Code No: R32023 **R10** **Set No: 1**

III B.Tech. II Semester Regular/Supplementary Examinations, May/June -2014

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1. (a) What are the relative advantages and disadvantages of DC and AC electric drives?
   (b) What are special applications of synchronous motors? [7+8]

2. Explain the following [5+5+5]
   (i) Resistance heating (ii) direct resistance heating (iii) Indirect resistance heating

3. (a) What are the various methods of welding?
   (b) What are the advantages of coated electrodes in welding process? [8+7]

4. Define and derive the following
   (i) Luminous flux (ii) Rousseau Diagram (iii) Illumination [5+5+5]

5. (a) Why tungsten is selected as the filament material and on what factors its life depends?
   (b) What are the advantages of fluorescent lighting over plain mercury discharge lighting? [7+8]

6. (a) What are the advantages of single phase low frequency system of track electrification? What are the factors due to which its wide spread application remains limited?
   (b) Compare ac and dc system of traction [8+7]

7. An electric train has an average speed of 42 km/hr on a level track between stops 1400 m apart. It is accelerated at 1.7 km/hr/sec and it is braked at 3.3km/hr/sec. Draw the speed-Time curve and estimate the specific energy consumption. Assume tractive resistance as 50 NW/Tonne and allow 10% rotational inertia. [15]

8. Explain following which are related to DSM measures and programs [5+5+5]
   (i) Financial Incentive/Plenty (ii) Load Scheduling (iii) Energy Conservation

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Code No: R32023 **R10** **Set No: 2**

III B.Tech. II Semester Regular/Supplementary Examinations, May/June -2014

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1. (a) Explain with the help of quadrant diagram the speed-torque characteristics of an induction motor.
   (b) Discuss the various methods of controlling the speed of 3-Phase induction motors. [7+8]

2. Explain the operation of Induction heating and derive the equation for power loss in the secondary. [15]

3. (a) What is fundamental difference between electric arc welding and resistance welding?
   (b) Compare the AC and DC systems of welding methods. [8+7]

4. Define and derive the following
   (i) Maintenance factor (ii) Reflection factor (iii) Spectral distribution curve and luminous efficiency [5+5+5]

5. Describe the construction and operation of cold cathode discharge tube used for signs. What safety precautions are taken? [15]

6. Compare the various types of braking methods as applied to different types of motors [15]

7. Derive the relationship between acceleration, retardation, maximum speed, running time and distance between two stops assuming a trapezoidal Speed-Time curve. [15]

8. (a) Advantages of DSM
   (b) Explain clearly Promotion to implement DSM Programmes [8+7]

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Code No: R32023 **R10** **Set No: 3**

III B.Tech. II Semester Regular/Supplementary Examinations, May/June -2014

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1. (a) What factors contributed to mechanical vibrations and noise?
   (b) What are essential requirements of paper mill drive, rolling mill drive and sugar centrifuge? [7+8]

2. (a) What are the applications of induction heating?
   (b) Write down the advantages of Induction and dielectric heating? [7+8]

3. (a) Classify the electric arc and Electric resistance welding?
   (b) Explain the principle of operation of electric arc welding. [8+7]

4. Define and derive the following
   (i) Rousseau Diagram (ii) Reflection factor (iii) Plane and solid angle [5+5+5]

5. (a) What are advantages and disadvantages of direct, indirect and general diffusing lighting systems?
   (b) Discuss the various faults that occur in lighting systems and explain how these are rectified. [8+7]

6. What are main transition connections from series to parallel operation of traction motors and what are their relative merits? [15]

7. With the help of a complete Speed-Time curve, discuss how different parameters of this curve change with the type of train service. [15]

8. Obstacle to implement DSM programmes [15]

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Code No: R32023 **R10** **Set No: 4**

III B.Tech. II Semester Regular/Supplementary Examinations, May/June -2014

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1. Give with reasons the type of application for which the following motors are best suited:
   (a) DC shunt motor
   (b) DC series motor
   (c) Synchronous motor
   (d) 3-Phase induction motor [4+4+4+3]

2. (a) Explain the advantages of Electrical heating?
   (b) What are the various types of induction furnace? Explain in detailed? [7+8]

3. (a) What are the advantages of using coated welding electrodes?
   (b) What is the technique of weld metal deposition by electric arc? [7+8]

4. Define and derive the following
   (i) Plane and solid angle (ii) Luminous Intensity (iii) Polar curve [5+5+5]

5. With a neat diagram, explain the construction and working of Mercury vapour lamp. [15]

6. (a) Explain the constructional difference between single phase series motors and dc series motors
   (b) How direction of rotation of a traction motor is reversed? [8+7]

7. With the help of trapezoidal speed time curve, derive an expression for the maximum speed and hence estimate the values of acceleration and retardation. [15]

8. What are the load scheduling programs in DSM, and explain clearly [15]

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