Reg. No. :

Question Paper Code: 53505

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Third Semester

Electronics and Instrumentation Engineering

15UEI305 - ELECTRICAL CIRCUITS AND NETWORKS

(Regulation 2015)

Duration: 1:15hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Ohmic law mention, $V = IR$, when

    (a) voltage is constant   (b) at any resistance
    (c) only for DC   (d) when temperature remains constant

2. If there are 'b' branches and 'n' nodes the number of equations will be

    (a) n-1   (b) b   (c) b-n-1   (d) b-n+1

3. The superposition theorem requires as many circuits to be solved as there are

    (a) Nodes   (b) Sources
    (c) Nodes and Sources   (d) Nodes, Sources and Mesh

4. Condition for maximum power transfer theorem is

    (a) $R_L = 4R_S$ (b) $R_L = 2R_S$ (c) $R_L = R_S/2$ (d) $R_L = R_S$

5. When a RLC circuits is said be at resonance, then than PF of the circuits will be

    (a) zero   (b) unity   (c) lag   (d) load

6. A Capacitor is generally a

    (a) Bilateral and active component   (b) Non-Linear component
   (c) Linear and Bilateral component   (d) Nonlinear active component

7. In a series-parallel circuit, any two resistance in the same current path may be connected in

    (a) Series with each other   (b) Parallel with each other

    (c) Series with the voltage source   (d) Parallel with the voltage source

8. The time constant of *RL* series circuit is

    (a) L (b) R/L (c) L/R (d) none of these

9. A 3-phase balanced load, when connected in delta across three-phase balanced supply, the total power in 3-phase delta connected load is equal to _____ times of power in star connected load.

    (a) *10*   (b) 5   (c) 6   (d) 3

10. For a 3 - phase load balanced condition, each phase has the same value of

    (a) Impedance   (b) Resistance

    (c) Power factor   (d) All of these

<p style="text-align:center">PART – B (3 x 8= 24 Marks)</p>

<p style="text-align:center">(Answer any three of the following questions)</p>
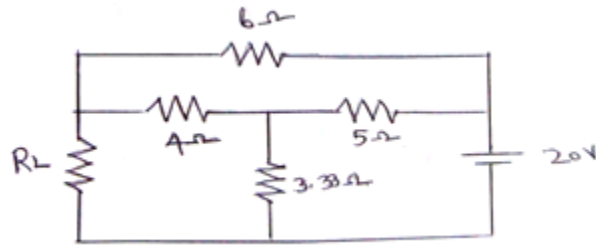
11.   Find the current in all the branches of the circuits given below by nodal method.

                                                                          (8)
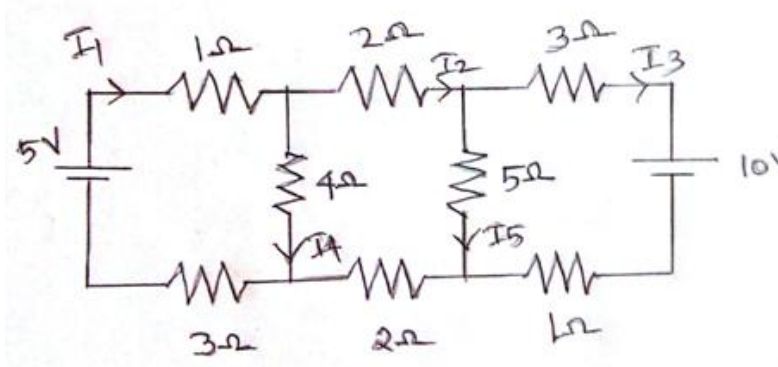
12.   Find the value of *RL* in the circuits given for maximum power transfer to it. Find maximum power.   (8)

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13. Derive the equation for band width = $R/2\pi L$. (8)

14. Derive the equation for RC series circuit time constant both for charging and discharging condition. (8)

15. Draw the circuit and prove that two Wattmeter method will measure 3φ power. (8)

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