

**III B.Tech I Semester Regular Examinations, November 2006**

**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**

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1. (a) Compare parallel systems and stand by systems.  
(b) Describe the placement of instruments in a work area. [8+8]
2. (a) Draw the functional block diagram of 723 regulator. Derive the expression for its output voltage.  
(b) Explain the current limiting feature of 723 regulator. [10+6]
3. Explain the features and function of the following electronic workshop equipment.  
(a) TNC probing  
(b) Profile projectors  
(c) Metal soldering irons  
(d) Tool check. [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) Write about component placing and mounting in PCB.  
(b) Explain about cooling requirements and packaged density related to PCB. [8+8]
6. Sketch the geometry of a screen fabric and explain about Monofil polyester fabrics and stainless steel fabrics. [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. Explain the following testing methods for testing inductors and transformers  
(a) Ohmmeter testing  
(b) Voltmeter testing  
(c) Resonance method of testing. [16]

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1. (a) Compare parallel systems and stand by systems.  
(b) Describe the placement of instruments in a work area. [8+8]
2. Explain in detail the constructional features and the principle of operation of single beam CRO. [16]
3. (a) Explain the function of front panel controls of a signal generator.  
(b) What are frequency dividers? Explain. [10+6]
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. Write about PCB layout check related
  - (a) General Consideration
  - (b) Mechanical considerations
  - (c) Electrical considerations. [4+6+6]
6. Write about Dyeing, Touch up, post backing and stripping related to wet film resists. [16]
7. (a) Explain the methods of reducing leakage inductance and distributed capacitance in the coil windings of a transformer.  
(b) List the requirements of windings of a transformer.  
(c) List and explain the quality requirements of a transformer. [8+4+4]
8. (a) Explain the winding design for the construction of a transformer.  
(b) List the characteristics of materials used for electrical insulation tapes in transformers.  
(c) List the various tests to be performed on pulse transformers. [12+6]

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1. Derive the reliability function of a parallel - series system using neural networks. From the result obtained, obtain the back propagation gradient Vs training epoch graph and the density distribution function. [16]
2. (a) Draw the functional block diagram of 723 regulator. Derive the expression for its output voltage.  
(b) Explain the current limiting feature of 723 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 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. Write about PCB layout check related
  - (a) General Consideration
  - (b) Mechanical considerations
  - (c) Electrical considerations. [4+6+6]
6. (a) Briefly discuss different trends in etching machine designs.  
(b) Briefly compare the different Etchants. [8+8]
7. (a) Define permeability. Which materials have high permeability? What is the advantage of using high permeability magnetic material for the core of inductor ?  
(b) What are permanent magnets? Explain its preparation. State their applications.  
(c) What type core will be used for the Af transformers. [6+6+4]
8. (a) Explain the various tests conducted on coils and transformers.  
(b) List the equipment used for conducting tests on coils and transformers and explain the test procedure. [8+8]

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1. (a) Explain in detail the mortality curve.  
(b) Briefly explain the theories relating to mortality and dynamic models. [6+10]
2. (a) Draw the functional block diagram of 723 regulator. Derive the expression for its output voltage.  
(b) Explain the current limiting feature of 723 regulator. [10+6]
3. (a) Explain the working of an electronic counter with a block diagram.  
(b) Explain any two applications of electronic counters. [8+8]
4. (a) What is meant by conductively coupled interference? How does it affect the readings of the instrument? How can this be eliminated?  
(b) When both temperature and pressure changes, how is the instrument's performance affected? How can they be eliminated? [9+7]
5. Write about PCB layout check related
  - (a) General Consideration
  - (b) Mechanical considerations
  - (c) Electrical considerations. [4+6+6]
6. Classify the photo resists and explain about them in general and give their applications. [16]
7. (a) Explain the methods of reducing leakage inductance and distributed capacitance in the coil windings of a transformer.  
(b) List the requirements of windings of a transformer.  
(c) List and explain the quality requirements of a transformer. [8+4+4]
8. Explain the following testing methods for testing inductors and transformers
  - (a) Ohmmeter testing
  - (b) Voltmeter testing
  - (c) Resonance method of testing. [16]

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