

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

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

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| Faculty Name: Mr.G. SATISH | Year / Sem: B.Tech in EEE - 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, find the current, power factor and voltage across each element. |  |
| * Gathering and organizing data | **1M** |
| * Calculating intermediate quantities | **2M** |
| * Ca;culating the current and power factor | **1M** |
| * Ca;culating voltage 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) Power factor (vi) Active power (vii) Reactive power (viii) Voltage across capacitor. |  |
| * Gathering and organizing data | **1M** |
| * Calculating 8 quantities | **4M** |
| 5. Derive the expression for DC response of R-L series circuit. |  |
| * Derivation | **5M** |