

Elex

SE sem III / Elex (CBAS) E.D.

Q.P. Code :10591

[Time: 3 Hours]

[ Marks:80]

Please check whether you have got the right question paper.

- N.B:**
1. Question -1 is compulsory,
  2. Solve any THREE from remaining questions.
  3. Assume suitable if it is required.

- 1 a) How Zener diode is different than normal diode? (5)  
b) Explain nonlinear effects in MOSFET? (5)  
c) Draw and explain Ebers. moll model of BJT (5)  
d) Compare BJT and IGBT (5)
- 2 a) Draw the graph of built in potential  $V_{bi}$  for a symmetrical si diode ( $N_a = N_d$ ) at  $T = 300^\circ K$ . over the range  $10^{14} \leq N_a \leq 10^{19} \text{ cm}^{-3}$ . (10)  
b) Explain working of BJT considering all possible modes of operation. (10)
- 3 a) Derive the equation of threshold Voltage  $V_{Th}$  of n channel Enhancement MOSFET (10)  
b) Neatly sketch all FET characteristics. Explain how various parameters can be determined from the characteristics. State drain current equation of FET. (10)
- 4 a) Sketch and explain Tunnel diode characteristics. Explain applications of this diode (10)  
b) Explain construction, working and characteristics of D – MOSFET. (10)
- 5 a) Explain how optical device are classified? Explain any one photodetector in detail. (10)  
b) Draw and explain construction and characteristics of UJT. State its applications. (10)
- 6 Write notes on any TWO of the following. (20)  
a) HBT  
b) Solar Cell.  
c) SCR  
d) Diac and Triac



