

Total No. of Questions : 8]

SEAT No. :

P4169

[4760]-1133

[Total No. of Pages : 2

**M.E.(Electronics) (Digital Systems& Common to all E&TC
Specializations)**

**RESEARCH METHODOLOGY
(2013Credit Pattern) (Semester-I)**

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Solve Q.1 or Q.2.*
- 2) *Solve any two questions from Q.3 to Q.5.*
- 3) *Solve any two questions from Q.6 to Q.8.*
- 4) *Neat diagrams must be drawn wherever necessary.*
- 5) *Assume suitable data, if necessary.*
- 6) *Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- 7) *Figures to the right indicate full marks.*

- Q1)** a) Define the concepts related to objective of research, measures of satisfactory research and what factors need to be consider in motivation of research work. **[5]**
- b) What do you mean by research? Explain its significance in modern times. How to differentiate- need based research and fundamental research. **[5]**
- Q2)** a) What are the different steps need to be taken in real time research.Explain it with suitable example. **[5]**
- b) Classify the different static and dynamic characteristics of instruments with example. **[5]**
- Q3)** a) Give the procedure to collect real time data in computer? Make remark on data acquisition module and signal converters. **[5]**
- b) Write short notes on: **[5]**
- i) Pilot survey.
 - ii) Regression analysis
- Q4)** a) Elucidate concept of Principal Component Analysis with application in technology. **[5]**
- b) Write short note on Parameter estimation for development of algorithm. **[5]**

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- Q5)** a) 'The different non-linearity needs to be consider in real time research' explain the statement with suitable example. [5]
- b) Clarify the need of real time experimentation in research work with emphasize on validation of developed mathematical algorithms. [5]
- Q6)** a) Enlist the different factors required for verification of process performance. Explain each in short. [5]
- b) What are the different points need to be included in research proposal? Explain each in short. [5]
- Q7)** a) What are defferences between individual proposals and institutional proposals? What care should be taken during the submission of institutional proposals. [5]
- b) Develop a short proposal of your work (or any research) for submission to government agency with emphasizing national and international importance. [5]
- Q8)** a) What is meaning of modeling for research? Discuss the concept of multiscale modeling. [5]
- b) Discuss the research scope in agricultural automation in the view of electronics and communication field. [5]

