Code.No: R05010501 | R05 | SET-1

I B.TECH – EXAMINATIONS, DECEMBER - 2010
BASIC ELECTRICAL ENGINEERING
(COMMON TO CSE, IT, CSS)

Time: 3hours   **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1.a) Distinguish between:
  i) Conductor   ii) Semi-Conductor
  iii) Insulators and give one example for each.
  b) Distinguish between:
  i) Potential difference   ii) Electromotive force.
  c) Two resistance R_1 and R_2 are connected in parallel and if the current entering the parallel combination is I. Calculate the values of currents I_1 and I_2 flowing in the resistance R_1, R_2 in terms I, R_1 R_2.   [6+4+6]

2.a) State and explain Max. power transfer theorem.
  b) Calculate the current flowing through $R_L = 20$ of the network shown in the figure by using Thevenin's theorem.   [8+8]
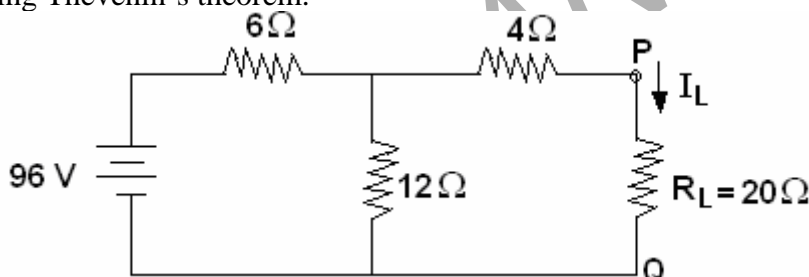
3.a) Explain how to obtain the B-H curve of a magnetic material. What does that curve indicate?
  b) A steel magnetic circuit has an uniform cross sectional area of 6 cm^2 and length 60 cm. A coil of 300 turns is wound uniformly over the magnetic circuit when the current in the coil is 1A, the total flux is 0.3 mwb and when the current is 5A, the flux, is 0.6m wbs. Calculate the magnetic field strength and relative permeability in each case.   [8+8]

4.a) What is 'j' operator?
  b) Explain about phasor representation of alternating quantities.
  c) A coil having a resistance of 10 ohms and an inductance of 0.2H is connected in series with a $100 \times 10^{-6} F$ capacitor across a 230V, 50Hz supply, Calculate:
  i) The active and reactive components of the current
  ii) The voltage across the coil, Draw the phasor diagram.   [2+6+8]

5. What are the different losses occurring in a transformer on load? How can these losses be determined experimentally?   [16]

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R05

SET-1

6.a) Derive an expression for the speed of a DC motor in terms of back emf and flux per pole.

b) Explain speed current and speed torque characteristic of DC shunt motor.   [8+8]

7.a) A 6-pole 3-phase, 50Hz alternator has 12 slots per pole and four conductors per slot. The winding is five-sixths pitch. The flux per pole is 1.5wb; the armature coils are all connected in series. The winding is star connected. Calculate the induced e.m.f per phase.

b) Explain the principle of operation of synchronous machine with neat diagram.

[8+8]

8. With a neat sketch explain in detail moving iron repulsion type instrument.   [16]

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Code.No: R05010501 | R05 | SET-2

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BASIC ELECTRICAL ENGINEERING
(COMMON TO CSE, IT, CSS)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
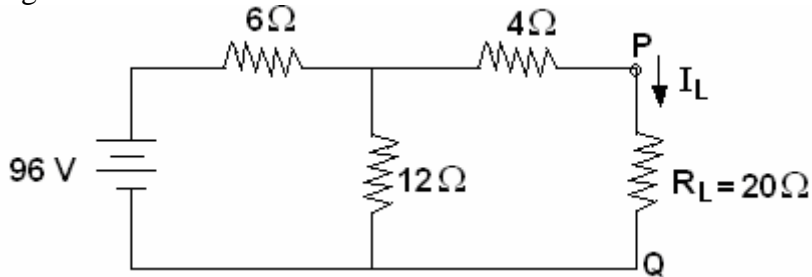**All questions carry equal marks**
- - -

