Code No: 07A3EC01 **R07** **Set No. 2**

II B.Tech I Semester Examinations,May/June 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Common to CE, ME, MECT, MEP, AME

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Derive the relationship between α and β.
   (b) Why does the CE configuration provide large current amplification while the CB configuration does not? [8+8]

2. Write short notes on the following:
   (a) Principle of operation of a DC generator
   (b) Construction and function of commutator
   (c) Lap and wave winding. [6+5+5]

3. (a) Compare electrostatic deflection with magneto static deflection.
   (b) In a cathode ray tube having electric deflection system, the deflection plates are 2 cm long and have a uniform spacing of 4 mm between them. The fluorescent screen is 25 cm away from the centre of the deflection plates. Calculate the deflection sensitivity, if the potential of the final anode is
      i. 1000 V
      ii. 2000 V and
      iii. 3500 V. [8+8]

4. Find voltage drop across x-y terminals shown in figure 4. [16]

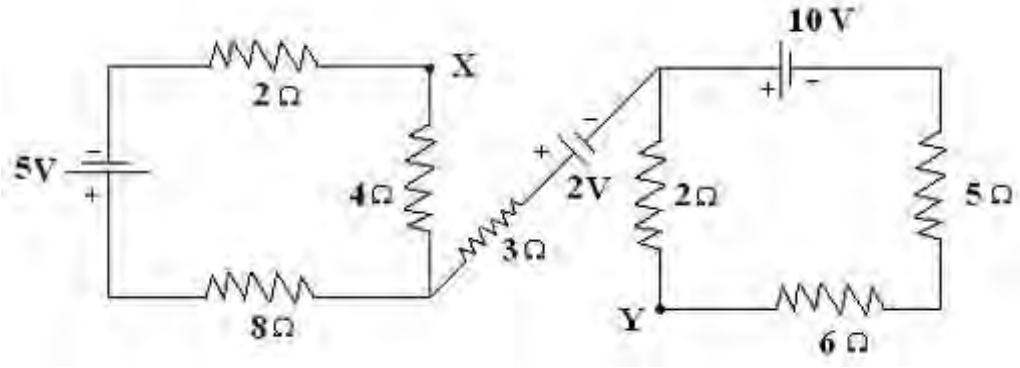

Figure 4

5. (a) In the case of an open circuited P-N junction, the acceptor atom concentration is $2.5 \times 10^{16}/\text{m}^3$ and donor concentration is $2.5 \times 10^{19}/\text{m}^3$. Determine the value of contact difference of potential.
   (b) Calculate the dynamic forward resistance of a diode with the following parameters: Applied bias voltage is 0.26 V, $V_T = 26$ mV, $I_0 = 1\ \mu A$, n=1. [8+8]

6. With a neat diagram explain the working of moving iron attraction type instrument. [16]

7. Write short notes on the following:

   (a) Ideal transformer.

   (b) Transformation ratio.

   (c) Practical transformer.

   (d) Temparature control of transformers. [16]

8. A 3-phase star connected synchronous motor has synchronous reactance of 4 ohms per phase and is working on 1100 V bus bar. Calculate the power factor of this machine when taking 90 KW from the mains, the excitation being adjusted to a value corresponding to an induced emf of 1200 V. Neglect armature resistance.[16]

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Code No: 07A3EC01 **R07** **Set No. 4**

II B.Tech I Semester Examinations,May/June 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Common to CE, ME, MECT, MEP, AME

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Compare electrostatic deflection with magneto static deflection.
   (b) In a cathode ray tube having electric deflection system, the deflection plates are 2 cm long and have a uniform spacing of 4 mm between them. The fluorescent screen is 25 cm away from the centre of the deflection plates. Calculate the deflection sensitivity, if the potential of the final anode is
      i. 1000 V
      ii. 2000 V and
      iii. 3500 V. [8+8]

2. (a) In the case of an open circuited P-N junction, the acceptor atom concentration is $2.5 \times 10^{16}/\text{m}^3$ and donor concentration is $2.5 \times 10^{19}/\text{m}^3$. Determine the value of contact difference of potential.
   (b) Calculate the dynamic forward resistance of a diode with the following parameters: Applied bias voltage is 0.26 V, $V_T = 26$ mV, $I_0 = 1\ \mu A$, n=1. [8+8]

