode	iv. Measure of dispersion

	A	B	C	D
a)	iii	i	iv	ii
b)	iii	iv	i	ii
c)	iii	iv	ii	i
d)	iv	iii	i	ii

5. The type I error in hypothesis testing characterized by   CO2 [K₂]

   a) Accepting of hypothesis which should have been rejected
   b) Accepting the trial output
   c) Rejection of hypothesis which should have been accepted
   d) Rejecting the trial output

6. _____ sampling involves grouping the population and then   CO3 [K₂]
   selecting the groups for samples.

   a) Quota sampling
   b) Stratified sampling
   c) Cluster sampling
   d) Multistage sampling

7. Assertion (A): A large size sample is required in to give a confidence internval of   CO2 [K₂]
   desired width.

   Reason (R): If the items are heterogeneous, then a large size sample is required

   a) Both A and R are Individually true and R is the correct explanation of A
   b) Both A and R are Individually true but R is not the correct explanation of A
   c) A is true but R is false
   d) A is false but R is true

8. Which of the following method is used for collecting primary data?   CO1 [K₂]

   a) Observation
   b) Literature
   c) News letters
   d) Magazine

9. Which of the following are the main functions the of hypothesis. CO2 [K2]

   1. To suggest new experiments
   2. To suggest new observations
   3. To suggest analytical techniques

   a) 1,3 only   b) 1,2 only

   c) 1,2,3   d) 2,3 only

10. Which portion of the research report should contain the objectives and novelty of the research? CO3 [K2]

    a) Conclusion   b) Introduction

    c) Materials and methods   d) Results and discussion

PART B (10 x 2 = 20 Marks)

11. Distinguish between quantitative research and qualitative research. CO1 [K2]
12. Classify various types of data used in research method. CO1 [K2]
13. Write the relationship between the mean, median, and mode. CO2 [K2]
14. What is the purpose of carrying out Analysis of Variance? CO2 [K2]
15. List the points to consider while preparing the questionnaire. CO3 [K2]
16. The runs scored in a cricket match by 11 players is as follows: CO2 [K3]

    7, 16, 121, 51, 101, 81, 1, 16, 9, 11, 16

    Find the mean, mode, and median of this data.
17. Differentiate between questionnaire and schedule. CO3 [K2]
18. Classify different types of reports. CO3 [K2]
19. Differentiate between inferential and descriptive statistics. CO2 [K2]
20. Distinguish between dependent and independent variables. CO3 [K2]

PART C (6 x 5 = 30 Marks)

21. For the research title Effects of organizational culture on business profitability: a case study of Virgin Atlantic, write down the research questions and research objectives on your own time bound. CO1 [K2]

22. Discuss in detail the essential elements of Research Design with suitable examples. CO2 [K2]

23.	Explain the Latin square design in research methodology.	CO2	[K$_3$]
24.	Enumerate the methods of effective data presentation.	CO3	[K$_3$]
25.	A sample of 400 male students has a mean height of 67.47 cm. Can it be reasonably regarded as a sample from a large population with mean height 67.39 cm and standard deviation 1.30 cm? Test at 5% level of significance for one-tailed test.	CO2	[K$_3$]
26.	Write short notes on data coding and classification.	CO3	[K$_2$]

Answer any FOUR Questions
PART D (4 x 10 = 40 Marks)

27.	Discuss in detail the steps in the scientific method with a suitable flow chart.	CO1	[K$_3$]
28.	Discuss in detail the various data analysis techniques.	CO2	[K$_3$]
29.	Enumerate the various types of probability distributions used in research.	CO2	[K$_3$]
30.	Discuss in detail the mechanics of writing a research report and elaborate on precautions while preparing the research report.	CO3	[K$_3$]
31.	Discuss in detail the different steps in report writing.	CO3	[K$_3$]

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