Code No: R05222104   **R05**   **Set No. 2**

II B.Tech II Semester Examinations,December 2010
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) In domestic wiring electrical appliances are connected in series or parallel? Why? Explain the reason.

   (b) In an electrical circuit four bulbs each of 125 W, 150 V are working in parallel. If a 200 V supply is available, what value of resistance should be connected in series with source so that the voltage across bulb is rated voltage.   [6+10]

2. (a) Draw the structure, symbol and V-I characteristics of an SCR.

   (b) Explain the working of a SCR when   [8+8]
      i. gate is open
      ii. gate is positive w.r.t. cathode.

3. (a) Explain the various applications of DC motors.

   (b) A 120 V DC shunt motor has an armature resistance of 0.2 Ω and field resistance of 60 Ω. It runs at 1800 rpm, when it is taking a full load current of 40 A. Find the speed of the motor, when it is operating with half load.   [6+10]

4. (a) What is Rotating magnetic Field? What are the important properties of RMF? How RMF is generated in IM?

   (b) A 3-Φ IM is wound with 4-poles and is supplied from 50 Hz system. When the slip is 4 % calculate the synchronous speed, actual speed of rotor and the relative (slip) speed. Find the rotor current frequency when rotor speed is 600 rpm.   [8+8]

5. (a) Give the applications of CRO and explain them in detail.

   (b)   i. If $f_H / f_v = 1/4$ and $f_V = 2$kHz, then find f_H .   [8+8]
      ii. If $f_H / f_v = 2/3$ and $f_H = 5$kHz, then find f_v.

6. (a) Derive the expression for efficiency of a full-wave rectifier.

   (b) A FWR using two diodes, the internal resistance of diode is 20Ω. The transformer rms secondary voltage from center-tap to each end of secondary is 50V and load resistance is 1k Ω, Find   [8+8]
      i. I_{dc} and
      ii. I_{rms}

7. Draw and explain the constructional details of attractive and repulsive type of Moving Iron instrument.   [16]

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8. (a) Explain how do you conduct short circuit test for a given transformer rating 2 kVA 400 / 200 V experimentally.

   (b) A single phase transformer is connected to a 660 V supply. The voltage/turn of transformer is 1.1 V. The secondary voltage of the transformer is found to be 440 V. determine the following: [8+8]

      i. Primary & Secondary turn.
      ii. Cross section of the core if the maximum flux density is 1.4 T.

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Code No: R05222104 | **R05** | **Set No. 4**

II B.Tech II Semester Examinations,December 2010
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Give the applications of CRO and explain them in detail.

   (b)   i. If $f_H / f_v = 1/4$ and $f_V = 2$kHz, then find f_H .   [8+8]
         ii. If $f_H / f_v = 2/3$ and $f_H = 5$kHz, then find f_v.

2. (a) Explain the various applications of DC motors.

   (b) A 120 V DC shunt motor has an armature resistance of 0.2 Ω and field resistance of 60 Ω. It runs at 1800 rpm, when it is taking a full load current of 40 A. Find the speed of the motor, when it is operating with half load.   [6+10]

3. (a) Explain how do you conduct short circuit test for a given transformer rating 2 kVA 400 / 200 V experimentally.

   (b) A single phase transformer is connected to a 660 V supply. The voltage/turn of transformer is 1.1 V. The secondary voltage of the transformer is found to be 440 V. determine the following: [8+8]

      i. Primary & Secondary turn.
      ii. Cross section of the core if the maximum flux density is 1.4 T.

4. (a) In domestic wiring electrical appliances are connected in series or parallel? Why? Explain the reason.

   (b) In an electrical circuit four bulbs each of 125 W, 150 V are working in parallel. If a 200 V supply is available, what value of resistance should be connected in series with source so that the voltage across bulb is rated voltage.   [6+10]

5. Draw and explain the constructional details of attractive and repulsive type of Moving Iron instrument.   [16]

6. (a) What is Rotating magnetic Field? What are the important properties of RMF? How RMF is generated in IM?

   (b) A 3-Φ IM is wound with 4-poles and is supplied from 50 Hz system. When the slip is 4 % calculate the synchronous speed, actual speed of rotor and the relative (slip) speed. Find the rotor current frequency when rotor speed is 600 rpm.   [8+8]

7. (a) Derive the expression for efficiency of a full-wave rectifier.

   (b) A FWR using two diodes, the internal resistance of diode is 20Ω. The transformer rms secondary voltage from center-tap to each end of secondary is 50V and load resistance is 1k Ω, Find   [8+8]

3

      i. I_{dc} and

      ii. I_{rms}

8. (a) Draw the structure, symbol and V-I characteristics of an SCR.

   (b) Explain the working of a SCR when   [8+8]

      i. gate is open

      ii. gate is positive w.r.t. cathode.

