

TED (15/19) – 2041  
(Revision – 2015/19)

**A23 - 02461**

Reg.No.....  
Signature.....

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE , APRIL – 2023**

**BASIC ELECTRONICS**

(Maximum Marks : 100)

(Time : 3 hours)

**PART – A**  
(Maximum Marks : 10)

Marks

**I.** Answer **all** questions in one or two sentences. Each question carries 2 marks.

1. Define Capacitance with symbol.
2. Define intrinsic semiconductor.
3. Mention the ripple factor.
4. Write the transistor current equation.
5. Draw the symbol of NPN & PNP transistor.

(5x2=10)

**PART – B**  
(Maximum Marks : 30)

**II.** Answer any **five** of the following questions. Each question carries 6 marks.

1. Differentiate active and passive components.
2. Three resistors having  $10\Omega$ ,  $20\Omega$  and  $30\Omega$  are connected in parallel. Calculate the effective resistance.
3. Draw the Energy Band diagrams of conductors, insulators and semiconductors.
4. Describe Zener and Avalanche breakdown.
5. Describe shunt capacitor filters with waveforms.
6. Explain the working of positive and negative diode clamper Circuits.
7. Identify transistor configurations.

(5x6=30)

**PART – C**

(Maximum Marks : 60)

(Answer **one full** question from each unit. Each full question carries 15 marks)

**UNIT – I**

- III.** (a) Explain the color coding of resistors with two examples. (8)  
(b) Explain the working principle of transformers. (7)

**OR**

- IV.** (a) Describe paper and ceramic capacitors. (8)  
(b) Define self and mutual inductance. (7)

**UNIT – II**

- V.** (a) Explain the formation of PN junction and depletion region. (8)  
(b) Describe the voltage regulator using Zener diode. (7)

**OR**

- VI.** (a) Draw the VI characteristics' of silicon diode and mention knee voltage, static and dynamic resistance. (8)  
(b) Explain the working of Varactor diode. (7)

**UNIT –III**

- VII.** (a) Explain the working of full wave centre taped rectifier with waveforms. (8)  
(b) Explain the working of positive and negative biased clipper with reference  $+V_r$ . (7)

**OR**

- VIII.** (a) Describe the working of full wave voltage doublers. (8)  
(b) Compute the average value of voltage in Full Wave Rectifier. (7)

**UNIT – IV**

- IX.** (a) Explain the working principle of NPN transistor with diagrams. (8)  
(b) Compare CE, CB and CC configuration of transistors. (7)

**OR**

- X.** (a) Identify Cut off, Active and Saturation Regions in characteristic curve of CE configuration. (8)  
(b) Derive relation between  $\alpha$ ,  $\beta$  and  $\gamma$ . (7)

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