

## EP - Electrical Energy Utilization

P. Pages : 2

Time : Three Hours



**GUG/S/18/6558**

Max. Marks : 80

- Notes :
1. All questions carry equal marks.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answers wherever necessary with the help of neat sketches.
  5. Use of non programable calculator is permitted.

1. a) Give & explain the characteristics of different mechanical load with suitable examples. 8
- b) Classify & explain electric braking for D.C. Motor. 8

**OR**

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|-----------|--|----------|
| <b>2.</b> | <p>a) A 200V shunt motor having armature Resistance of 0.4 ohms takes armature current of 20 Amp on full load &amp; runs at 600 rpm. If resistance of 0.5 ohm is placed in the armature circuit. Find</p> <div style="margin-left: 40px;">             i) Full load torque                      ii) Half full load torque<br/>             iii) What is the ratio of stalling torque to full load torque.           </div> | <b>8</b> |
|           | <p>b) Which type of motors used in following applications. Explain each in details.</p> <div style="margin-left: 40px;">             1) Rolling mill                      2) Crane<br/>             3) Textile mill           </div>   | <b>8</b> |
| <b>3.</b> | <p>a) What are Advantages of electric heating?</p>   | <b>8</b> |
|           | <p>b) Explain Indirect Arc heating furnace with neat sketch &amp; write its merits &amp; Demerits.</p>   | <b>8</b> |

**OR**

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|-----------|----|--|----------|
| <b>4.</b> | a) | Describe construction & working of coreless type high frequency Induction Furnace. | <b>8</b> |
|           | b) | Explain Infrared heating with suitable Application & Give their advantages.        | <b>8</b> |
| <b>5.</b> | a) | What is an electric Arc Welding? Explain.  | <b>8</b> |
|           | b) | Explain with a neat diagram "Tungsten Inert Gas (TIG) welding".                    | <b>8</b> |

**OR**

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|-----------|--|----------|
| <b>6.</b> | <p>a) Write a short note on.</p> <div style="display: flex; justify-content: space-between;"> <span>i) Buttt welding.</span> <span>ii) Spot welding.</span> </div> | <b>8</b> |
|           | <p>b) Compare AC &amp; DC welding state which one is superior with advantages.</p>   | <b>8</b> |

7. a) Define 8  
a) Illumination b) Lamp efficiency  
c) Luminous Intensity d) Utilization factor  
e) Maintenance factor.

- b) Explain with a suitable diagram the construction & working of sodium vapour lamp. 8

**OR**

8. a) The illuminations at a point on a working plane directly below the lamp is to be 80 lumens/m<sup>2</sup>. The lamp gives 180 C.P. uniformly below the horizontal plane. Determine. 8

1) The height at which the lamp is suspended.

2) The illumination at a pt. on the working plane 1.5m away from the vertical axis of the lamp.

- b) Describe different lighting scheme for indoor lighting Installation. 8

9. a) What are the advantages & Disadvantages of electric Traction. 8

- b) Discuss briefly the speed time curve for train movement. 8

**OR**

10. a) Derive expressions for the Quadrilateral speed time curve. 8

- b) What are the essentials of driving mechanism in on electric vehicle. Also explain the terms "Adhesive Weight" & "Coefficient of Adhesion" in a relation to the train movement. 8

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