3. A 3-phase star connected synchronous motor has synchronous reactance of 4 ohms per phase and is working on 1100 V bus bar. Calculate the power factor of this machine when taking 90 KW from the mains, the excitation being adjusted to a value corresponding to an induced emf of 1200 V. Neglect armature resistance.[16]

4. With a neat diagram explain the working of moving iron attraction type instrument. [16]

5. Find voltage drop across x-y terminals shown in figure 5. [16]

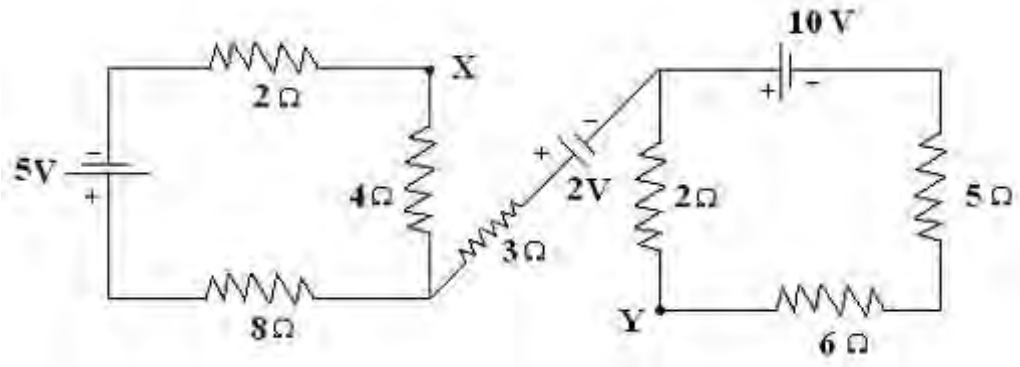

Figure 5

6. Write short notes on the following:

(a) Principle of operation of a DC generator

(b) Construction and function of commutator

(c) Lap and wave winding. [6+5+5]

7. Write short notes on the following:

(a) Ideal transformer.

(b) Transformation ratio.

(c) Practical transformer.

(d) Temparature control of transformers. [16]

8. (a) Derive the relationship between α and β.

(b) Why does the CE configuration provide large current amplification while the CB configuration does not? [8+8]

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Code No: 07A3EC01 **R07** **Set No. 1**

II B.Tech I Semester Examinations,May/June 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Common to CE, ME, MECT, MEP, AME

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

Answer any FIVE Questions
All Questions carry equal marks

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1. A 3-phase star connected synchronous motor has synchronous reactance of 4 ohms per phase and is working on 1100 V bus bar. Calculate the power factor of this machine when taking 90 KW from the mains, the excitation being adjusted to a value corresponding to an induced emf of 1200 V. Neglect armature resistance.[16]

2. Write short notes on the following:
   (a) Principle of operation of a DC generator
   (b) Construction and function of commutator
   (c) Lap and wave winding. [6+5+5]

3. (a) Compare electrostatic deflection with magneto static deflection.
   (b) In a cathode ray tube having electric deflection system, the deflection plates are 2 cm long and have a uniform spacing of 4 mm between them. The fluorescent screen is 25 cm away from the centre of the deflection plates. Calculate the deflection sensitivity, if the potential of the final anode is
      i. 1000 V
      ii. 2000 V and
      iii. 3500 V. [8+8]

4. (a) In the case of an open circuited P-N junction, the acceptor atom concentration is $2.5 \times 10^{16}/\text{m}^3$ and donor concentration is $2.5 \times 10^{19}/\text{m}^3$. Determine the value of contact difference of potential.
   (b) Calculate the dynamic forward resistance of a diode with the following parameters: Applied bias voltage is 0.26 V , $V_T = 26$ mV, $I_0 = 1\ \mu A$, n=1. [8+8]

5. With a neat diagram explain the working of moving iron attraction type instrument. [16]

6. (a) Derive the relationship between α and β.
   (b) Why does the CE configuration provide large current amplification while the CB configuration does not? [8+8]

