H.T.No: | | | | | | | | | | | Course Code: **241EE001**

ADITYA UNIVERSITY

B.Tech – I Semester End Examinations Regular – Dec 2024

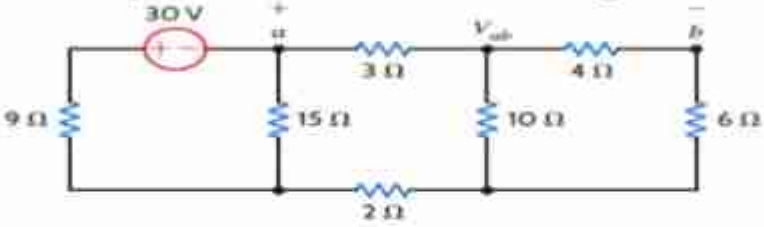
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CE, ME, ECE, CSE & Min.E)

Time: 3 hours **Max. Marks: 50**

Answer ONE question from each unit
All Questions Carry Equal Marks
All parts of the questions must be answered at one place only

UNIT-I

1	a	Define the following: i) Potential Difference ii) Resistance iii) Inductance iv) Capacitance v) Work	L2	CO1	[5M]
	b	Using the KVL equations, find the Vab in the following circuit.	L3	CO1	[5M]



(OR)

2	a	Derive an expression for the equivalent inductance when the inductances are connected in parallel.	L3	CO1	[5M]
	b	Derive an expression for the equivalent capacitance when the capacitances are connected in series.	L3	CO1	[5M]

UNIT-II

3	a	Explain the principle of operation of DC generator.	L2	CO2	[5M]
	b	Explain the working of repulsion type moving iron instrument.	L2	CO2	[5M]

(OR)

4	a	Describe the operation of a single phase transformer.	L2	CO2	[5M]
	b	Explain the operation of three phase induction motor.	L2	CO2	[5M]

UNIT-III

5	a	List and briefly explain any five conventional and five non-conventional energy resources.	L2	CO3	[5M]
	b	Explain the layout and operation of hydro power plant.	L2	CO3	[5M]

(OR)

6	a	Compare and contrast the advantages and disadvantages of solar power generation and wind power generation.	L3	CO3	[5M]
	b	Explain the working principle of a thermal power plant with a neat diagram.	L3	CO3	[5M]

UNIT-IV

7	a	Explain the impact of temperature variations on the conductivity of intrinsic and extrinsic semiconductors.	L2	CO4	[5M]
	b	Explain a simple common base configuration of BJT.	L2	CO4	[5M]

(P.T.O)

(OR)

8	a	Explain the input and output characteristics of a common emitter (CE) transistor configuration.	L2	CO4	[5M]
	b	Explain the performance of a Zener diode as a voltage regulator.	L5	CO4	[5M]

UNIT-V

9	a	Analyze the ripple factor of a half-wave rectifier and full-wave rectifier.	L4	CO5	[5M]
	b	Explain the working of universal gates (NAND and NOR) in digital logic design.	L5	CO5	[5M]

(OR)

10	a	Explain a simple DC power supply circuit using a full-wave bridge rectifier and a capacitor filter. Calculate the expected output voltage and ripple voltage for given input parameters.	L2	CO5	[5M]
	b	Write the truth tables for NOT, OR, AND gates.	L2	CO5	[5M]

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