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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

**Subject Title : CIRCUIT ANALYSIS AND NETWORKS Time : 3 hours**

**Subject Code: 12EI201/10EI201 Maximum Marks: 100**

#### **Answer ALL questions**

**PART – A (10 x 1 = 10 MARKS)**

1. Any closed path of a circuit is called as \_\_\_\_\_\_\_\_.

2. State Kirchoff’s current law.

3. Draw the Norton’s equivalent circuit.

4. State reciprocity theorem.

5. A series RLC circuit is said to be at \_\_\_\_\_\_\_\_\_ if XL = XC.

6. The difference between the half-power frequencies is called the\_\_\_\_\_\_\_\_\_\_\_.

7. Define mutual inductance.

8. What is co-efficient of coupling?

9. The \_\_\_\_ parameters are used to analyze transistor circuits.

10. Draw the frequency response of an ideal low pass filter.

**PART – B (5 x 3 = 15 MARKS)**

11. Define Mesh, Loop, Branch and Node.

12. State Maximum Power Transfer theorem.

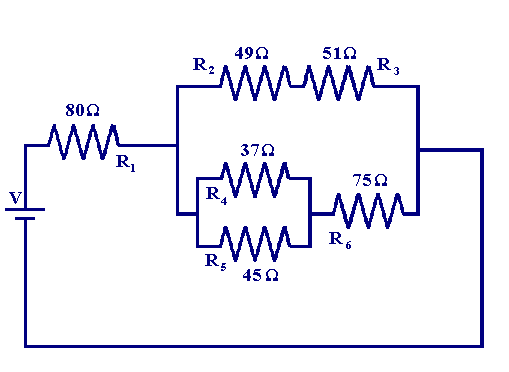
13. Give the expression for quality factor of a resonant circuit.

14. What is dot rule in coupled circuits?

15. What are two port networks?

**PART – C (5 x 15 = 75 MARKS)**

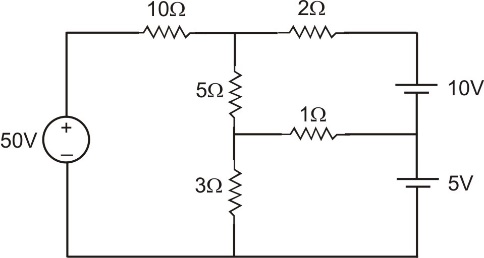
16. a. Find the equivalent resistance of the circuit shown in the figure. (10)



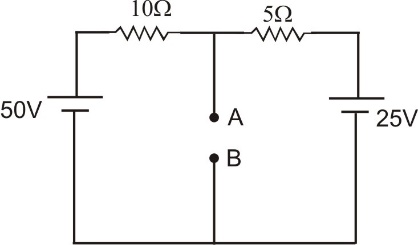
b. Analyze the concepts of current division and voltage division techniques. (5)

(OR)

17. Determine the mesh currents in the circuit shown.

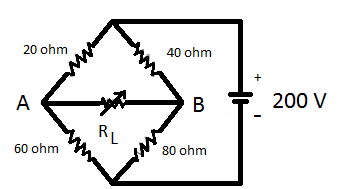


18. Determine the Thevenin’s equivalent circuit across AB for the circuit shown in Figure below:



(OR)

19. Determine the load resistance to receive maximum power from the source. Also find the maximum power delivered to load in the circuit.



20. Derive the expression for transient response i(t) for an R-C circuit with a DC input. Also find the transient voltage across the inductor and resistor.

(OR)

21. A series RLC circuit has a quality factor of 5 at 50 rad/sec. The current flowing through the circuit at resonance is 10A and the supply voltage is 100V. The total impedance of the circuit is 20 Ω. Find the circuit constants.

22. Derive the maximum output voltage for a single tuned circuit. Also plot the variation of amplification factor with frequency for different coupling coefficients

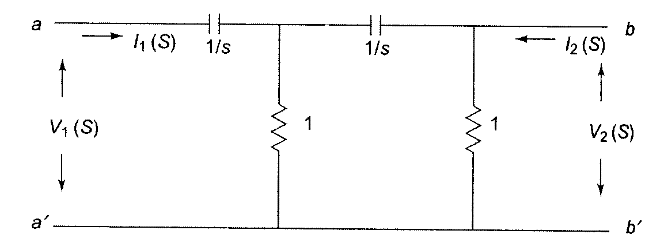
(OR)

23. a. Two coupled coils with L1 = 0.02 H, L2 = 0.01H and K = 0.5 are connected in four different ways. i) Series aiding and opposing

ii) Parallel aiding and opposing.

What are the four equivalent inductances? (7)b. Show that in a coupled circuit, k = M/√ (L1\*L2). (8)

24. Find the Z parameters of the RC ladder network shown in figure.



(OR)

25. Derive the hybrid parameters for a two port network.