H.T.No: | | | | | | | | | | | Course Code: **241AE005**

ADITYA UNIVERSITY

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

BASIC ELECTRICAL GADGETS AND INSTRUMENTS
(Agricultural Engineering)

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	A series RLC circuit containing a resistance of 12Ω, an inductance of 0.15H and a capacitorof 100uF are connected in series across a 100V, 50Hz supply. Determine i) circuit impedance ii) the circuit current iii) power factor	L3	CO1	[7M]
	b	Mention the differences between the DC and AC supply systems?	L2	CO1	[3M]
		(OR)			
2		Analyse about series Resonance and derive an expression of i) resonant frequency ii) lower and hight cut off frequencies?	L3	CO1	[10M]

UNIT-II

3		Explain the measurement of three phase power by using two-watt meter method in star connected load with required diagrams? Also derive an expression of power factor angle in terms of wattmeter readings?	L2	CO2	[10M]
		(OR)			
4	a	Derive the relation between the line current and phase current in three phase delta connected system?	L2	CO2	[5M]
	b	A three-phase balanced star connected load of 4+j4 Ω/ph is connected across 415V, 50 Hz three phase balanced supply. Evaluate i) phase voltage ii) Line current iii) three phase active power.	L3	CO2	[5M]

UNIT-III

5	a	Analyse the working of a half wave rectifier with a neat circuit diagram.	L2	CO3	[5M]
	b	Explain the working of NPN Transistor with neat diagrams	L2	CO3	[5M]
		(OR)			
6	a	Explain about Zener diode as voltage regulator?	L2	CO3	[5M]
	b	Explain about the working of centre-tapped full wave rectifier with required diagrams?	L2	CO3	[5M]

UNIT-IV

7	a	Describe the characteristics of an ideal op-amp?	L2	CO4	[5M]
	b	Draw the circuit of a subtractor using an OP-AMP and derive the expression for its output voltage?	L2	CO4	[5M]
		(OR)			
8	a	Explain the working of OP-AMP Adder with neat diagram	L2	CO4	[6M]
	b	Draw the symbol and Explain the truth table of AND and OR logic gates?	L2	CO4	[4M]

(P.T.O)

UNIT-V

9		Explain about the working principle of a linear variable differential transformer (LVDT) for displacement measurement with required diagrams?	L2	CO5	[10M]
		(OR)			
10	a	Explain how a thermocouple works. Discuss its advantages and disadvantages?	L2	CO5	[5M]
	b	Describe the working of solar radiation measurement?	L2	CO5	[5M]

*****