

FACULTY OF ENGINEERING
B.E. II/IV (CSE) I SEMESTER (Main) Examination, Nov./Dec., 2009
BASIC ELECTRONICS

Time : 3 Hours]

[Max. Marks : 75

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

PART – A**(Marks: 25)**

1. What is Hall effect in semiconductors ? 2
2. Draw the circuit diagram of Half wave rectifier with LC π filter. 3
3. Draw NPN and PNP Transistors. Label all the currents and show the direction of flow. 2
4. How the transistor amplifies the input signal ? Explain. 2
5. Differentiate between positive and negative feedback. 2
6. Enumerate the advantages of R-C oscillators. 2
7. What is an Op-Amp ? List the four building blocks of an Op-Amp. 3
8. Differentiate between combinational and sequential logic circuits. 3
9. Differentiate between photo diode and photo transistor. List various applications of photo transistor. 3
10. How does TRIAC differ from an SCR ? Explain. 3

PART – B**(Marks: 5 × 10 = 50)**

11. (a) What is meant by Intrinsic and Extrinsic semiconductors ? Explain V-I characteristics of PN junction diode and mention the applications of PN junction diode. 4
 (b) Draw the circuit diagram of a Bridge rectifier and derive its ripple factor and efficiency without filter. 6
12. Define α , β and γ of a transistor. "Why does the CE configuration provide large current amplification, while the CB configuration does not" ? Explain. 10
13. (a) What are the disadvantages of negative feedback ? Explain how the input and output impedances of an amplifier are effected by the different types of negative feedback. 4
 (b) State and briefly explain Barkhausen criterion of an oscillator. Draw the circuit of Hartley oscillator and explain its working. 6

(This paper contains 2 pages)

14. (a) What should be the ideal characteristics of an operational amplifier ? Name them. Distinguish between virtual ground and actual ground. 5
(b) What are called universal gates ? Design full adder circuit using NAND gates. 5
15. (a) What are active and passive transducers ? Explain how is a thermocouple used for temperature measurement. 4
(b) What is the speciality of a dual beam CRO ? Explain frequency and phase can be measured using a CRO. 6
16. (a) State and explain the characteristics of a Zener diode. How can it be used as voltage regulator ? 6
(b) How the Op-Amp acts as integrator and differentiator ? Explain. 4
17. Write short notes on :
(a) Simple Inverter Circuits 5
(b) Photo Electric Devices 5
-