ID—220-EL-111622/111622-B6

B. Tech. EXAMINATION, 2023

(First Semester)

COMPUTER SCIENCE AND ENGINEERING
(CYBER SECURITY)

Code : EEE-101

Basics of Electical and Electronics Engineering

Time : 3 *Hours* *Maximum Marks :* 70

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Q. No. 1 will be compulsory. Q. No. 1 will have five parts of 2 marks each. Attempt *Five* questions in all, first being compulsory and selecting *one* from each Unit.

1. (a) Explain role and importance of circuits in engineering. 2

(b) Define Active power and Reactive power. 2

(c) What is a PN diode ? Write its applications. 2

(d) Differentiate between JFET and MOSFET. 2

(e) State the need of biasing. 2

Unit I

2. (a) State Milliman's theorem.

(b) State Thevenin theorem. Mention its advantages and limitations. 15

3. (a) Why there is need of network reduction ?

(b) Explain in detail star to delta conversion. 15

Unit II

4. (a) Explain with the help of diagram series resonance circuit.

(b) Two resistors are connected in parallel and a voltage of 200 V is applied to the terminals. The total current taken is 2.5 A, and the power dissipated in one of the resistor is 1500 W. What is the resistance of each element ? 15

5. Write short notes on the following : 15

(a) Average peak and RMS value of sinusoidal waveform.

(b) 3-phase AC circuits.

Unit III

6. (a) With appropriate circuit diagram explain the DC load line analysis of semiconductor diode.

(b) In a full wave rectifier, the input is from 30-0-30 V transformer. The load and diode forward resistances are 100 Ω and 10 Ω respectively. Calculate the average voltage, dc output power, ac input power, rectification efficiency and percentage regulation. 15

7. (a) Explain the working of positive clamping circuit.

(b) In a Common Emitter transistor circuit if $\beta = 100$ and $IB = 50\ \mu A$, compute the values of α, IE and IC. 15

Unit IV

8. (a) Draw and explain N-channel JFET construction.

(b) Define the following terms : 15
Dynamic Drain Resistance, Amplification Factor and Transconductance.

9. (a) Explain the Working Principle of Enhancement type MOSFET (n-channel).

(b) State the application of MOSFET. 15