



Code No. : 3295

**FACULTY OF ENGINEERING**  
**B.E. 2/4 (CSE) I Semester (Main) Examination, December 2010**  
**BASIC ELECTRONICS**

Time: 3 Hours]

[Max. Marks: 75

*Note : Answer all the questions of Part – A. Answer five questions from Part – B.*

**PART – A**

**(25 Marks)**

1. Describe the valance band, conduction band, and forbidden energy gap with the help of energy level diagram. 3
2. What do you mean by mobility, diffusion and drift current ? 3
3. Define  $\beta$ , show that  $\beta = \frac{\alpha}{1-\alpha}$ . 3
4. Distinguish between Zener breakdown and Avalanche breakdown. 2
5. What do you mean by feedback in an amplifier ? Give the expression for feedback gain. 3
6. State the condition under which a feedback amplifier works as an oscillator. 2
7. What is an operational amplifier ? Mention some of its applications. 2
8. What is the importance of logic gates ? Draw an 'OR' gate and give its truth table. 2
9. Draw the symbols of SCR, Triac Diac and UJT. 2
10. Explain the basic principal involved in a strain guage. 3

**PART – B**

**(50 Marks)**

11. a) Draw the circuit diagram of Fullwave rectifier and explain its working. Also define the terms Ripple, regulation, TUF and efficiency. 5
- b) Define Hall effect and Hall coefficients. Derive the expression for Hall coefficient. 5



12. a) Draw the circuit diagram of CE transistor and explain its working. Draw its input and output characteristics and calculate input impedance and output impedance from the characteristics. 5
- b) Draw the circuit diagram of Zener regulator and explain its working. Describe the method to calculate load regulation and line regulation. 5
13. a) What are the different ways of sampling the output signal, in a feedback amplifier? Name the four feedback topologies. State the effects of negative feedback in an amplifier. 5
- b) Draw the circuit diagrams of RC-phase shift oscillator and explain its working. 5
14. a) Define the following terms : 5
- i) Difference signal
  - ii) Common mode signal
  - iii) CMRR
  - iv) Input bias current
  - v) Input offset current
- b) With the help of circuit diagram and truth table explain how half adders can be used to get full adder. Draw the truth table of a full subtractor. 5
15. a) Draw a neat diagram of a cathode ray tube and explain its working principle. Explain how time base is obtained in a cathode Ray oscillograph. 5
- b) With a neat diagram explain the working of LVDT. 5
16. a) Show the structure and circuit representation of SCR. Explain its principle of operation. Mention some of its applications. 5
- b) Give the circuit diagram of colpitts oscillator and explain its action. What is the approximate frequency of oscillators? 5
17. a) How a transistor can be represented as a two port device? Define the h-parameters for a basic transistor circuit in 'CB' configuration and give its hybrid model. 5
- b) Draw the circuit diagram of p.n junction diode and explain its working in forward bias and reverse bias conditions. Draw the characteristics curves and explain its nature. 5