

Total No. of Questions : 08]

SEAT No. :

**P2242**

**[4460]-723**

[Total No. of Pages : 2

**M.E. (Electronics) (Digital System) (Semester - I)**  
**(Common to E & TC (Single Processing) / Communication Network**  
**/ Microwave / VLSI Embedded)**  
**RESEARCH METHODOLOGY**  
**(2013 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) Attempt any five questions.*
- 2) Figures to the right indicate full marks.*
- 3) Assume Suitable data if necessary.*

**Q1)** a) What do you mean by Research? Explain its significance in modern times. **[5]**

b) What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem. Give suitable examples to elucidate your points. **[5]**

**Q2)** a) Describe in a brief the different steps involved in a research process. **[5]**

b) Distinguish between research methods and research methodology. **[5]**

**Q3)** a) What is regression analysis? Explain it with a suitable example. **[4]**

b) Name the important multivariate techniques and explain the important characteristic of any one of such techniques. **[3]**

c) Define principal component analysis and explain the steps usually involved in principal components method. **[3]**

**Q4)** a) In an interview for a job, the interviewer tells you that the average annual income of the company's 25 employees is 60,849. The actual annual incomes of the 25 employees are shown below. What are the mean, median, and mode of the incomes? **[4]**

17,305, 478,320, 45,678, 18,980, 17,408,  
25,676, 28,906, 12,500, 24,540, 33,450,  
12,500, 33,855, 37,450, 20,432, 28,956,  
34,983, 36,540, 250,921, 36,853, 16,430,  
32,654, 98,213, 48,980, 94,024, 35,671

**P.T.O.**

- b) When is median preferred over mean to represent a set of values ? Give any one example. [3]
- c) Explain with an example the role of DSP if collected data contains noise. [3]
- Q5)** a) Describe, in brief, the layout of a research report, covering all relevant points. [4]
- b) Explain the technique and importance of oral presentation of research findings. Is only oral presentation sufficient? If not, why? [3]
- c) Explain the significance of a research report and narrate the various steps involved in writing such a report. [3]
- Q6)** a) What is Primary Data? Explain any one method of collecting primary data. [4]
- b) Explain the sensitivity theory in brief and enlist its applications. [3]
- c) Explain the meaning of asymptotic analysis. Describe briefly non linear analysis of a system. [3]
- Q7)** a) Mention the different types of report, particularly pointing out the difference between a technical report and a popular report. [4]
- b) Describe in brief Bibliography and its importance in context of research report [3]
- c) Explain the characteristics of a good research report. [3]
- Q8)** Write short note on the following:
- a) Objectives of Research [4]
- b) State vector machines and uncertainty analysis [3]
- c) Data collection using digital computer system [3]

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