1.a) Explain how to obtain the B-H curve of a magnetic material. What does that curve indicate?

b) A steel magnetic circuit has an uniform cross sectional area of 6 cm^2 and length 60 cm. A coil of 300 turns is wound uniformly over the magnetic circuit when the current in the coil is 1A, the total flux is 0.3 mwb and when the current is 5A, the flux, is 0.6m wbs. Calculate the magnetic field strength and relative permeability in each case. [8+8]

2.a) What is 'j' operator?

b) Explain about phasor representation of alternating quantities.

c) A coil having a resistance of 10 ohms and an inductance of 0.2H is connected in series with a $100 \times 10^{-6} F$ capacitor across a 230V, 50Hz supply, Calculate:
i) The active and reactive components of the current
ii) The voltage across the coil, Draw the phasor diagram. [2+6+8]

3. What are the different losses occurring in a transformer on load? How can these losses be determined experimentally? [16]

4.a) Derive an expression for the speed of a DC motor in terms of back emf and flux per pole.

b) Explain speed current and speed torque characteristic of DC shunt motor. [8+8]

5.a) A 6-pole 3-phase, 50Hz alternator has 12 slots per pole and four conductors per slot. The winding is five-sixths pitch. The flux per pole is 1.5wb; the armature coils are all connected in series. The winding is star connected. Calculate the induced e.m.f per phase.

b) Explain the principle of operation of synchronous machine with neat diagram.
[8+8]

6. With a neat sketch explain in detail moving iron repulsion type instrument. [16]

7.a) Distinguish between:
i) Conductor ii) Semi-Conductor
iii) Insulators and give one example for each.

b) Distinguish between:
i) Potential difference ii) Electromotive force.

c) Two resistance R_1 and R_2 are connected in parallel and if the current entering the parallel combination is I. Calculate the values of currents I_1 and I_2 flowing in the resistance R_1, R_2 in terms I, R_1 R_2. [6+4+6]

Code.No: R05010501

R05

SET-2

8.a) State and explain Max. power transfer theorem.
  b) Calculate the current flowing through $R_L = 20$ of the network shown in the figure by using Thevenin's theorem. [8+8]


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Code.No: R05010501

R05

SET-3

I B.TECH – EXAMINATIONS, DECEMBER - 2010
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(COMMON TO CSE, IT, CSS)

Time: 3hours   Max.Marks:80

Answer any FIVE questions
All questions carry equal marks
- - -

1. What are the different losses occurring in a transformer on load? How can these losses be determined experimentally? [16]

2.a) Derive an expression for the speed of a DC motor in terms of back emf and flux per pole.
  b) Explain speed current and speed torque characteristic of DC shunt motor. [8+8]

3.a) A 6-pole 3-phase, 50Hz alternator has 12 slots per pole and four conductors per slot. The winding is five-sixths pitch. The flux per pole is 1.5wb; the armature coils are all connected in series. The winding is star connected. Calculate the induced e.m.f per phase.
  b) Explain the principle of operation of synchronous machine with neat diagram. [8+8]

4. With a neat sketch explain in detail moving iron repulsion type instrument. [16]

5.a) Distinguish between:
  i) Conductor   ii) Semi-Conductor
  iii) Insulators and give one example for each.
  b) Distinguish between:
  i) Potential difference   ii) Electromotive force.
  c) Two resistance R_1 and R_2 are connected in parallel and if the current entering the parallel combination is I. Calculate the values of currents I_1 and I_2 flowing in the resistance R_1, R_2 in terms I, R_1 R_2. [6+4+6]

