Code No: RR320206 | RR | | Set No. 2 |

III B.Tech II Semester Examinations,December 2010
UTILIZATION OF ELECTRICAL ENERGY
Electrical And Electronics Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Explain what do you mean by "Individual drive" and "Group drive". Discuss their relative merits and demerits. [8]

   (b) A 500 V d.c. series motor runs at 500 r.p.m. and takes 60 amps. The resistances of the field and the armature are 0.3 and 0.2 Ohms, respectively. Calculate the value of the resistance to be shunted with the series field winding in order that the speed may be increased to 600 r.p.m., if the torque were to remain constant. Saturation may be neglected. [8]

2. (a) Explain why a series motor is preferred for the electric traction. [6]

   (b) The characteristics of a series motor at 525 V are as follows. [10]

CURRENT(A)	50	100	150	200
SPEED(RPM)	1200	952	840	745

   Determine the current when working as a generator at 1000 R.P.M and loaded with a resistance of 3 ohms. The resistance of the motor is 0.5 ohms.

3. (a) Briefly explain the a.c. motors used in traction.

   (b) The scheduled speed of a trolley service is to be 53km/hr. The distance between stops is 2.8km. The track is level and each stop is of 30 sec duration. Using simplified speed-time curve, calculate the maximum speed, assuming the acceleration to be 2km/hr/sec, retardation 3.2km/hr/sec, the dead weight of the car as 16 tonnes, rotational inertia as 10% of the dead weight and track resistance as 40 newtons/tonne. If the overall efficiency is 80%, calculate

      i. the maximum power output from the driving axles

      ii. the specific energy consumption in watt-hr/tonne-km. [8+8]

4. (a) Discuss the various modes of heat dissipation. [6]

   (b) A motor driving a load has to deliver a load rising uniformly from zero to a maximum of 2000 h.p. in 20 sec during the acceleration period, 1000 h.p. for 40 sec during the full speed period and during the deceleration period of 10 sec when regenerating braking is taking place the h.p. returned to the supply falls from 330 to zero. The interval for decking before the next load cycle starts is 20 sec. Estimate the horse power rating of the motor. [10]

5. (a) What are the requirements of good electric braking? [6]

   (b) Explain the method of rheostatic braking. [10]

6. (a) How will you control most efficiently the heat of resistance furnace? [5]

   (b) What advantages does graphite electrode possess over carbon electrode. [5]

   (c) Write a note on A.C welding set & D.C.welding set. [6]

7. Explain with connection diagram the operation of the low pressure fluorescent lamp and state its advantages. [16]

8. (a) Discuss inverse square law & cosine law of Illumination. [6]

   (b) A lamp fitted with 120 degrees angled cone reflector illuminates circular area of 200 metres in diameter. The illumination of the disc increases uniformly from 0.5 metre-candle at the edge to 2 metre-candle at the centre. Determine [10]

       i. the total light received
      ii. Average illumination of the disc
     iii. Average c.p. of the source

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Code No: RR320206 **RR** **Set No. 4**

III B.Tech II Semester Examinations,December 2010
UTILIZATION OF ELECTRICAL ENERGY
Electrical And Electronics Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Explain why a series motor is preferred for the electric traction.   [6]

   (b) The characteristics of a series motor at 525 V are as follows.   [10]

CURRENT(A)	50	100	150	200
SPEED(RPM)	1200	952	840	745

   Determine the current when working as a generator at 1000 R.P.M and loaded with a resistance of 3 ohms. The resistance of the motor is 0.5 ohms.

