

# International Islamic University Chittagong (IIUC)

## Department of Electronic and Telecommunication Engineering

### Midterm Exam

Program: B.Sc (Engg.)  
 Course Code: ETE-1245  
 Total Marks: 30

Semester: Autumn2023  
 Course Title: Basic Electronics  
 Time: 1.5Hours

**[(i) Answer all the questions. The figures in the right-hand margin indicate full marks.]**  
**[(ii) Course Learning Outcomes (COs) and Bloom's Levels are mentioned in additional Columns.]**

Course Outcomes (COs) of the Questions						
<b>CLO1</b>	Apply knowledge of Basic Electronics to distinguish schematic symbol and recognize basic concepts of electronic components and circuits.					
<b>CLO2</b>	To analyse the functionality of various devices including several types of Diodes, BJT and FET through problem analysis					
Bloom's Levels of the Questions						
Letter Symbols	R	U	Ap	An	E	C
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

- |     |     |   |    |      |    |  |
|-----|-----|---|----|------|----|--|
| Q1. | (a) | Describe the valence band, conduction band & forbidden energy gap with the help of energy level diagram.  | 03 | CLO1 | R  |  |
|     | (b) | Discuss forward & reverse biasing with diagram and explain the V-I characteristics of a p-n junction.   | 07 | CLO1 | An |  |
| Q2. | (a) | A half wave rectifier is used to supply 50V dc to a resistive load of 800Ω. The diode has a resistance of 25Ω. Calculate ac voltage required.                                     | 03 | CLO2 | E  |  |
|     | (b) | Draw the equivalent circuit of a crystal diode.   | 03 | CLO2 | U  |  |
|     | (c) | Explain how zener diode maintains constant voltage across the load.   | 04 | CLO2 | U  |  |
| OR  |     |   |    |      |    |  |
| Q2. | (a) | The LC tank circuit has a 1 mH inductor. The varactor has capacitance of 100pF when reverse bias is 5V dc. Determine the resonant frequency of the circuit for this reverse bias. | 03 | CLO1 | Ap |  |
|     | (b) | Discuss the working of a half wave voltage doubler.   | 04 | CLO2 | C  |  |
|     | (c) | Write about clamper & clipper.  | 03 | CLO1 | U  |  |
| Q3. | (a) | Explain the working of LED & give two application of LED.   | 05 | CLO1 | An |  |
|     | (b) | What is varactor diode? How to work varactor diode & write one application.   | 05 | CLO2 | Ap |  |