

FACULTY OF ENGINEERING

B.E. 2/4 (CSE) I – Semester (Main) Examination, November 2013

Subject : Basic Electronics

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. Distinguish between diffusion current and drift current. (2)
2. What are the advantages of Bridge rectifier? (2)
3. If the emitter of a transistor is open, will be there any collector current. (3)
4. What are the basic operational differences between a FET and an ordinary transistor? (3)
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. (3)
8. Draw the truth table of binary half adder. (2)
9. Draw the symbols of SCR, TRIAC, DIAC & UJT. (2)
10. Explain the basic principle involved in a strain gauge. (3)

PART – B (50 Marks)

- 11.a) Explain the working principle of P-N junction diode draw the characteristic curves and mention the applications of P-N junction diode. (5)
- b) Explain the working of centre-tapped full wave rectifier with neat circuit diagram? And derive its d.c. load current, RMS output current and ripple factor. (5)
- 12.a) Explain the working of CE-Amplifier with neat circuit diagram? And derive expression for input resistance and current gain using h-parameter equivalent circuit. (5)
- b) Explain the operation of JFET with its V-I characteristics. (5)
- 13.a) Explain how gain, input and output impedance of an amplifier are effected by the negative feed back. (5)
- b) Draw the circuit diagram of Zener regulator and explain its working. (5)
- 14.a) Draw the circuit of Hartley oscillator and explain its working. Drive its frequency of Oscillations. (6)
- b) A Hartley oscillator is design with $L_1 = 2\text{mH}$, $L_2 = 20\text{mH}$, and a variable capacitance. Determine the range of capacitance value, if the frequency of oscillation is varied between 950 kHz & 2050 kHz. (4)
- 15.a) What should be the ideal characteristics of an operational amplifier? How the OP-amp acts as integrator? Explain. (6)
- b) A 5 mv, 1 kHz, sinusoidal signal is applied to the input of an OP-amp integrator for which $R = 100\text{K}\Omega$ & $C = 1\ \mu\text{f}$. Find the output voltage. (4)
- 16.a) With neat diagram explain the working of LVDT. (4)
- b) Draw the block diagram of CRO and explain its working principle. (6)
17. Write notes on :
 - a) Photo Transistor (3)
 - b) DIAC (3)
 - c) Simple inverter circuit (4)
