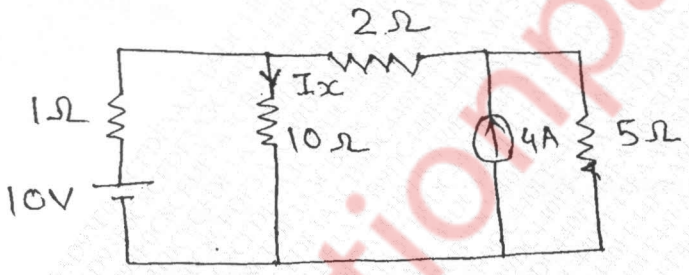
Q. P. Code: 37653

[Time: Three Hours] **[Marks:80]**

N.B: 1. Question.No.1 is compulsory.
2. Attempt any three questions from remaining five questions.
3. Assume suitable data wherever necessary.

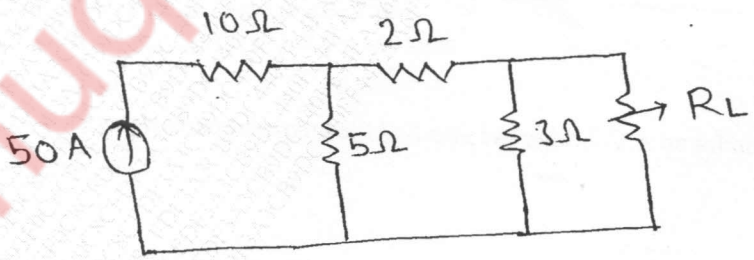
1 Attempt any following 20
a What is series resonance? Explain
b Explain Digital Voltmeter (DVM).
c What are the advantages of an A.C. Bridge?
d What is Q-meter? Explain in brief.

2 a Find the current I_x using Superposition 10



b Find the open-circuit impedance parameters with equivalent circuit diagram and also derive the condition for Reciprocity and Symmetry. 10

3 a What will be the value of R_L to get maximum power delivered to it? 10



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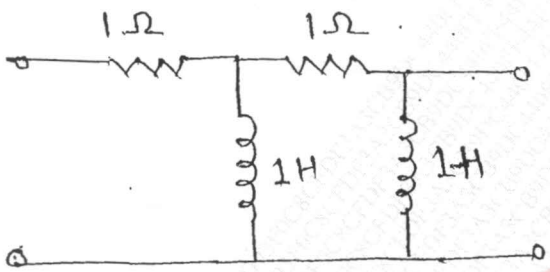
b Explain the transient condition for a series R-L circuit for D.C. conditions. 10

4 a Determine the Z parameters for the network shown. 10



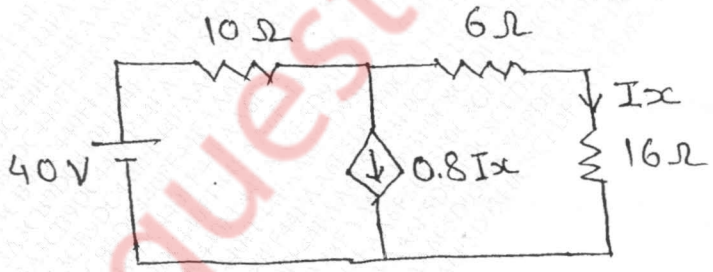
b Test whether $F(s)=\frac{s^3+6s^2+7s+3}{s^2+2s+1}$ is positive real function. 10

5 a Realize Foster forms of the following LC impedance function. 10

$$Z(s)=\frac{(s^2+1)(s^3+3)}{s(s^2+2)(s^2+4)}$$

b Explain the working of PMMC instruments. 10

6 a Find the current through the 16 Ω resistor. 10



b Derive the balancing condition for an A.C. bridge and also find the unknown parameters for Hay's Bridge. 10

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