

Code: 23ES1202

**I B.Tech - II Semester – Regular / Supplementary Examinations
JUNE 2026****BASIC ELECTRICAL & ELECTRONICS
ENGINEERING
(Common for EEE, ECE, CSE)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This question paper contains two Parts: Part-A and Part-B.

2. Each Part contains:

- 5 short answer questions. Each Question carries 1 Mark and
- 3 essay questions with an internal choice from each unit. Each question carries 10 marks.

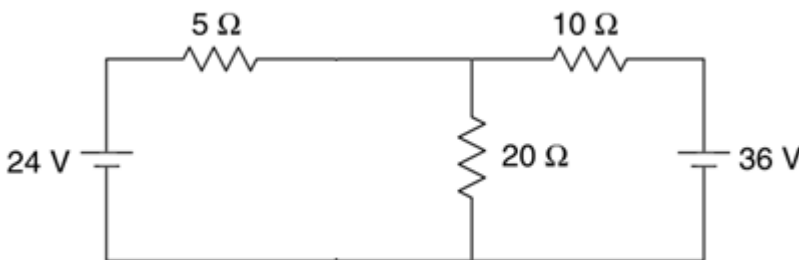
3. All parts of Question paper must be answered in one place.

BL – Blooms Level

CO – Course Outcome

PART – A

		BL	CO
1.a)	Define impedance.	L2	CO1
1.b)	State KVL and formulate loop equations for a simple circuit.	L3	CO1
1.c)	Illustrate working principle of single phase transformer.	L2	CO2
1.d)	Compare MI and PMMC instruments.	L2	CO2
1.e)	Describe electric shock and analyze its causes.	L2	CO3

			BL	CO	Max. Marks
UNIT-I					
2	Find the current through the $5\ \Omega$ resistor in Figure solving by using super position theorem.		L3	CO1	10 M
					
OR					
3	a)	An sinusoidal alternating current of frequency 60 Hz has a maximum value of 120 A. Calculate i. Average value. ii. RMS value. iii. Peak factor.	L3	CO1	6 M
	b)	A $10\ \Omega$ resistor and $400\ \mu\text{F}$ capacitor are connected in series to a 60V, 50Hz sinusoidal supply. Calculate impedance and phase angle between the current and voltage.	L3	CO1	4 M
UNIT-II					
4	Discuss the construction and working of DC generator and list their applications, advantages and limitations.		L2	CO2	10 M
OR					
5	Describe the construction and working of PMMC instrument and analyze list their advantages, limitations and applications.		L3	CO2	10 M

UNIT-III					
6	a)	Explain different types of earthing and justify their importance in electrical safety.	L2	CO3	5 M
	b)	What is two part tariff? Explain the calculation of electricity bill for domestic consumer.	L2	CO3	5 M
OR					
7	a)	Discuss the working of fuse, MCB and list their advantages.	L2	CO3	4 M
	b)	Outline the working and layout of nuclear power plant.	L3	CO2	6 M

PART – B

		BL	CO
1.f)	Define Zener diode and explain its voltage regulation role.	L2	CO4
1.g)	Explain transistor biasing and justify its importance.	L2	CO4
1.h)	Describe capacitor filter and analyze its ripple reduction role.	L3	CO5
1.i)	Explain the block diagram of public addressing system.	L3	CO5
1.j)	What is flip-flop? Classify its types.	L2	CO6

		BL	CO	Max. Marks
UNIT-IV				
8	Explain in detail the CB configuration of transistor with the help of input output characteristics and discuss its applications.	L3	CO4	10 M

OR					
9	Describe the construction and working of Zener diode and plot its V-I characteristics.		L3	CO4	10 M
UNIT-V					
10	Explain the operation of a full-wave bridge rectifier with neat wave forms.		L3	CO5	10 M
OR					
11	a)	Explain the working of capacitor filter and analyze its effectiveness in reducing ripple.	L3	CO5	5 M
	b)	Discuss the working of Zener diode as voltage regulator.	L2	CO5	5 M
UNIT-VI					
12	a)	Describe the construction and operation of a full adder and write its Boolean expressions for sum and carry outputs.	L3	CO6	6 M
	b)	Explain the functionality of NAND and NOR gates with truth tables.	L3	CO6	4 M
OR					
13	a)	Explain the working of an SR flip-flop and analyze its truth table, advantages and limitations.	L3	CO6	6 M
	b)	Convert the binary number $(11011011)_2$ into decimal, Gray code and Excess-3 code.	L3	CO6	4 M