PVP 23

Code: 23ES1202

I B.Tech - II Semester – Regular / Supplementary Examinations
MAY 2025

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.

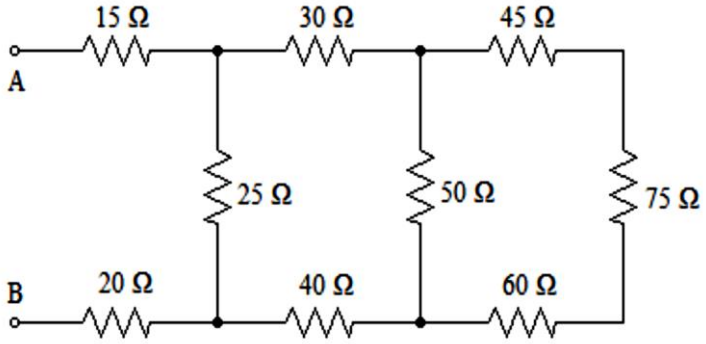
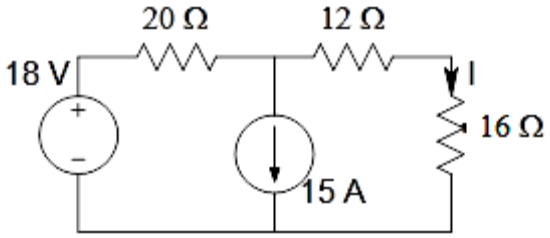
3. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1.a)	State ohm's law.	L1	CO1
1.b)	Explore the Significance of Measurement System.	L2	CO2
1.c)	Write any three applications of a DC Motor.	L1	CO2
1.d)	Define unit of Electrical Energy.	L2	CO3
1.e)	What is the function of Fuse?	L1	CO3

			BL	CO	Max. Marks
UNIT-I					
2	a)	Obtain the expression for equivalent resistance of 2 resistors connected in i) series and ii) parallel.	L3	CO2	5 M
	b)	For an AC Voltage of V = 300 Sin (314t) Volts, determine (i) Average Value (ii) RMS Value (iii) Peak Factor (iv) Form Factor (v) Frequency (vi) Time Period.	L3	CO2	5 M
OR					

3	a)	Find the equivalent Resistance between terminals A and B shown in Fig.  	L3	CO3	5 M
	b)	Find the current through 16Ω resistor using the superposition theorem for the circuit shown in the figure.  i. Write the statement of superposition theorem ii. Calculate the current through 16 Ω due to 18V source alone acting, with 15A current source not included. iii. Calculate the current through 16 Ω due to 15A source alone acting, with 18 V voltage source not included. iv. Find the total or actual current in the 16 Ω resistor when both 18 V and 15A sources acting.	L3	CO3	5 M
		UNIT-II			
4	a)	Describe the Construction and working principle of an Induction Motor with a neat sketch.	L3	CO2	5 M
	b)	With neat sketch, explain the measurement of unknown resistance using Wheatstone bridge.	L3	CO2	5 M

		OR			
5	a)	Explain the following parts of the Alternator with a neat sketch. (i) Stator (ii) Rotor	L3	CO2	5 M
	b)	Illustrate the construction and working principle of the Attraction Type MI Meter with a neat diagram.	L3	CO2	5 M
		UNIT-III			
6	a)	Explain Layout and operation of Wind power generating station.	L3	CO2	5 M
	b)	What are merits and de-merits of Miniature Circuit Breaker (MCB).	L3	CO3	5 M
		OR			
7	a)	Explain the need of earthing. List the types of earthing.	L2	CO3	5 M
	b)	What is an electric shock? How to prevent electric shock at home?	L3	CO3	5 M

PART – B

		BL	CO
1.f)	What is the difference between conductors and semiconductors?	L1	CO1
1.g)	Explain the operation of an NPN transistor.	L2	CO1
1.h)	State the function of an amplifier.	L1	CO5
1.i)	What are universal gates represent with symbols?	L1	CO4
1.j)	List any two basic properties of Boolean algebra.	L2	CO4

			BL	CO	Max. Marks
		UNIT-I			
8	a)	With a neat sketch outline the input and output characteristics of a transistor in common base (CB) configuration.	L3	CO5	5 M
	b)	With a neat sketch explain the characteristics of a PN Diode.	L2	CO4	5 M

		OR			
9	a)	With a neat sketch outline the input and output characteristics of a transistor in common Emitter (CE) configuration.	L3	CO5	5 M
	b)	Briefly explain the operation of a small signal CE amplifier.	L2	CO4	5 M
		UNIT-II			
10	a)	Draw the block diagram of Electronic Instrumentation System and explain the function of each block.	L3	CO4	5 M
	b)	Briefly explain the Working of Common Emitter (RC coupled) Amplifier with proper circuit and wave forms.	L2	CO5	5 M
		OR			
11	a)	What is a Capacitor Filter? Analyze the importance of Capacitor Filter in a Full Wave Rectifier?	L4	CO4	5 M
	b)	Explain briefly about the following: i) A step down transformer ii) A rectifier iii) A DC filter iv) A regulator	L3	CO5	5 M
		UNIT-III			
12	a)	Expand $A+B\overline{C}+AB\overline{D}+ABCD$ to min terms and max terms.	L4	CO5	5 M
	b)	Write the truth tables of SR, T and D-flip flop.	L2	CO5	5 M
		OR			
13	a)	Realize half adder using 2 input EX-OR gate.	L4	CO5	5 M
	b)	Analyze EX-OR and EX-NOR logic gates functionality with truth tables.	L2	CO4	5 M