(DCS 222)

B.Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the End of Second Year)

COMPUTER SCIENCE

Paper - II : Circuit Theory

Time : 3 Hours **Maximum Marks : 75**

Answer question No.1 compulsory ***(15)***

Answer ONE question from each unit ***(4 × 15 = 60)***

1) a) Write about KVL.

b) When 'n' capacitors are connected :

i) What is the effective resistance in series combination.

ii) What is the effective resistance in parallel combination.

c) State Thevinis theorem and Norton's theorem.

d) Define peak factor, crest factor, form factor.

e) Give the differences between series and parallel resonance.

f) Define quality factor and give relation between quality factor and bandwidth.

g) What are the advantages of three phase system.

h) What is a balanced system.

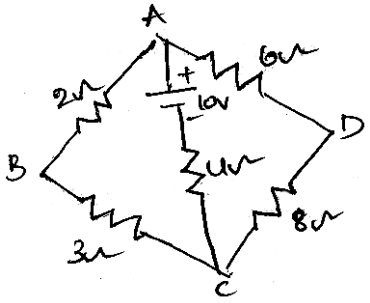
i) What is meant by source transformation technique.

j) Give the expression for energy stored in capacitor & inductor.

UNIT - I

2) a) Write about Mesh analysis.

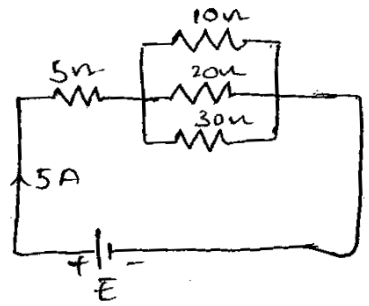
b) Calculate current in each element of the circuit.



OR

3) a) Write about Nodal analysis.

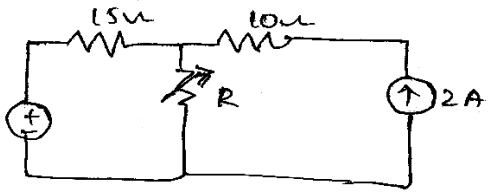
b) In the circuit shown in figure the current is 5 Ω resistor is 5 amp. Calculate power consumed by 5Ω resistor. Also determine current through 10 Ω resistor and the supply voltage E.



UNIT - II

4) a) Define maximum power transfer theorem.

b) Find value of R for maximum power transfer. Also calculate the maximum power.



OR

5) Derive the expression for response when RC series circuit is excited by a AC source.

UNIT - III

6) a) For a π – connected resistive network, compute short circuit z -parameters.

b) A series RLC circuit consists of R = 50 Ω, L = 20 μH and C = 10 μ F. The applied voltage is 100V. Find (i) W_o (ii) Q_o (iii) Bandwidth

OR

7) Derive the expression for resonant frequency and quality factor for series resonance.

UNIT - IV

8) a) What is polyphase system and write its advantages.

b) For a star connected network, derive the relationship b/w line and phase values with the help of phasor diagram.

OR

9) a) Describe about generation of 3-ϕ voltages.

b) Determine the active and reactive components of voltages in each phase of star connected 4400V, 3-phase s/m supplying 3500 kW at a power factor 0.65.

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