

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**Subject: – NETWORK THEORY (EC-214)**

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| Faculty Name: Mr.G. SATISH | Year / Sem: B.Tech in ECE - II/I | Academic Year: 2020-21 |

**SCHEME OF EVALUATION OF INTERNAL QUESTION PAPERS**

**ASSIGNMENT-1**

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| 1. a)Find the value of R in the circuit of fig. |  |
| * Step by Step Procedure of Determining R | **2.5M** |
| 1. b) Find the single equivalent resistance between A and B in the circuit of fig by network reduction. |  |
| * Step by Step Procedure of network Reduction | **2.5M** |
| 2. For the network shown in fig. develop the fundamental cut set matrix and write KCL equations. |  |
| * Finding fundamental cutset matrix | **3M** |
| * Writing KCL Equations | **2M** |
| 3.Find the magnitude of currents in 10Ω resistor in the network by mesh analysis. |  |
| * Obtaining Mesh Equations | **2+2=4M** |
| * Calculation of current in 10ohm resistor | **1M** |

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| 4. Find the current through 4Ω resistor in the circuit of figure by nodal method. |  |
| * Obtaining Nodal Equations | **1+1+1=3M** |
| * Solving Nodal equations | **1M** |
| * Calculating current in 4ohm resistor | **1M** |
| 5.A RLC series circuit has a resistance of 100 , Inductance 0.5H and the maximum current flows through it at a frequency of 40Hz. If the supply is 100V at 50 cps, findthe current, powerfactor and voltage across each element. |  |
| * Gathering and organizing data | **1M** |
| * Calculating intermediate quantities | **2M** |
| * Ca;culatingthe current and powerfactor | **1M** |
| * Ca;culatingvoltage across each element. | **1M** |
| 6. Draw the the phasor diagram for a pure resistor, inductor, capacitor, R-L series circuit, R-C series circuit. |  |
| * 5 Diagrams | **5M** |



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**MID-I**

**SECTION-A 6\*1=6M**

|  |  |
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| 1. a) What are the passive elements? |  |
| * Names of 3 passive elements | **1M** |
| b) State kirchoff’s current law. |  |
| * KCL statement | **1M** |
| c) Define ‘Tree’ of a graph. |  |
| * Tree definition | **1M** |
| d)Give the equations for active and reactive power. |  |
| * 2 equations | **1M** |
| e) Define complex power? |  |
| * complex power definition | **1M** |
| f) Define the term power factor |  |
| * Definition of power factor | **1M** |

**SECTION-B 1×7=7M**

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| 2. Determine the Resistance between the terminals A and B. |  |
| * Y-D conversion | **2M** |
| * Parallel and series reduction | **3M** |
| * Final parallel reduction and answer | **2M** |
| 3. Calculate the current through 4Resistor in the circuit by nodal method. |  |
| * Obtaining and solving Nodal Equations | **2+2+2=6M** |
| * Calculating current in 4ohm resistor | **1M** |

**SECTION-C 1×7=7M**

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| 4. A resistance of 10and a capacitance of 100 F are connected in series across 150V, 50 Hz supply. Calculate (i) Capacitive Reactance (ii) Impedance (iii) Current (iv) Phase angle (v) Powerfactor (vi) Active power (vii) Reactive power |  |
| * Gathering and organizing data | **1M** |
| * Calculating 7 quantities | **6M** |
| 5.Derive the expression for DC response of R-L series circuit. |  |
| * Derivation | **7M** |