International Islamic University Chittagong (IIUC)

Department of Computer and Communication Engineering

Midterm Examination

Program: **B.sc (Engg.)**
Course Code: **CCE 1209**
Total Marks: **30**

Semester: **Spring 2024**
Course Title: **Basic Electronics Engineering**
Time: **1 Hours 30 Minutes**

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

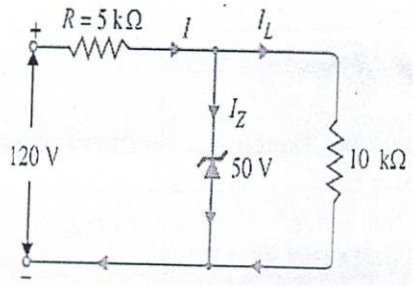
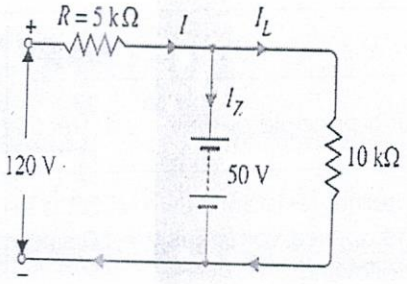
Course Learning Outcomes (CLOs) of the Questions

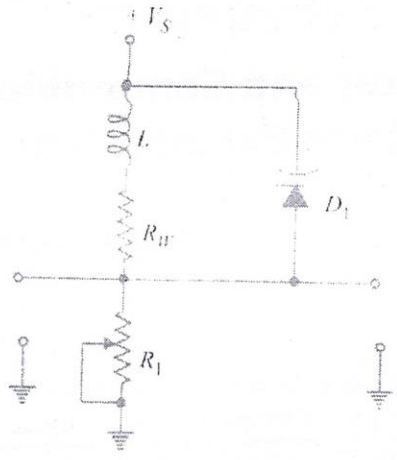
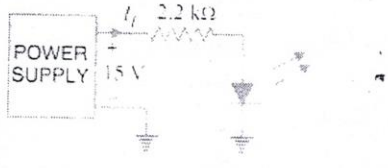
CLO1 Apply Knowledge of Basic Electronics to Distinguish schematic symbol and recognize basic concepts of electronic components and circuits.

CLO2 To analyze the functionality of various devices including several types of Diodes, BJT, FET, Amplifier and OP-Amp through problem analysis.

Bloom's Levels of the Questions

Letter Symbols Meaning	R Remember	U Understand	Ap Apply	An Analyze	E Evaluate	C Create

1)	a)	Explain the difference between the Intrinsic and Extrinsic semiconductor .	**CLO2**	**Ap**	**4**
1)	b)	For the circuit shown in following figure:  (i)  (ii) find : (i)the output voltage (ii) the voltage drop across series resistance (iii) the current through zener diode.	**CLO2**	**Ap**	**6**
2)	a)	What is regulated power supply? Explain the operation of Zener diode when it is act as an voltage regulator with proper sketch.	**CLO1/ CLO2**	**Un/E**	**2+3**
2)	b)	The LC tank circuit shown in the following figure has a 1 mH inductor. The varactor has capacitance of 100 pF when reverse bias is 5V d.c. Determine the resonant frequency of the circuit for this reverse bias.	**CLO2**	**Ap**	**5**

					
3)	a)	Explain the differences between the clipper and clamper circuits.	**CLO2**	**An**	**5**
3)	b)	What is current through the LED in the circuit shown in following figure ? Assume that voltage drop across the LED is 5 V . 	**CLO2**	**Ap**	**5**
		OR			
3)	a)	Explain the working principle of half-wave rectifier with proper sketch.	**CLO2**	**An**	**5**
3)	b)	A diode having internal resistance R_d = 100Ω is used for half wave rectification. If the applied voltage is v = 50 sin(wt) and load resistance R_L = 10Ω. Find the following: • I_m, I_{dc}, I_{rms} • AC power input • DC power output	**CLO2**	**Ap**	**5**