Code No.: EE401ES	R20	H.T.No.			8	R						

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–II–Semester End Examinations (Supply) - December- 2025
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(MECH)

[Time: 3 Hours] **[Max. Marks: 70]**

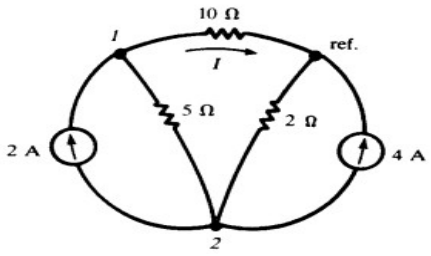
Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1.	a)	How do you convert a voltage source into current source?	[2M]
	b)	Define r.m.s value of an alternating quantity.	[2M]
	c)	Explain the necessity of earthing in electrical installations.	[2M]
	d)	What is the need for battery back-up?	[2M]
	e)	State different speed control methods of d.c motor.	[2M]
	f)	Define slip of a 3-phase induction motor.	[2M]
	g)	Define static resistance of PN junction diode.	[2M]
	h)	What is ripple factor?	[2M]
	i)	Draw the symbol for two types of BJT.	[2M]
	j)	What are the conditions to be fulfilled for the amplification of BJT?	[2M]

PART-B **(50 Marks)**

2.	a)	State and explain KCL and KVL.	[5M]
	b)	Find the value of current 'I" in the circuit given below.	[5M]



OR

3.	a)	Explain (i) active power ii) reactive power and (iii) apparent power.	[5M]
	b)	A series circuit of R= 10 Ω and C = 40 mF has an applied voltage v = 500 sin $(2500t + 30^0)$ volts. Find the resulting current i.	[5M]
4.		Explain the operation of ELCB with neat sketch.	[10M]

OR

5.	a)	Explain different types of batteries.	[5M]
	b)	Explain the various types of wires used in domestic wiring.	[5M]

6.a)	Explain the constructional details of d.c generator with a neat sketch.	[5M]
b)	Derive the torque equation of a d.c motor.	[5M]
	OR	
7.a)	Explain the working principle of synchronous generator.	[5M]
b)	A 2200 / 220 V single phase transformer has e.m.f per turn 12 V. Find (i) the number turns on primary and secondary (ii) the cross sectional area of the core if the operating flux density is 1.5 Wb /m^2	[5M]
8.a)	What is rectification? Describe the working of a half wave rectifier circuit. Also, draw the relevant waveforms.	[10M]
	OR	
9.a)	Draw and explain the V-I characteristics of PN Junction diode.	[5M]
b)	Explain various types of filters.	[5M]
10.	Draw the circuit diagram of for a CB transistor configuration. Explain its working.	[10M]
	OR	
11.a)	Compare BJT with FET.	[5M]
b)	Explain the biasing of FET.	[5M]

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