Code No: RR311002 **Set No.1**

III B.Tech. I Semester Regular Examinations, November -2005
ELECTRONIC EQUIPMENT DESIGN
(Common to Electronics & Instrumentation Engineering and Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Derive the reliability function of a parallel - series system using neural networks. From the result obtained, obtain the back propagation galient Vs training epoch graph and the density distribution function. [16]

2. Draw the block diagram of a digital LCR meter. Explain its constructional details and working. [16]

3. (a) Describe a modern laboratory type signal generator.
   (b) Explain the technique used to improve its stability. [8+8]

4. (a) What are the various rules of guarding techniques? Explain with diagrams.
   (b) Discuss in brief the various rules of noise reduction in the instruments. [12+4]

5. Write about how Electromagnetic interference occurs in digital PCB. [16]

6. Write about Dyeing, Touch up, post backing and stripping related to wet film resists. [16]

7. (a) What is soft magnetic material and hard magnetic material? What is the difference in their properties? What are their applications?
   (b) What type of core will be used for the Pulse transformers and give reasons.
   (c) What are the main applications of inductor ferrites ? [6+5+5]

8. (a) Explain the design of a General purpose Pulse Transformer with the following specifications Pulse duration = 0.2ms, Pulse period = 1 ms, Pulse amplitude = 5V, Allowable Tilt at the load<15%, Source resistance=75Ohms, Load resistance = 1 kOhms, Transformation ratio=2.
   (b) List the properties of the winding wires. [12+4]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR311002 **Set No.2**

III B.Tech. I Semester Regular Examinations, November -2005
ELECTRONIC EQUIPMENT DESIGN
(Common to Electronics & Instrumentation Engineering and Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) What do you mean by MTTF, MTBF and Mean life.
   (b) Derive the interrelationships between the above terms. [8+8]
2. (a) List and explain the characteristics of three terminal IC regulators. What are the limitations of three terminal regulators.
   (b) Design a current limiting circuit for a 723 regulator to limit the current to 60m. [8+8]
3. Explain the different phases in facsimile transmission process. [16]
4. (a) What are the various guarding or grounding techniques? Discuss in brief with the general rules of grounding.
   (b) Explain in brief how the environmental conditions, affect the performance, of the instrument. [12+4]
5. (a) Explain about Ground and supply line noise related to digital PCB's.
   (b) Write about component placing in analog circuit PCB's. [6+10]
6. Write about Dyeing, Touch up, post backing and stripping related to wet film resists. [16]
7. (a) Draw the schematic diagram of full-wave single-phase magnetic amplifier circuit and explain its working principle.
   (b) How can a magnetic amplifier be used to maintain the speed of a shunt motor constant, under varying load conditions? Draw the circuit diagram also. [8+8]
8. Explain the following testing methods for testing inductors and transformers
   (a) Ohmmeter testing
   (b) Voltmeter testing
   (c) Resonance method of testing. [16]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR311002 **Set No.3**

III B.Tech. I Semester Regular Examinations, November -2005
ELECTRONIC EQUIPMENT DESIGN
(Common to Electronics & Instrumentation Engineering and Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) What are the factors to be taken into consideration while the instruments in the control panel are designed.
   (b) Discuss in detail the advantages and disadvantages of the use of colour in display design. [8+8]
2. (a) Design an adjustable regulator (3v to 28v) with short circuit current limit of 60mA using 723 regulator.
   (b) Explain the limitations of linear voltage regulator. [10+6]
3. Explain in detail the features of a FM signal generator with a neat block diagram. [6+10]
4. (a) What is meant by vibration pump? Explain its working in brief with a neat diagram.
   (b) Explain with graphs and diagram how thermal fatigue affects the performance of instruments. [8+8]
5. Briefly discuss about Reflections and cross talk problems that affect digital PCBs. [16]
6. Write about Dyeing, Touch up, post backing and stripping related to wet film resists. [16]
7. (a) Describe the insulating methods and process of impregnation, drying and baking.
   (b) State and explain various parameters that control the working of coils and transformers. [4+12]
8. (a) Explain the various tests specified for IF and RF transformers and coils.
   (b) For RF transformers how is voltage transfer ratio determined and tested.
   (c) What is meant by Pulsactor and explain its roles in the transformers. [6+6+4]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR311002 **Set No.4**

III B.Tech. I Semester Regular Examinations, November -2005
ELECTRONIC EQUIPMENT DESIGN
(Common to Electronics & Instrumentation Engineering and Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Briefly describe the steps to be followed in the process of product design. [16]

2. (a) List and explain the characteristics of three terminal IC regulators. What are the limitations of three terminal regulators.
   (b) Design a current limiting circuit for a 723 regulator to limit the current to 60m. [8+8]

3. Explain the features and functions of the following electronic workshop equipment.
   (a) Linear encoders
   (b) TNC upgrades
   (c) Quadra check
   (d) Stereo scope. [16]

4. (a) What is meant by capacitive, inductive and electromagnetic interferences? Explain in brief about each of them.
   (b) What is shielding? What do single shielding and double shielding mean? [8+8]

5. (a) Explain about Ground and supply line noise related to digital PCB's.
   (b) Write about component placing in analog circuit PCB's. [6+10]

6. Explain about Ferric Chloride advantages, disadvantages and operation for Etching. [16]

7. (a) Define Curie point and give its typical values for three ferromagnetic materials.
   (b) Why is heat treatment necessary for Ferromagnetic materials ?
   (c) Mention three materials used for ferrites and give their applications. [5+5+6]

8. Explain the following testing methods for testing inductors and transformers
   (a) Ohmmeter testing
   (b) Voltmeter testing
   (c) Resonance method of testing. [16]

⋆ ⋆ ⋆ ⋆ ⋆