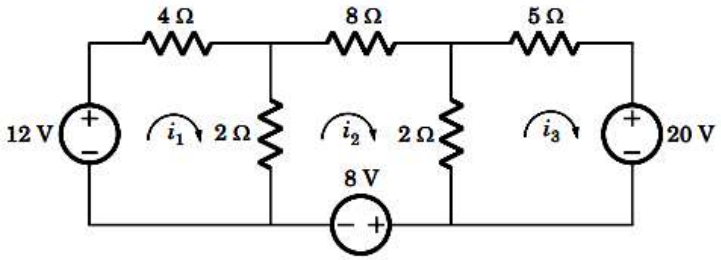
BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE **SEMESTER: II**
BRANCH: CSE/IT/ECE/EEE **SESSION: SP/2020**

SUBJECT: EE101 BASICS OF ELECTRICAL ENGINEERING

TIME: 2 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

				CO	BL
Q1	(a)	Define i) Potential difference ii) Mesh iii) Flux intensity iv) Flux density	[2]	co1	1
Q1	(b)	Find the current i1, i2 and i3 with help of Mesh analysis technique. 	[3]	co1, co2	1,2,3
Q2	(a)	What are the advantages of ac supply over DC supply?	[2]	co1, co2	1,2
Q2	(b)	Explain the star delta conversion.	[3]	co1, co4	1,2,3
Q3	(a)	The combined inductance of the two coils connected in series 0.6H and 0.4 H depending upon the relative direction of the current in coil. When one of the coil, where isolated has a self inductance of 0.15H then find the Mutual inductance and co-efficient of coupling.	[2]	co1, co2,co4	1,2,3,5
Q3	(b)	A mild- steel with $\mu_r = 400$ having a cross sectional area of 400mmsq.and mean circumference of 400mm has a coil of 200 turns wound uniformly around it. Determine i) the reluctance of ring ii) the current required to produce a flux of 800μ wb in the ring.	[3]	co1, co2,co4	1,2,3,5
Q4	(a)	A 230V, 50 Hz voltage is applied to a coil L=5H and R=2Ω is in series with a capacitance C. What value must C have in order that the voltage across the coil be 400V?	[2]	co1, co2,co4	1,2,3,5
Q4	(b)	An alternating voltage is given by the equation $v = 282.84\sin(377t + \frac{\pi}{6})$. Find the i) average value ii) rms value iii) frequency iv)time period	[3]	co1, co2	1,2,3,4
Q5	(a)	Explain the RLC series circuit in terms of impedance, current, voltage with proper phasor diagram.	[2]	co1, co2	1,2,3,4
Q5	(b)	40KW load takes a current of 20A from a 240 V ac supply. Calculate the reactive power and apparent power.	[3]	co1, co2	1,2,3

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