

FACULTY OF ENGINEERING
B.E. 2/4 (CSE) I – Semester (Suppl.) Examination, July 2014

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 | State the hall effect in semiconductors? | 2 |
| 2 | Draw the circuit diagram of half wave rectifier with inductor and L-section filter. | 2 |
| 3 | The collector and base current of npn transistor are measured as $I_c = 5\text{mA}$, and $I_B = 55 \mu\text{A}$. Determine the ' α ' and ' β ' values. | 2 |
| 4 | What is an oscillator? And state the Barkhausen criterion. | 3 |
| 5 | How the transistor amplifies the input-signal? Explain. | 3 |
| 6 | Differentiate between positive and negative feedback. | 3 |
| 7 | What is an op-amp? List the four building blocks of an op-amp. | 3 |
| 8 | What are the universal gates? Give the truth tables. | 2 |
| 9 | What are the applications of CRO? | 2 |
| 10 | How does UJT differ from BJT and FET? | 3 |

PART – B (50 Marks)

- | | | |
|----|--|---|
| 11 | a) What are the types of semiconductors? Explain the working of p-N junction diode with V-I characteristics. | 6 |
| | b) A centre-tapped transformer has a 220v 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 100Ω . What is the dc output voltage, dc load current and PIV rating required for diodes. | 4 |
| 12 | a) Draw the circuit diagram of CE amplifier and explain its working. Analyse with h-parameter equivalent circuit. | 7 |
| | b) Why does a transistor has low input-resistance and high output resistance. | 3 |
| 13 | a) Explain the operation of JFET with V-I characteristics. | 5 |
| | b) Explain how does a Zener diode behaves as voltage regulator. | 5 |
| 14 | a) Classify negative feedback amplifiers. Compare their performance in a tabular column. | 6 |
| | b) Release the full adder using basic gates. | 4 |
| 15 | a) Draw the circuit diagram of RC phase shift oscillator and explain its operation by deriving expression for frequency of oscillation. | 7 |
| | b) A phase shift oscillator using a transistor has the parameter values $R_c = 3.3 \text{ k}\Omega$, $R = 5.6 \text{ k}\Omega$ and $C = 0.01 \mu\text{f}$ calculate the frequency of oscillations and h_{fe} required for sustaining the oscillations. | 3 |
| 16 | a) What are the applications of op-amp? Explain any two with proper expressions. | 8 |
| | b) What is meant by slew rate in an op-amp? | 2 |
| 17 | a) Explain the construction and working of LVDT. | 4 |
| | b) With the help of CRO block diagram explain its operation. | 6 |
