

Roll No.

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M.Tech. (EE)(2015 Onwards)/(Power System) (2016 & 2017) (Sem.-1)

**RESEARCH METHODOLOGY**

Subject Code : MTRM-101

M.Code : 70729

Time : 3 Hrs.

Max. Marks : 100

**INSTRUCTIONS TO CANDIDATES :**

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

1. Classify different nature of research and briefly explain about each of these.
2. Write a detailed note on preparation of research proposal.
3. Define Standard Deviation. The probability that a patient recovers from a rare blood disease is 0.4. If 100 people are known to have contracted this disease, what is the probability that less than 30 survive?
4. The grades of a class 9 students on a midterm report (x) and on the final examination (y) are as follows (x, y) : (77, 82), (50, 66), (71, 78), (72, 34), (81, 47), (94, 85), (96, 99), (99, 99), (67, 68).
  - a) Estimate the linear regression line
  - b) The final examination grade of a student who received a grade of 85 on the midterm report.
5. The TV picture tubes of manufacturer A have a mean lifetime of 6.5 years and a standard deviation of 0.9 year, while those of manufacturer B have a mean lifetime of 6.0 years and a standard deviation of 0.8 year. What is the probability that a random sample of 36 tubes from manufacturer A will have a mean lifetime that is at least 1 year more than the mean lifetime of a sample of 49 tubes from manufacturer B?
6. The daily demand of a product seems to follow uniform distribution. The observed frequency of daily demand values are summarized in the following table :

<b>Demand</b>	25	26	27	28	29	30	31	32	33	34
<b>Observed frequency</b>	18	15	12	15	11	14	17	15	19	14

Check whether the given data follows uniform distribution at a significance level of 0.01.

7. With the help of a suitable example, discuss analysis of variance technique.
8. Write short notes on :
  - a) Use of MATLAB for statistical analysis
  - b) Randomized block design

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**