

**FACULTY OF ENGINEERING**  
**B.E. 2/4 (EE/Inst.) I Sem. (Suppl.) Examination, July 2012**  
**ELECTRONIC ENGINEERING – I**

Time: 3 Hours]

[Max. Marks : 75

*Note : Answer all questions from Part A. Answer any five questions from Part B.*

## PART – A

(25 Marks)

1. A germanium diode draws 50 mA with a forward bias of 0.27 V. The junction is at room temperature of 27°C. Determine the reverse saturation current of the diode. 3
2. Draw the equivalent circuit of an ideal zener diode in the breakdown region. 2
3. The reverse saturation current of a N-P-N transistor in common base circuit is 12.5  $\mu$  A. For an emitter current of 2 mA, Collector current is 1.97 mA. Determine the current gain and base current. 3
4. Why CE configuration is most popular in amplifier circuits ? 2
5. When a reverse voltage of 10 V is applied between gate and source of JFET the gate current is 0.001  $\mu$  A. Determine resistance between gate and source. 3
6. Draw the VI characteristics of UJT. 2
7. List out any three salient features of low frequency BJT amplifier circuits. 3
8. Draw the diagram of the cascade configuration. 2
9. Explain about the classification of amplifiers. 3
10. What do you mean by distortion in amplifiers ? 2

## PART – B

(50 Marks)

11. a) A centre-tapped transformer has a 220 V primary winding and a secondary winding rated at 12-0-12 V and is used in a full-wave rectifier circuit with a load of 100  $\Omega$ . What is the dc output voltage, dc load current and the PIV rating required for diodes ? 6
- b) Explain the working of a  $\pi$ -filter for full-wave rectifier. 4



12. a) Explain how the stability of a self bias CE amplifier as compared to the fixed bias circuit is improved. Does large value of stability factor means better thermal stability ? 5½
- b) Compare CE, CB and CC amplifiers. 4½
13. a) Explain the basic construction of an enhancement type N-channel MOSFET. Draw and explain its static characteristics. 5
- b) An N-channel JFET has a pinch-off voltage of  $-4.5\text{ V}$  and  $I_{DSS}=9\text{ mA}$ . At what value of  $V$  as will  $I_{DS}$  equal to  $3\text{ mA}$  ? What is its  $g_m$  at this  $I_{DS}$  ? 5
14. Discuss the effect of an emitter bypass capacitor on low frequency response of a CE-BJT amplifier with mathematical analysis. 10
15. a) Explain in detail with neat diagrams about difference amplifier. Explain its operation. 7
- b) State the Miller's theorem. Explain it. 3
16. a) Compare SCR and TRIAC. 5
- b) Discuss in detail about bias stabilization circuits. 5
17. Write short note on the following :
- a) Bridge rectifiers. 5
- b) Transistor as an amplifier. 5