

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 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 colour coding for resistors. Indicate the colour code for a $33K\Omega$ , 2% tolerance resistor.                                                                                                                                                                         | (5) |
| 2 | A Germanium diode carries a current of 1 mA at $20^{\circ}\text{C}$ when a forward bias of 0.15 V is applied. Estimate the reverse saturation current for that diode. Also, calculate the forward bias voltage required to produce a diode current of 20 mA at the same temperature. | (5) |
| 3 | What do you mean by Q-point? What are the factors affecting the stability of Q-point?                                                                                                                                                                                                | (5) |
| 4 | List the major difference between JFET and BJT.                                                                                                                                                                                                                                      | (5) |
| 5 | Draw and explain a voltage doubler circuit                                                                                                                                                                                                                                           | (5) |
| 6 | Explain the working of a zener diode regulator.                                                                                                                                                                                                                                      | (5) |
| 7 | Explain with block diagram the operation of analog multimeter.                                                                                                                                                                                                                       | (5) |
| 8 | Explain the terms accuracy, precision, sensitivity related to electronic measuring instruments.                                                                                                                                                                                      | (5) |

**PART B**

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

**Module I**

- |   |                                                                                                                                     |      |
|---|-------------------------------------------------------------------------------------------------------------------------------------|------|
| 9 | Explain the constructional details and features of a carbon film resistor and a wire wound resistor with the help of neat diagrams. | (10) |
|---|-------------------------------------------------------------------------------------------------------------------------------------|------|

**OR**

- |    |                                                                            |     |
|----|----------------------------------------------------------------------------|-----|
| 10 | a) Explain the working principle of electro mechanical relay with diagram. | (7) |
|    | b) Explain the working principle of transformers with diagram.             | (3) |

**Module II**

- |    |                                                                                                                                                                                                      |      |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 11 | Explain the V-I characteristics of a Germanium diode at room temperature. Draw the V-I characteristics of the same diode at a higher temperature and explain the effect of temperature on the graph. | (10) |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|

**OR**

- 12 a) Explain the working principle of LEDs? Also discuss the various types of LEDs. (6)  
b) Explain about the working of a photo diode. (4)

**Module III**

- 13 Explain the input and output characteristics of an NPN transistor in CE configuration. Indicate active, cut-off and saturation regions in output characteristics. (10)

**OR**

- 14 Explain an RC coupled amplifier with the frequency response. (10)

**Module IV**

- 15 a) Explain the structure and operation of n-channel FET. (6)  
b) Draw and explain the drain and transfer characteristic curves of n-channel FET (4)

**OR**

- 16 a) Explain the working principle of SCR. Draw and explain the characteristics of SCR. (8)  
b) Explain holding current and latching currents in SCR. (2)

**Module V**

- 17 a) Explain the working of half wave rectifier with diagram (4)  
b) Derive the RMS value, DC value, ripple factor of a Half Wave Rectifier. (6)

**OR**

- 18 Explain the working of SMPS with block diagram. What are its applications? (10)

**Module VI**

- 19 Describe the working of CRT with diagram. (10)

**OR**

- 20 a) Draw the block diagram of a digital storage oscilloscope and explain its working. (8)  
b) Give the advantages of DSO over CRO (2)

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