



**SF-6485**

**B. E. - II (Sem - IV) (EC-ECC) Examination**

**May / June - 2011**

**EC-403 : Solid State Devices**

Time : 3 Hours]

[Total Marks : 100

**Instructions :**

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="text" value="B. E. - II (Sem - IV) (EC-ECC)"/>	<input type="text" value="Student's Signature"/>
Name of the Subject :	
<input type="text" value="EC-403 Solid State Devices"/>	
Subject Code No. : <input type="text" value="6"/> <input type="text" value="4"/> <input type="text" value="8"/> <input type="text" value="5"/> Section No. (1, 2,.....): <input type="text" value="NIL"/>	

- (2) Attempt all questions.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data, if necessary.

- 1 (a) Answer the following : 10
- (1) Define drift current and diffusion current.
- (2) Give the difference between enhancement and depletion mode MOSFET.
- (3) Why CE configuration is most popular is amplifier circuits ?
- (4) Give the expression for continuity equations.
- (5) What is recombination centre ?
- (b) (1) Find resistivity of intrinsic Si at  $300^{\circ}K$ . (Assume standard data) 5
- (2) Define terms conductivity and mobility in semi conductor. 5
- 2 (a) Explain maximum voltage rating in transistor. 8
- (b) Explain junction diode switching times with relevant waveforms. Show the significance of reverse recovery time. 7

**OR**

- 2 (a) Explain the conductivity modulation taking place in semi conductor. 8  
 (b) Explain current component in P-N junction diode. 7
- 3 Attempt any **two** : 15  
 (a) Explain transistor as an amplifier.  
 (b) Tunneling phenomena in tunneling diode.  
 (c) Compare BJT and FET.
- 4 (a) Answer the following in brief : 15  
 (1) State the advantage of digital voltmeter and list its application.  
 (2) Describe briefly how measurement of frequency and voltage can be made with the use of CRO.  
 (3) What is SCR ? What are its applications ?  
 (4) Compare LED and LCD.  
 (5) Explain the  $dv/dt$  and  $di/dt$  rating of SCR.  
 (b) With help of circuit diagram and necessary waveform explain the operation of full wave rectifier using SCR. 5
- 5 (a) With the help of neat diagram, explain the main parts of cathode ray tube (CRT). 8  
 (d) Describe the different methods of operation of a thyristor with help of its static V-I characteristics. 7
- OR**
- 5 (a) Using diagram, explain the four quadrant operating conditions for TRIAC. 8  
 (b) What are the advantages of digital multimeter ? Explain the detail block diagram of digital multimeter. 7
- 6 Attempt any **three** : 15  
 (a) Explain the construction and operation of LCD. Discuss the difference between reflective type and transmittive type cells.  
 (b) Write short note on spectrum analyser.  
 (c) Explain the diode fabrication and packaging in detail.  
 (d) Explain the diffusion and epitaxial growth and discuss the application of each process to transistor manufacturing.  
 (e) Explain the electrostatic deflection in CRT.