Code No: 07A40203 **R07** **Set No. 2**

II B.Tech II Semester Examinations,April/May 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is a Bipolar Junction Transistor? Who invented it? How are its terminals named?
   (b) Explain the operation of NPN and PNP transistors. [6+10]

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 [6+10]

4. A 4-pole, 50 Hz induction motor has a full load slip of 5 %. Each rotor phase has a resistance of 0.3 ohms and a stand still reactance of 1.2 ohms. Find the ratio of the maximum torque to the full load torque and the speed at which the maximum torque occurs. [16]

5. (a) Show that a full-wave rectifier is twice as efficient as a half-wave rectifier.
   (b) Describe the action of a full-wave bridge rectifier. [8+8]

6. Explain different types of errors in moving iron instruments and explain the compensation techniques. [16]

7. (a) Prove that the energy stored by the inductor is 1/2 LI^2.
   (b) The current in a 2H inductor varies at a rate of 2 Amps/second. Find the voltage across the inductor and the energy stored in the magnetic field after 2 seconds. [8+8]

8. (a) Explain the basic principle of operation of single phase transformer.
   (b) A 200 KVA ,3300/240 V,50 Hz single phase transformer has 80 turns on the secondary winding. Assuming an ideal transformer, Calculate:

i. primary and secondary currents on full load
ii. The maximum value of flux
iii. The number of primary turns. [8+8]

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Code No: 07A40203 **R07** **Set No. 4**

II B.Tech II Semester Examinations,April/May 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the basic principle of operation of single phase transformer.
   (b) A 200 KVA ,3300/240 V,50 Hz single phase transformer has 80 turns on the secondary winding. Assuming an ideal transformer, Calculate:
      i. primary and secondary currents on full load
      ii. The maximum value of flux
      iii. The number of primary turns. [8+8]

2. (a) Show that a full-wave rectifier is twice as efficient as a half-wave rectifier.
   (b) Describe the action of a full-wave bridge rectifier. [8+8]

3. 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]

4. (a) Prove that the energy stored by the inductor is 1/2 LI^2.
   (b) The current in a 2H inductor varies at a rate of 2 Amps/second. Find the voltage across the inductor and the energy stored in the magnetic field after 2 seconds. [8+8]

5. (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 [6+10]

6. (a) What is a Bipolar Junction Transistor? Who invented it? How are its terminals named?
   (b) Explain the operation of NPN and PNP transistors. [6+10]

7. A 4-pole, 50 Hz induction motor has a full load slip of 5 %. Each rotor phase has a resistance of 0.3 ohms and a stand still reactance of 1.2 ohms. Find the ratio of the maximum torque to the full load torque and the speed at which the maximum torque occurs. [16]

8. Explain different types of errors in moving iron instruments and explain the compensation techniques. [16]

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Code No: 07A40203 **R07** **Set No. 1**

II B.Tech II Semester Examinations,April/May 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the basic principle of operation of single phase transformer.
   (b) A 200 KVA ,3300/240 V,50 Hz single phase transformer has 80 turns on the secondary winding. Assuming an ideal transformer, Calculate:
      i. primary and secondary currents on full load
      ii. The maximum value of flux
      iii. The number of primary turns. [8+8]

2. (a) What is a Bipolar Junction Transistor? Who invented it? How are its terminals named?
   (b) Explain the operation of NPN and PNP transistors. [6+10]

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 [6+10]

4. 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]

5. (a) Show that a full-wave rectifier is twice as efficient as a half-wave rectifier.
   (b) Describe the action of a full-wave bridge rectifier. [8+8]

6. Explain different types of errors in moving iron instruments and explain the compensation techniques. [16]

7. (a) Prove that the energy stored by the inductor is 1/2 LI^2.
   (b) The current in a 2H inductor varies at a rate of 2 Amps/second. Find the voltage across the inductor and the energy stored in the magnetic field after 2 seconds. [8+8]

8. A 4-pole, 50 Hz induction motor has a full load slip of 5 %. Each rotor phase has a resistance of 0.3 ohms and a stand still reactance of 1.2 ohms. Find the ratio of the maximum torque to the full load torque and the speed at which the maximum torque occurs. [16]

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Code No: 07A40203 **R07** **Set No. 3**

II B.Tech II Semester Examinations,April/May 2012
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the basic principle of operation of single phase transformer.
   (b) A 200 KVA ,3300/240 V,50 Hz single phase transformer has 80 turns on the secondary winding. Assuming an ideal transformer, Calculate:
      i. primary and secondary currents on full load
      ii. The maximum value of flux
      iii. The number of primary turns. [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. Explain different types of errors in moving iron instruments and explain the compensation techniques. [16]

4. (a) Prove that the energy stored by the inductor is 1/2 LI^2.
   (b) The current in a 2H inductor varies at a rate of 2 Amps/second. Find the voltage across the inductor and the energy stored in the magnetic field after 2 seconds. [8+8]

5. A 4-pole, 50 Hz induction motor has a full load slip of 5 %. Each rotor phase has a resistance of 0.3 ohms and a stand still reactance of 1.2 ohms. Find the ratio of the maximum torque to the full load torque and the speed at which the maximum torque occurs. [16]

6. (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 [6+10]

7. (a) Show that a full-wave rectifier is twice as efficient as a half-wave rectifier.
   (b) Describe the action of a full-wave bridge rectifier. [8+8]

8. (a) What is a Bipolar Junction Transistor? Who invented it? How are its terminals named?

   (b) Explain the operation of NPN and PNP transistors. [6+10]

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