2. (a) What are the requirements of good electric braking?   [6]

   (b) Explain the method of rheostatic braking.   [10]

3. (a) Discuss the various modes of heat dissipation.   [6]

   (b) A motor driving a load has to deliver a load rising uniformly from zero to a maximum of 2000 h.p. in 20 sec during the acceleration period, 1000 h.p. for 40 sec during the full speed period and during the deceleration period of 10 sec when regenerating braking is taking place the h.p. returned to the supply falls from 330 to zero. The interval for decking before the next load cycle starts is 20 sec. Estimate the horse power rating of the motor.   [10]

4. (a) Explain what do you mean by "Individual drive" and "Group drive". Discuss their relative merits and demerits.   [8]

   (b) A 500 V d.c. series motor runs at 500 r.p.m. and takes 60 amps. The resistances of the field and the armature are 0.3 and 0.2 Ohms, respectively. Calculate the value of the resistance to be shunted with the series field winding in order that the speed may be increased to 600 r.p.m., if the torque were to remain constant. Saturation may be neglected.   [8]

5. Explain with connection diagram the operation of the low pressure fluorescent lamp and state its advantages.   [16]

6. (a) Briefly explain the a.c. motors used in traction.

   (b) The scheduled speed of a trolley service is to be 53km/hr. The distance between stops is 2.8km. The track is level and each stop is of 30 sec duration. Using simplified speed-time curve, calculate the maximum speed, assuming the acceleration to be 2km/hr/sec, retardation 3.2km/hr/sec, the dead weight of the car as 16 tonnes, rotational inertia as 10% of the dead weight and track resistance as 40 newtons/tonne. If the overall efficiency is 80%, calculate

3

      i. the maximum power output from the driving axles

      ii. the specific energy consumption in watt-hr/tonne-km.   [8+8]

7. (a) Discuss inverse square law & cosine law of Illumination.   [6]

  (b) A lamp fitted with 120 degrees angled cone reflector illuminates circular area of 200 metres in diameter. The illumination of the disc increases uniformly from 0.5 metre-candle at the edge to 2 metre-candle at the centre. Determine   [10]

      i. the total light received

      ii. Average illumination of the disc

      iii. Average c.p. of the source

8. (a) How will you control most efficiently the heat of resistance furnace?   [5]

  (b) What advantages does graphite electrode possess over carbon electrode.   [5]

  (c) Write a note on A.C welding set & D.C.welding set.   [6]

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Code No: RR320206 $\boxed{\textbf{RR}}$ $\boxed{\textbf{Set No. 1}}$

III B.Tech II Semester Examinations,December 2010
UTILIZATION OF ELECTRICAL ENERGY
Electrical And Electronics Engineering

Time: 3 hours Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Discuss the various modes of heat dissipation. [6]

   (b) A motor driving a load has to deliver a load rising uniformly from zero to a maximum of 2000 h.p. in 20 sec during the acceleration period,1000 h.p. for 40 sec during the full speed period and during the deceleration period of 10 sec when regenerating braking is taking place the h.p. returned to the supply falls from 330 to zero. The interval for decking before the next load cycle starts is 20 sec. Estimate the horse power rating of the motor. [10]

2. (a) Explain what do you mean by "Individual drive" and "Group drive". Discuss their relative merits and demerits. [8]

   (b) A 500 V d.c. series motor runs at 500 r.p.m. and takes 60 amps. The resistances of the field and the armature are 0.3 and 0.2 Ohms, respectively. Calculate the value of the resistance to be shunted with the series field winding in order that the speed may be increased to 600 r.p.m., if the torque were to remain constant. Saturation may be neglected. [8]

3. (a) What are the requirements of good electric braking? [6]

   (b) Explain the method of rheostatic braking. [10]

4. (a) Briefly explain the a.c. motors used in traction.

   (b) The scheduled speed of a trolley service is to be 53km/hr. The distance between stops is 2.8km. The track is level and each stop is of 30 sec duration. Using simplified speed-time curve, calculate the maximum speed, assuming the acceleration to be 2km/hr/sec, retardation 3.2km/hr/sec, the dead weight of the car as 16 tonnes, rotational inertia as 10% of the dead weight and track resistance as 40 newtons/tonne. If the overall efficiency is 80%, calculate

      i. the maximum power output from the driving axles

      ii. the specific energy consumption in watt-hr/tonne-km. [8+8]

5. (a) How will you control most efficiently the heat of resistance furnace? [5]

   (b) What advantages does graphite electrode possess over carbon electrode. [5]

   (c) Write a note on A.C welding set & D.C.welding set. [6]

6. (a) Explain why a series motor is preferred for the electric traction. [6]

   (b) The characteristics of a series motor at 525 V are as follows. [10]

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CURRENT(A)	50	100	150	200
SPEED(RPM)	1200	952	840	745

Determine the current when working as a generator at 1000 R.P.M and loaded with a resistance of 3 ohms. The resistance of the motor is 0.5 ohms.

