

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIRST SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

**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 | 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? | (5) |
| 2 | Draw the V-I characteristics of an ideal diode and that of a piecewise linear model with explanation.   | (5) |
| 3 | Explain the different configurations of a BJT. Compare the input resistance and output resistance in each case.   | (5) |
| 4 | Discuss the parameters of a JFET? Obtain the relation connecting JFET parameters.   | (5) |
| 5 | Draw the circuit diagram and output waveform of a positive clipper with clipping level at 5V.   | (5) |
| 6 | Compare the different parameters of Half wave and Centretapped fullwave rectifier.  | (5) |
| 7 | Explain the working of a function generator with diagram.   | (5) |
| 8 | Explain the terms accuracy, precision, 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 | What are the various types of capacitors? Explain the constructional details of any two in detail. | (10) |
|---|--|------|

**OR**

- |    |  |     |
|----|--|-----|
| 10 | a) How are inductors classified based on their frequency of operation? Discuss the features and uses of each type. | (6) |
|    | b) Discuss the operating principle of transformers. How are they classified based on voltage levels?               | (4) |

**Module II**

- |    |  |     |
|----|--|-----|
| 11 | a) Differentiate between Zener breakdown and Avalanche breakdown     | (5) |
|    | b) What is doping? Explain the mechanism of current flow in a P type | (5) |

semiconductor.

**OR**

- 12 Explain the working principle of: (10)
- (a) Solar cell
  - (b) Photo diode

**Module III**

- 13 a) Explain with diagram the principle of operation of an npn transistor. (5)
- b) Define the parameters  $\beta$  and  $\alpha$  of a transistor. Derive the relation between them. (5)

**OR**

- 14 a) With a neat circuit diagram explain the working of an RC coupled amplifier. (6)
- b) For a given transistor  $I_C$  is 2mA and  $I_B$  is  $20\mu A$ . Find the value of  $\alpha_{dc}$ . If the transistor is replaced by another transistor having  $\beta = 50$  find the new value of  $I_C$ . (4)

**Module IV**

- 15 With a neat sketch explain n-channel enhancement type MOSFET. Draw its drain characteristics. (10)

**OR**

- 16 a) Draw and explain the equivalent circuit of UJT. What is intrinsic stand-off ratio? (6)
- b) Compare the features of JFET with BJT (4)

**Module V**

- 17 a) Explain the working of a positive clamping circuit. (4)
- b) Draw a circuit to clamp a given 10Vpp sine wave negatively at -3V. Also draw the input and output waveforms. (6)

**OR**

- 18 Draw the block diagram of a DC power supply and explain the functions of each blocks in it. (10)

**Module VI**

- 19 a) Draw the block diagram of CRO and explain the functions of each block. (6)
- b) Explain how CRO is used to measure voltage and frequency. (4)

**OR**

- 20 With the help of block diagram, explain how a digital multimeter can be used to measure parameters like voltage, current and resistance. (10)

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