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Roll No. 2390081.....

# TEE-101

B. TECH. (FIRST SEMESTER)

MID SEMESTER

EXAMINATION, Oct., 2023

BASIC ELECTRICAL ENGINEERING

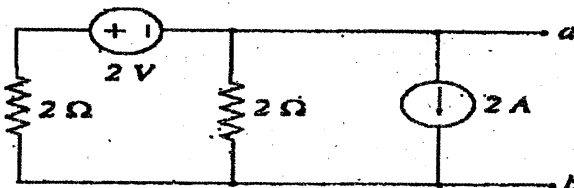
Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) For the network shown in fig., find the Thevenin equivalent voltage across terminals *a* and *b*. (CO1)



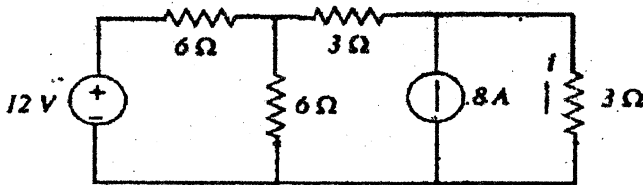
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(2)

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OR

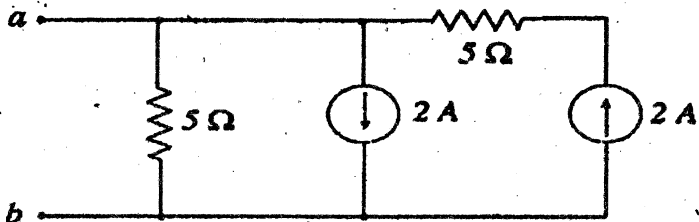
- (b) Find current  $i$  using node voltage analysis : (CO1)



2. (a) What do you understand by Maximum Power Transfer theorem ? Prove that the efficiency obtained by maximum power transfer circuit is 50%. (CO)

OR

- (b) For the network shown in fig., find the Norton equivalent current source and equivalent parallel resistance across terminals  $a$  and  $b$ . (CO1)

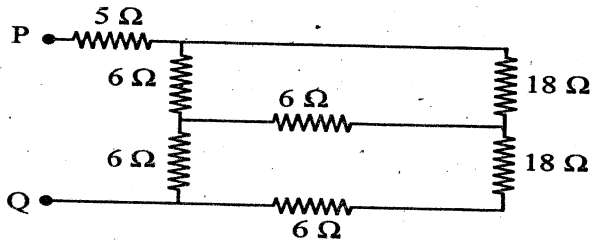


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3. (a) Determine the Input resistance between P-Q using star-delta transformation.

(CO1/CO2)



OR

- (b) Define the following terms : (CO1/CO2)
- (i) Potential difference
  - (ii) E.M.F.
  - (iii) Active and passive elements
  - (iv) Form factor
  - (v) Peak factor
4. (a) Derive the condition of resonance in series RLC circuit. Also prove that the current is maximum, when the circuit is in resonance. (CO1/CO2)

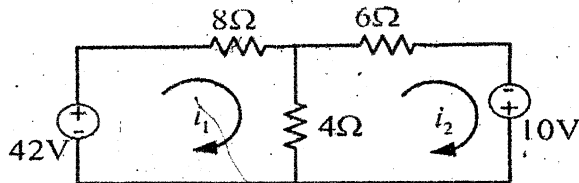
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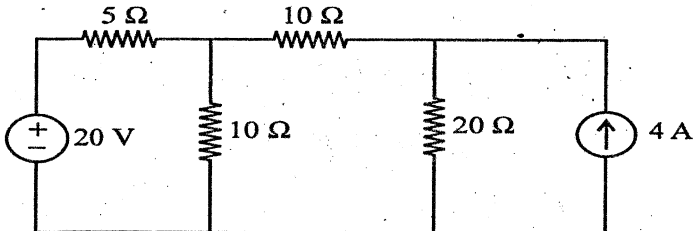
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OR

- (b) Determine all branch currents using mesh analysis for the given circuit. (CO1/CO2)



5. (a) Find the current flowing through  $20\Omega$  using superposition theorem : (CO1/CO2)



OR

- (b) The equation of alternating voltage is given by : (CO1/CO2)

$$v = 325.22 \sin 314t.$$

Find :

- (i) RMS value
- (ii) Frequency
- (iii) Average value

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3,400