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Question Paper Code: 43504

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Third Semester

Electronics and Instrumentation Engineering

14UEI304 - ELECTRICAL CIRCUITS AND NETWORKS

(Common to Instrumentation and Control Engineering)

(Regulation 2014)

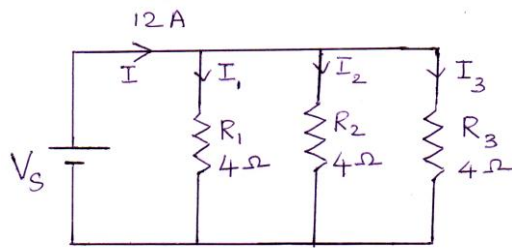
Duration: 1:45 hour

Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. State Ohm's law.
2. State Kirchoff's current law and voltage law.
3. Each of the three arms of a delta connected network has a resistance of 3Ω . Formulate the equivalent star connected network.
4. Define Maximum power transfer theorem.
5. A series RLC circuit resonates at 1.5 kHz and consumes 50 W from a 50 V supply. The circuit has a bandwidth of 0.75 kHz . Calculate the values of R , L and C .
6. Define coefficient of coupling.
7. What is meant by transient response?
8. Infer transient response.
9. Compare three-phase star connected system with delta connected system.
10. Define power and power factor.
11. Determine the total current in the circuit shown in below figure.

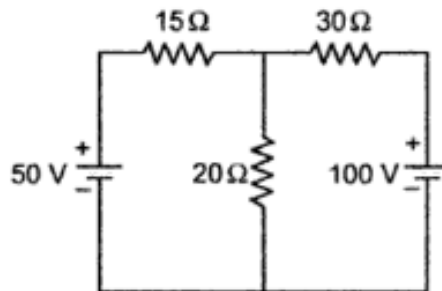


12. State superposition theorem.
13. Define bandwidth.
14. Define transient response.
15. What are the advantages of 3 phase system over single phase system?

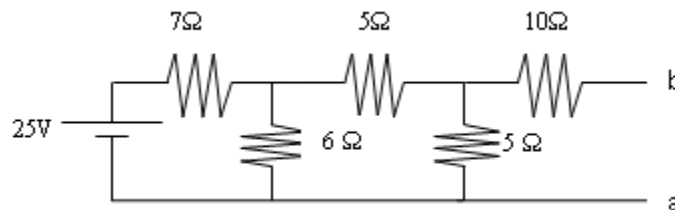
PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. Apply Kirchoff's current law and voltage law to the circuit given below. Indicate the various branch currents. Write down the equations relating the various branch currents. Solve these equations to find the values of these currents. (10)



17. Find the thevenin's voltage and thevenin's resistance for the circuit shown in the figure. (10)



18. Derive the formula for mutual inductance in terms of coefficient of coupling and self inductance. (10)

19. A Series RLC circuits has $R=50$ ohm, $L= 0.2H$, and $C = 50$ microfarad. Constant voltage of 100V is impressed upon the circuit at $t=0$. Find the expression for the transient current assuming initially relaxed conditions. (10)

20. With a neat circuit and phasor diagram explain the three phase power measurement by two wattmeter method and also derive the expression for power factor. (10)