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KAMALA INSTITUTE OF TECHNOLOGY & SCIENCE, SINGAPUR
25EE28ES203

I B. Tech II Semester Regular Examinations, June - 2026
BASIC ELECTRICAL ENGINEERING
(CSE)

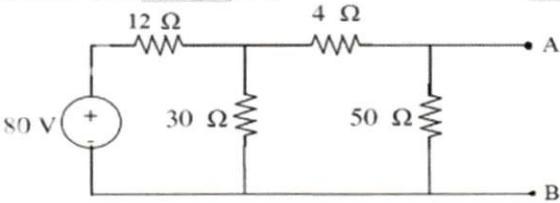
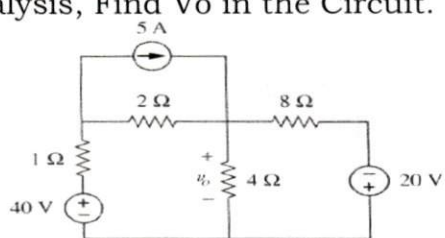
Time: 3 Hours

Max. Marks: 60

Note: Question paper consists of Part-A & Part-B.

i) **Part-A** for 10M, ii) **Part-B** for 50marks

- Part A** is compulsory, consisting of 5 sub questions from all units carrying equal marks.
- Part-B** consists of **10 questions** (numbered from 2 to 11) carrying **10 marks** each. From each unit there are 2 questions and the students should answer one of them. Hence the student should answer **5 questions** from **Part-B**.

PART-A (10Marks)			
Q. No	Questions	Marks	BTL
1.a)	Define KVL and KCL	2M	2
1.b)	Define active power, and write the formula	2M	2
1.c)	State the faraday's law of electromagnetic induction principle	2M	1
1.d)	Define slip	2M	2
1.e)	What is the basic calculation for energy consumption in watt-hours?	2M	1
PART-B (50Marks)			
Q.No	Questions	Marks	BTL
2. a)	Find the Thevenin's equivalent voltage and resistance across AB for the circuit shown below 	5M	3
b)	State the superposition theorem how it is applied for a network with an example?	5M	2
OR			
3. a)	A series RL circuit is connected to a DC supply. Derive the expression for current growth in the circuit and sketch the waveform	5M	3
b)	Using Nodal Analysis, Find V_o in the Circuit. 	5M	3

4. a)	A single-phase RLC series circuit has $R = 20 \Omega$, $L = 0.1 \text{ H}$, $C = 100 \mu\text{F}$ and supply voltage 230 V , 50 Hz . Calculate: Impedance Current Power factor Power consumed	5M	3
b)	Derive average and RMS voltages for a sinusoidal waveform	5M	3
OR			
5. a)	Explain resonance in a series RLC circuit and derive the condition for resonance.	5M	3
b)	A series RLC circuit of $R=40 \Omega$, $L= 50.07\text{mH}$ and a capacitor is connected across a $400\text{V}, 50\text{Hz}$, A.C supply. This RLC combination draws a current of 10A . Calculate (1) Power factor of the circuit. (2) Capacitor value	5M	3
6. a)	Explain the construction and working principle of a single-phase transformer with neat diagram.	5M	2
b)	List the different losses in transformer, define efficiency and voltage regulation of a transformer.	5M	2
OR			
7. a)	Explain the construction and operation of an Auto-transformer	5M	2
b)	Derive the EMF Equation of transformer.	5M	3
8. a)	Explain the performance characteristics of a DC shunt motor	5M	2
b)	Explain torque –slip characteristics of a three phase induction motor.	5M	2
OR			
9. a)	Explain the construction and operation of DC Generator	5M	2
b)	3- ϕ 4 pole induction motor is supplied from 3 ϕ 50Hz ac supply. Find (i) synchronous speed (ii) rotor speed when slip is 3% (iii) the rotor frequency when runs at 500r.p.m.	5M	3
10.a)	Compare and contrast MCBs, MCCBs, and SFUs, detailing their construction and primary applications in protecting electrical circuits	10M	2
OR			
11.a)	What is the main function of battery and what are the types of batteries explain any one method	10M	2

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