

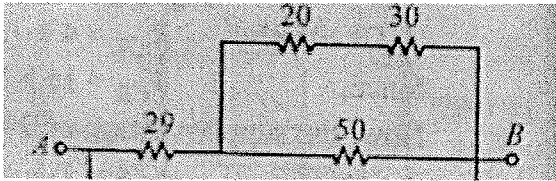
G. S. Mandal's  
 Maharashtra Institute of Technology, Aurangabad  
 (An Autonomous Institute)  
 MAKE-UP EXAMINATION  
First Year B.Tech (All) -April/May 2022

Course Code : ESC104  
 Duration : 2 Hrs

Course Name : Basic Electrical Engineering  
 Max. Marks : 50      Date : 07/05/2022

**Instructions :**

- i) All questions are compulsory
- ii) Assume suitable data wherever necessary and clearly state it
- iii) Figures to the right indicate full marks

Q-1	Solve/ Answer Any Five (Marks-10)	Marks	CO	BL
	Questions			
a)	Define ohms law and give unit of resistance	2	1	1
b)	Why loop and mesh are different	2	1	1
c)	What are types of induced EMFs	2	2	2
d)	Fill in the blanks Resistance is a ---- element and it is independent of -----	2	2	2
e)	Relate for the three-phase balanced system the angle between each phase?	2	3	3
f)	List down losses in the transformer.	2	3	3
<b>Q.2</b>	Compare Electric and magnetic circuits for similarity and differences	8	4	4
<b>Q.3</b>	Solve for given circuit-- 1) Effective resistance of the combination 2) If a 54-volt supply is given, then the current in the circuit. 3) What will be power developed in this circuit? 4) If there is an open in an effective combination of two resistances then what is the resultant resistance of the circuit. All resistances are in ohms 	8	6	5
<b>Q.4</b>	Illustrate superposition theorem with suitable circuits.	8	6	2

Q.5	<p>Determine The equation for current <math>i</math>. Draw waveforms for <math>v</math> &amp; <math>i</math> Draw a phaser diagram. What is power developed in the circuit. Draw a circuit for the same. for AC Voltage of equation <math>v = V_m \sin \omega t</math> when applied to a pure resistance then derive ( one mark each)</p> <p>1) <math>i = I_m \sin \omega t</math> <span style="float: right;">2</span>  2) Draw waveforms for <math>v</math> &amp; <math>I</math> <span style="float: right;">2</span>  3) Draw a phaser diagram. <span style="float: right;">1</span>  What is power developed in the circuit.  Power = <math>I \times I \times R</math> Watts-----2  5) Draw a circuit for the same. <span style="float: right;">1</span></p>	8	5	4
<b>OR</b>				
Q.5	<p>Evaluate for R-L-C Series circuit-</p> <p>1) a condition for series resonance --- 2  2) a phaser diagram at resonance. ---- 2  3) the power factor at resonance ---2  4) impedance at resonance-----2</p>	8	5	4
<b>OR</b>				
Q.6	<p>Elaborate single phase Transformer for</p> <p>1) Definition---2 Mark  2) WORKING-----3 Marks  3) TYPES-----3 Marks</p>	8	6	4
<b>OR</b>				
Q.6	<p>Develop a phaser diagram of a single-phase transformer for resistive loading &amp; discuss it.</p>	8	6	4