7. Find voltage drop across x-y terminals shown in figure 7. [16]

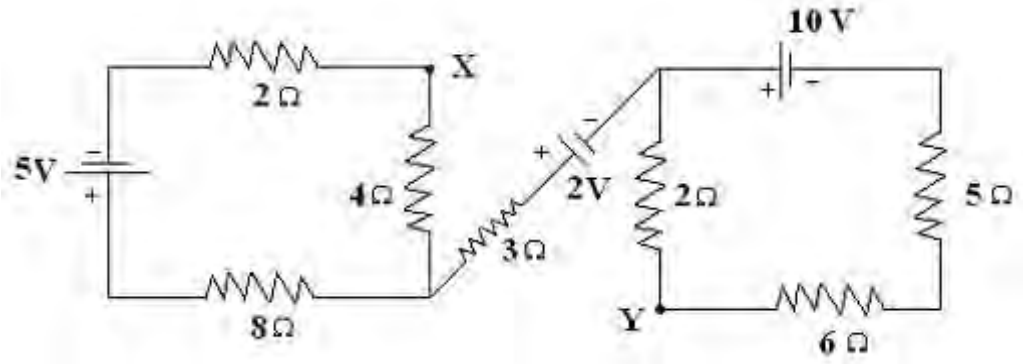

Figure 7

8. Write short notes on the following:

   (a) Ideal transformer.

   (b) Transformation ratio.

   (c) Practical transformer.

   (d) Temparature control of transformers. [16]

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Code No: 07A3EC01 **R07** **Set No. 3**

II B.Tech I Semester Examinations,May/June 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Common to CE, ME, MECT, MEP, AME

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

Answer any FIVE Questions
All Questions carry equal marks

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1. With a neat diagram explain the working of moving iron attraction type instrument. [16]

2. (a) In the case of an open circuited P-N junction, the acceptor atom concentration is $2.5 \times 10^{16}/\text{m}^3$ and donor concentration is $2.5 \times 10^{19}/\text{m}^3$. Determine the value of contact difference of potential.

   (b) Calculate the dynamic forward resistance of a diode with the following parameters: Applied bias voltage is 0.26 V , $V_T = 26$ mV,$I_0 = 1\ \mu A$, n=1. [8+8]

3. (a) Compare electrostatic deflection with magneto static deflection.

   (b) In a cathode ray tube having electric deflection system, the deflection plates are 2 cm long and have a uniform spacing of 4 mm between them. The fluorescent screen is 25 cm away from the centre of the deflection plates. Calculate the deflection sensitivity, if the potential of the final anode is

   i. 1000 V
   ii. 2000 V and
   iii. 3500 V. [8+8]

4. Find voltage drop across x-y terminals shown in figure 4. [16]

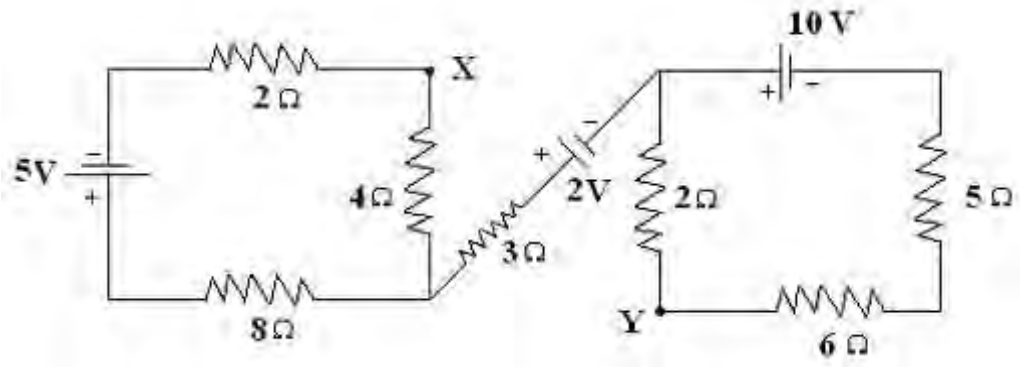

Figure 4

5. A 3-phase star connected synchronous motor has synchronous reactance of 4 ohms per phase and is working on 1100 V bus bar. Calculate the power factor of this machine when taking 90 KW from the mains, the excitation being adjusted to a value corresponding to an induced emf of 1200 V. Neglect armature resistance.[16]

6. Write short notes on the following:

(a) Ideal transformer.

(b) Transformation ratio.

(c) Practical transformer.

(d) Temparature control of transformers. [16]

7. Write short notes on the following:

(a) Principle of operation of a DC generator

(b) Construction and function of commutator

(c) Lap and wave winding. [6+5+5]

8. (a) Derive the relationship between α and β.

(b) Why does the CE configuration provide large current amplification while the CB configuration does not? [8+8]

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