7. (a) Discuss inverse square law & cosine law of Illumination. [6]

(b) A lamp fitted with 120 degrees angled cone reflector illuminates circular area of 200 metres in diameter. The illumination of the disc increases uniformly from 0.5 metre-candle at the edge to 2 metre-candle at the centre. Determine [10]

   i. the total light received
   ii. Average illumination of the disc
   iii. Average c.p. of the source

8. Explain with connection diagram the operation of the low pressure fluorescent lamp and state its advantages. [16]

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Code No: RR320206   **RR**   **Set No. 3**

III B.Tech II Semester Examinations,December 2010
UTILIZATION OF ELECTRICAL ENERGY
Electrical And Electronics Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) How will you control most efficiently the heat of resistance furnace? [5]

    (b) What advantages does graphite electrode possess over carbon electrode. [5]

    (c) Write a note on A.C welding set & D.C.welding set. [6]

2. Explain with connection diagram the operation of the low pressure fluorescent lamp and state its advantages. [16]

3. (a) Explain what do you mean by "Individual drive" and "Group drive". Discuss their relative merits and demerits. [8]

    (b) A 500 V d.c. series motor runs at 500 r.p.m. and takes 60 amps. The resistances of the field and the armature are 0.3 and 0.2 Ohms, respectively. Calculate the value of the resistance to be shunted with the series field winding in order that the speed may be increased to 600 r.p.m., if the torque were to remain constant. Saturation may be neglected. [8]

4. (a) What are the requirements of good electric braking? [6]

    (b) Explain the method of rheostatic braking. [10]

5. (a) Discuss inverse square law & cosine law of Illumination. [6]

    (b) A lamp fitted with 120 degrees angled cone reflector illuminates circular area of 200 metres in diameter. The illumination of the disc increases uniformly from 0.5 metre-candle at the edge to 2 metre-candle at the centre. Determine [10]

      i. the total light received

      ii. Average illumination of the disc

      iii. Average c.p. of the source

6. (a) Discuss the various modes of heat dissipation. [6]

    (b) A motor driving a load has to deliver a load rising uniformly from zero to a maximum of 2000 h.p. in 20 sec during the acceleration period, 1000 h.p. for 40 sec during the full speed period and during the deceleration period of 10 sec when regenerating braking is taking place the h.p. returned to the supply falls from 330 to zero. The interval for decking before the next load cycle starts is 20 sec. Estimate the horse power rating of the motor. [10]

7. (a) Briefly explain the a.c. motors used in traction.

(b) The scheduled speed of a trolley service is to be 53km/hr. The distance between stops is 2.8km. The track is level and each stop is of 30 sec duration. Using simplified speed-time curve, calculate the maximum speed, assuming the acceleration to be 2km/hr/sec, retardation 3.2km/hr/sec, the dead weight of the car as 16 tonnes, rotational inertia as 10% of the dead weight and track resistance as 40 newtons/tonne. If the overall efficiency is 80%, calculate

   i. the maximum power output from the driving axles

   ii. the specific energy consumption in watt-hr/tonne-km. [8+8]

8. (a) Explain why a series motor is preferred for the electric traction. [6]

  (b) The characteristics of a series motor at 525 V are as follows. [10]

CURRENT(A)	50	100	150	200
SPEED(RPM)	1200	952	840	745

Determine the current when working as a generator at 1000 R.P.M and loaded with a resistance of 3 ohms. The resistance of the motor is 0.5 ohms.

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