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Code No: R05222104 | **R05** | **Set No. 1**

II B.Tech II Semester Examinations,December 2010
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

Time: 3 hours
Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain how do you conduct short circuit test for a given transformer rating 2 kVA 400 / 200 V experimentally.

   (b) A single phase transformer is connected to a 660 V supply. The voltage/turn of transformer is 1.1 V. The secondary voltage of the transformer is found to be 440 V. determine the following: [8+8]

       i. Primary & Secondary turn.
       ii. Cross section of the core if the maximum flux density is 1.4 T.

2. (a) In domestic wiring electrical appliances are connected in series or parallel? Why? Explain the reason.

   (b) In an electrical circuit four bulbs each of 125 W, 150 V are working in parallel. If a 200 V supply is available, what value of resistance should be connected in series with source so that the voltage across bulb is rated voltage. [6+10]

3. (a) Explain the various applications of DC motors.

   (b) A 120 V DC shunt motor has an armature resistance of 0.2 Ω and field resistance of 60 Ω. It runs at 1800 rpm, when it is taking a full load current of 40 A. Find the speed of the motor, when it is operating with half load. [6+10]

4. (a) Give the applications of CRO and explain them in detail.

   (b) i. If $f_H / f_v = 1/4$ and $f_V = 2$kHz, then find f_H . [8+8]
       ii. If $f_H / f_v = 2/3$ and $f_H = 5$kHz, then find f_v.

5. (a) What is Rotating magnetic Field? What are the important properties of RMF? How RMF is generated in IM?

   (b) A 3-Φ IM is wound with 4-poles and is supplied from 50 Hz system. When the slip is 4 % calculate the synchronous speed, actual speed of rotor and the relative (slip) speed. Find the rotor current frequency when rotor speed is 600 rpm. [8+8]

6. (a) Derive the expression for efficiency of a full-wave rectifier.

   (b) A FWR using two diodes, the internal resistance of diode is 20Ω. The transformer rms secondary voltage from center-tap to each end of secondary is 50V and load resistance is 1k Ω, Find [8+8]

       i. I_{dc} and
       ii. I_{rms}

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7. (a) Draw the structure, symbol and V-I characteristics of an SCR.

   (b) Explain the working of a SCR when   [8+8]

      i. gate is open

      ii. gate is positive w.r.t. cathode.

8. Draw and explain the constructional details of attractive and repulsive type of Moving Iron instrument.   [16]

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Code No: R05222104 | **R05** | **Set No. 3**

II B.Tech II Semester Examinations,December 2010
ELECTRICAL AND ELECTRONICS ENGINEERING
Aeronautical Engineering

Time: 3 hours · Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain how do you conduct short circuit test for a given transformer rating 2 kVA 400 / 200 V experimentally.

    (b) A single phase transformer is connected to a 660 V supply. The voltage/turn of transformer is 1.1 V. The secondary voltage of the transformer is found to be 440 V. determine the following: [8+8]

        i. Primary & Secondary turn.
        ii. Cross section of the core if the maximum flux density is 1.4T.

2. Draw and explain the constructional details of attractive and repulsive type of Moving Iron instrument. [16]

3. (a) Draw the structure, symbol and V-I characteristics of an SCR.

    (b) Explain the working of a SCR when [8+8]

        i. gate is open
        ii. gate is positive w.r.t. cathode.

4. (a) Give the applications of CRO and explain them in detail.

    (b)   i. If $f_H / f_v = 1/4$ and $f_V = 2$kHz, then find f_H . [8+8]
       ii. If $f_H / f_v = 2/3$ and $f_H = 5$kHz, then find f_v.

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    (b) In an electrical circuit four bulbs each of 125 W, 150 V are working in parallel. If a 200 V supply is available, what value of resistance should be connected in series with source so that the voltage across bulb is rated voltage. [6+10]

6. (a) What is Rotating magnetic Field? What are the important properties of RMF? How RMF is generated in IM?

    (b) A 3-Φ IM is wound with 4-poles and is supplied from 50 Hz system. When the slip is 4 % calculate the synchronous speed, actual speed of rotor and the relative (slip) speed. Find the rotor current frequency when rotor speed is 600 rpm. [8+8]

7. (a) Derive the expression for efficiency of a full-wave rectifier.

    (b) A FWR using two diodes, the internal resistance of diode is 20Ω. The transformer rms secondary voltage from center-tap to each end of secondary is 50V and load resistance is 1k Ω, Find [8+8]

       i. I_{dc} and

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8. (a) Explain the various applications of DC motors.

   (b) A 120 V DC shunt motor has an armature resistance of 0.2 Ω and field resistance of 60 Ω. It runs at 1800 rpm, when it is taking a full load current of 40 A. Find the speed of the motor, when it is operating with half load. [6+10]

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