6.a) State and explain Max. power transfer theorem.
  b) Calculate the current flowing through $R_L = 20$ of the network shown in the figure by using Thevenin's theorem. [8+8]
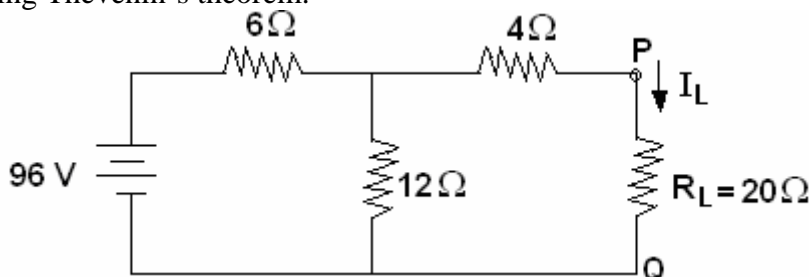
Code.No: R05010501   R05   SET-3

7.a) Explain how to obtain the B-H curve of a magnetic material. What does that curve indicate?

b) A steel magnetic circuit has an uniform cross sectional area of 6 cm^2 and length 60 cm. A coil of 300 turns is wound uniformly over the magnetic circuit when the current in the coil is 1A, the total flux is 0.3 mwb and when the current is 5A, the flux, is 0.6m wbs. Calculate the magnetic field strength and relative permeability in each case.   [8+8]

8.a) What is 'j' operator?

b) Explain about phasor representation of alternating quantities.

c) A coil having a resistance of 10 ohms and an inductance of 0.2H is connected in series with a $100 \times 10^{-6} F$ capacitor across a 230V, 50Hz supply, Calculate:
   i) The active and reactive components of the current
   ii) The voltage across the coil, Draw the phasor diagram.   [2+6+8]

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Time: 3hours　　　　　　　　　　　　　　　　　　**Max.Marks:80**

Answer any FIVE questions
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1.a) A 6-pole 3-phase, 50Hz alternator has 12 slots per pole and four conductors per slot. The winding is five-sixths pitch. The flux per pole is 1.5wb; the armature coils are all connected in series. The winding is star connected. Calculate the induced e.m.f per phase.

 b) Explain the principle of operation of synchronous machine with neat diagram.
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[8+8]

2. With a neat sketch explain in detail moving iron repulsion type instrument. [16]

3.a) Distinguish between:
 i) Conductor　　　　　　　　　ii) Semi-Conductor
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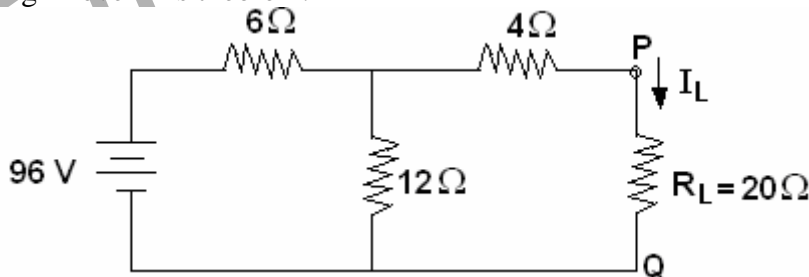
5.a) Explain how to obtain the B-H curve of a magnetic material. What does that curve indicate?
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Code.No: R05010501

R05

SET-4

6.a) What is 'j' operator?
 b) Explain about phasor representation of alternating quantities.
 c) A coil having a resistance of 10 ohms and an inductance of 0.2H is connected in series with a $100 \times 10^{-6} F$ capacitor across a 230V, 50Hz supply, Calculate:
    i) The active and reactive components of the current
    ii) The voltage across the coil, Draw the phasor diagram. [2+6+8]

7. What are the different losses occurring in a transformer on load? How can these losses be determined experimentally? [16]

8.a) Derive an expression for the speed of a DC motor in terms of back emf and flux per pole.
 b) Explain speed current and speed torque characteristic of DC shunt motor. [8+8]

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