B. TECH.
(SEM I) THEORY EXAMINATION 2018-19
ELECTRONICS ENGINEERING

Time: 3 Hours   *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   **Attempt *all* questions in brief.**   **2 x 10 = 20**
   a) Write some applications of P-N junction diode.
   b) What is meant by peak repetitive forward current
   c) What are the requirements of biasing circuits? Explain.
   d) What is early effect?
   e) Write the advantages of JFET over BJT.
   f) What is meant by saturation region
   g) Write the application of CRO
   h) What are the disadvantages of DVM?
   i) Define the truth table
   j) What are the basic laws of Boolean algebra?

SECTION B

2.   **Attempt any *three* of the following:**   **10 x 3 = 30**
   a) Explain the Diffusion capacitance and transition capacitance of a PN –diode.
   b) Explain the input and output characteristics of a transistor in CB configurations.
   c) Explain the construction and working of enhancement type MOSFET.
   d) Explain the working of digital voltmeter with the help of block diagram.
   e) Simplify the given expression using the Boolean algebra method
      $BD + B(D+E) + \bar{D}(D+F)$

SECTION C

3.   **Attempt any *one* part of the following:**   **10 x 1 = 10**
   a) Draw a circuit diagram of a bridge rectifier. Discuss the voltage regulation and efficiency of the circuit.
   b) A half wave rectifier rectifies an alternating voltage of 325-volt peak value and the diode has a forward resistance of 100 Ω. The value of load resistance is 1000 Ω. Determine the following: peak value, dc power output, AC input power, efficiency of the rectifier.

4.   **Attempt any *one* part of the following:**   **10 x 1 = 10**
   a) What are the characteristics of an ideal operational amplifier? Explain an inverting amplifier.
   b) Draw the circuit diagram of JFET as an amplifier and explain its working.

5.   **Attempt any *one* part of the following:**   **10 x 1 = 10**
   a) Draw a fixed bias circuit and obtain the value of d.c. voltages and currents in the circuit.
   b) What are the factors responsible for the instability of operating point? Also explain the various methods of improving stability.

6.   **Attempt any *one* part of the following:**   **10 x 1 = 10**
     a)   Draw the block diagram of a CRO and briefly explain the function of each block.
     b)   Explain the working of digital multimeter with the help of block diagram.

7.   **Attempt any *one* part of the following:**   **10 x 1 = 10**
     a)   Prepare k map for the following:
$$f = A + B + \overline{C}$$
     b)   Explain how multiplication and subtraction performed in digital systems. Explain the concept of universal gates.