PVP 23

Code: 23EE2602

III B.Tech – II Semester - Regular Examinations – APRIL 2026

ELECTRICAL WIRING ESTIMATION AND COSTING

(Common for ALL BRANCHES)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1.a)	List any four commonly used electrical symbols in domestic wiring.	L3	CO2
1.b)	Draw the circuit of a simple one-lamp controlled by one switch.	L3	CO2
1.c)	What is a three-phase four-wire distribution system?	L2	CO1
1.d)	What is meant by permissible voltage drop?	L2	CO1
1.e)	What are the factors to be considered while planning wiring for a commercial building?	L4	CO5
1.f)	State any four materials required for electrical installation in a small industry.	L3	CO4
1.g)	Define a substation.	L1	CO2
1.h)	What is a pole-mounted substation?	L3	CO4
1.i)	List any four components used in a contactor control circuit.	L3	CO4
1.j)	What is meant by motor protection?	L3	CO4

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	Describe the system of connection of electrical appliances and accessories in a residential installation.	L2	CO1	5 M
	b)	Draw and explain a ceiling fan circuit with regulator and switch.	L3	CO2	5 M
OR					
3	a)	Compare series and parallel connections used in electrical installations.	L4	CO3	5 M
	b)	Draw and explain the wiring diagram of a two-point light control circuit (staircase wiring).	L4	CO3	5 M
UNIT-II					
4	a)	Explain the three-phase four-wire distribution system with a neat sketch.	L3	CO2	5 M
	b)	Explain the importance of earthing in electrical installations.	L3	CO2	5 M
OR					
5	a)	Explain the factors affecting the selection of size of wires in an installation.	L4	CO3	5 M
	b)	Explain the concept of voltage drop and derive the expression for voltage drop in a single-phase feeder.	L3	CO2	5 M

UNIT-III					
6	a)	Explain the procedure for estimating and costing of electrical installation for a residential building.	L3	CO4	5 M
	b)	Estimate the quantity of wire, switches and accessories required for a single-bedroom house having: • 4 light points • 2 fan points • 2 socket outlets Assume PVC conduit wiring system. Prepare a detailed material schedule and approximate cost.	L4	CO5	5 M
OR					
7	a)	Describe the role of case study analysis in electrical installation planning.	L4	CO5	5 M
	b)	Estimate the electrical installation cost for a small industry floor measuring 20 m × 10 m requiring: • 10 light points • 4 exhaust fans • 3 three-phase motors (7.5 HP each) Prepare load calculation, sub-circuit arrangement and material cost estimation.	L4	CO5	5 M
UNIT-IV					
8	a)	Describe the classification of substations based on service requirement and constructional features.	L3	CO4	5 M

	b)	Explain the equipment used in a distribution substation.	L3	CO4	5 M
OR					
9	a)	Describe the layout and main components of an indoor (floor-mounted) substation.	L4	CO5	5 M
	b)	Sketch the single line diagram of a pole mounted substation.	L3	CO4	5 M
UNIT-V					
10	a)	Explain the starting method of a three-phase squirrel cage induction motor using DOL starter.	L3	CO4	5 M
	b)	Draw and explain a star-delta starter control circuit.	L3	CO4	5 M
OR					
11	a)	Describe the starting of a wound rotor induction motor with neat sketch.	L3	CO4	5 M
	b)	Draw and explain the control circuit for forward and reverse operation of an Induction motor.	L4	CO5	5 M