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# APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY FIRST SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018 Course Code: BE101-04 <br> Course Name: INTRODUCTION TO ELECTRONICS ENGINEERING 

Max. Marks: 100
Duration: 3 Hours

## PART A <br> Answer all questions, each carries 5 marks.

1 Give the specifications of a resistor. The colour bands marked on a resistor are
Blue, Grey, Yellow and Gold. What are the minimum and maximum resistance values expected from that resistance?

2 Draw the V-I characteristics of an ideal diode and that of a piecewise linear model with explanation.
3 Explain the different configurations of a BJT. Compare the input resistance and output resistance in each case.
4 Discuss the parameters of a JFET? Obtain the relation connecting JFET parameters.

5 Draw the circuit diagram and output waveform of a positive clipper with clipping level at 5 V .

6 Compare the different parameters of Half wave and Centretapped fullwave rectifier.

7 Explain the working of a function generator with diagram.
Explain the termsaccuracy, precision, resolution related to electronic measuring instruments.

## PART B <br> Answer six questions, one full question from each module and carries 10 marks. Module I

What are the various types of capacitors? Explain the constructional details of any two in detail.

## OR

10 a) How are inductors classified based on their frequency of operation? Discuss the features and uses of each type.
b) Discuss the operating principle of transformers. How are they classified based on voltage levels?

## Module II

11 a) Differentiate between Zener breakdown and Avalanche breakdown
b) What is doping? Explain the mechanism of current flow in a $P$ type
semiconductor.

## OR

12 Explain the working principle of:
(a) Solar cell
(b) Photo diode

## Module III

13 a) Explain with diagram the principle of operation of an npn transistor.
b) Define the parameters $\beta$ and $\alpha$ of a transistor. Derive the relation between them.

## OR

14 a) With a neat circuit diagram explain the working of an RC coupled amplifier.
b) For a given transistor $\mathrm{I}_{\mathrm{C}}$ is 2 mA and $\mathrm{I}_{\mathrm{B}}$ is $20 \mu \mathrm{~A}$. Find the value of $\alpha_{\mathrm{dc}}$. If the transistor is replaced by another transistor having $\beta=50$ find the new value of $\mathrm{I}_{\mathrm{C}}$.

## Module IV

15 With a neat sketch explain n-channel enhancement type MOSFET. Draw its drain characteristics.

## OR

16 a) Draw and explain the equivalent circuit of UJT. What is intrinsic stand-off ratio?
b) Compare the features of JFET with BJT

## Module V

17 a) Explain the working of a positive clamping circuit.
b) Draw a circuit to clamp a given 10 Vpp sine wave negatively at -3 V . Also draw the input and output waveforms.

## OR

18 Draw the block diagram of a DC power supply and explain the functions of each blocks in it.

## Module VI

19 a) Draw the block diagram of CRO and explain the functions of each block.
b) Explain how CRO is used to measure voltage and frequency.

OR
With the help of block diagram, explain how a digital multimeter can be used to measure parameters like voltage, current and resistance.

