Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019
Course Code: BE101-04
Course Name: INTRODUCTION TO ELECTRONICS ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.
Marks

1   Explain the constructional details of ceramic capacitors with diagram.   (5)

2   What are extrinsic and intrinsic semiconductors? Draw the crystalline structure   (5)
     of N-type semiconductor.

3   For a PNP transistor the base current and collector current are 45µA and 5.45mA   (5)
     respectively. Determine (i) values of α, β and (ii) Base current required to make
     collector current of 10 mA.

4   Why an FET is said to be a voltage controlled device? What is meant by pinch   (5)
     off voltage of FET?

5   Draw circuit diagram of a negative clipping circuit. Draw its input and output   (5)
     wave forms and explain its operation

6   Define rectification efficiency. Calculate its value for a full wave rectifier.   (5)

7   How can we test an NPN transistor using multi meter?   (5)

8   Explain the terms accuracy, sensitivity, resolution related to electronic measuring   (5)
     instruments.

PART B
Answer six questions, one full question from each module and carries10 marks.
Module I

9   a)   A carbon resistor has colour code orange, violet, yellow and silver. Find the   (5)
           range of resistance value.

     b)   What are the specifications of a capacitor? List the different types of capacitors   (5)

OR

10   a)   With a neat diagram, explain the working of an electromechanical relay.   (7)

     b)   Compare an electromechanical relay with a solid state relay.   (3)

Module II

11   a)   Give diode equation and explain the different terms.   (4)

     b)   Discuss the forward and reverse characteristics of PN junction diode   (6)

OR

12   a)   Explain the principle of operation of an LED. List any two types of   (5)
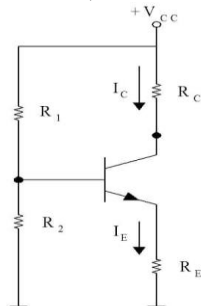
semiconductor materials used in the construction of LED.

b) With the help of a diagram explain the working of a solar cell.   (5)

Module III

13 a) For the given NPN transistor configuration find the quiescent values V_{CEQ} and   (7)
I_{CQ} .
Given $R_1 = 15$ kΩ, $R_2 = 2.7$ kΩ, $R_{E} = 1$ kΩ and $R_C = 1$ kΩ , $V_{CC} = 12$V, β=100.

b) Compare the three BJT configuration based on the major parameters.   (3)

OR

14 Draw and explain the input and output characteristics of an NPN transistor in   (10)
common base configuration

Module IV

15 Describe the structure and characteristics of n-channel depletion type MOSFET.   (10)

OR

16 a) Explain the working of a photo transistor with its characteristics.   (6)

b) Draw the structure and two transistor equivalent circuit of SCR.   (4)

Module V

17 Explain the working of a bridge rectifier with circuit diagram and waveform.   (10)

OR

18 a) Draw and explain zener diode voltage regulator.   (5)

b) Explain the working of a capacitor filter in a power supply with input and output   (5)
waveform.

Module VI

19 a) With the help of a block diagram explain the working of a function generator.   (5)

b) Describe the working of an analog multimeter.   (5)

OR

20 a) Explain the working of a CRO with block diagram.   (7)

b) Explain how CRO can be used to measure frequency.   (3)

****