Code No.: R22EE204ES | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–B.TECH–II–Semester End Examinations (Supply) - February- 2024
BASIC ELECTRICAL ENGINEERING
(Common for ECE, CSE, IT)

[Time: 3 Hours] **[Max. Marks: 60]**

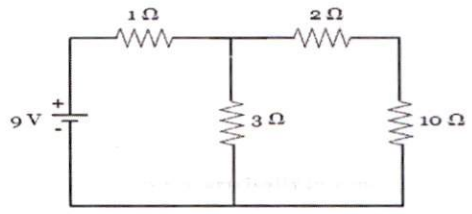
Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(10 Marks)**

1.	a)	What are the different types of electrical circuit elements?	[1M]
	b)	State KCL.	[1M]
	c)	Define RMS value of alternating quantity.	[1M]
	d)	Define resonance. What is the condition for series resonance?	[1M]
	e)	What is an Auto-Transformer?	[1M]
	f)	Define the Efficiency of a transformer.	[1M]
	g)	What are the essential parts of DC Machines?	[1M]
	h)	What are the losses which occur in DC generator?	[1M]
	i)	Define slip of a three-phase induction motor.	[1M]
	j)	What are different types of 3- phase induction motor?	[1M]

PART-B **(50 Marks)**

2.	a)	Sate and explain Superposition theorem.	[5M]
	b)	Find the current through 10 ohms resistance in the given network by using Norton's theorem.	[5M]



OR

3.	a)	Derive the transient response of an series RL circuit with dc excitation.	[5M]
	b)	State and explain Kirchhoff's voltage law with an example.	[5M]
4.		Derive the expression for Average value, RMS value, form factor and peak factor of sinusoidal waveform $v(t)= V_m \sin wt$.	[10M]

OR

5.	a)	Derive an expression for resonant frequency of R-L-C series circuit excited by AC source.	[5M]
	b)	Write the relationship between Phase and Line voltages, currents in star & Delta connected balanced three phase load.	[5M]
6.		Explain about constructional details and working principle of single phase Transformer.	[10M]

OR

7.		Draw and explain the equivalent circuit diagram of single phase transformer.	[10M]

8.	Explain about working principle and constructional details of DC Generator.	[10M]
	OR	
9.a)	Derive the Toque equation of DC Motor.	[5M]
b)	Explain the different types of DC Motors with neat diagrams.	[5M]
10.	Explain the constructional details and working principle of operation of three phase induction motor.	[10M]
	OR	
11.a)	Explain constructional details of synchronous generator.	[5M]
b)	Explain the various losses occurred in 3-phase induction motor.	[5M]

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