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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 of N-type semiconductor. (5)
- 3 For a PNP transistor the base current and collector current are $45\mu\text{A}$ and 5.45mA respectively. Determine (i) values of α , β and (ii) Base current required to make collector current of 10mA . (5)
- 4 Why an FET is said to be a voltage controlled device? What is meant by pinch off voltage of FET? (5)
- 5 Draw circuit diagram of a negative clipping circuit. Draw its input and output wave forms and explain its operation (5)
- 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 instruments. (5)

PART B

Answer six questions, one full question from each module and carries 10 marks.

Module I

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

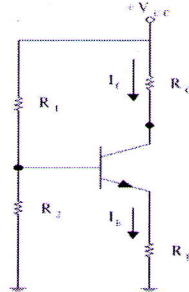
semiconductor materials used in the construction of LED.

- 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 I_{CQ} . (7)

Given $R_1=15\text{ k}\Omega$, $R_2=2.7\text{ k}\Omega$, $R_E=1\text{ k}\Omega$ and $R_C=1\text{ k}\Omega$, $V_{CC}=12\text{V}$, $\beta=100$.



- 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 common base configuration (10)

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 waveform. (5)

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)
