1.	What are the desired properties of heating element material?	02
2.	State the different types of Welding?	02
3.	Define Polar curves.	02
4.	Compare luminance and illuminance.	02
5.	Enlist the main requirements of a good refrigerant.	02
6.	Categorize the different systems for traction.	02
7.	Differentiate various types of Fans and Pump.	02
8.	What are special features of traction motors.	02
9.	State different types of fans and typical applications.	02
10.	Classify various electric heating methods along with a brief account of their working principles.	05
11.	Discuss the advantages of electric heating as compared to other heating methods.	05
12.	Draw a neat sketch of a spot-welding machine and describe its construction and working.	05
13.	Illustrate the different methods of induction heating. Give some application of induction heating.	05
14.	Define and explain the following terms: i) Utilization factor. ii) Space - height ratio. iii) Maintenance factor.	05
15.	Discuss various factors to be considered while designing lighting scheme.	05
16.	Explain the laws of illumination	05
17.	A building frontage 50 m 15m × is to be illuminated by flood lighting projectors situated 25 meters away. If the illumination is 100 lux. Coefficient of utilization 0.5, depreciation factor 1.5, waste light factor 1.2. Estimate the number and suggest suitable type of projectors. Sketch the arrangement of projectors. Also, state the applications of flood lighting.	05
18.	The hall of 30x20 sq-m area is to be provided with an average illumination of 200 lux. The lamps are to be fitted 4 m from ground floor. Find the number of lamps and wattage/lamp for the lighting scheme. Efficiency of the lamps available is 25 lumens/watt, depreciation factor is 0.8 and co-efficient of utilization is 0.75. Give satisfactory spacing arrangement.	05
19.	Describe with neat sketch vapor absorption refrigeration system. Compare it with vapor compression system.	05
20.	Describe complete arrangement of centrally air conditioning plant.	05
21.	Explain primary and secondary refrigerants.	
22.	Identify the factors on which air conditioning depends and explain in short.	
23.	Explain the factors on which air conditioning depends.	05
24.	Explain systems of track electrification in detail.	05
25.	Describe in detail special features of traction motors.	05
26.	Explain speed time curve for different services of electric traction.	05
27.	Explain speed time curve for different services of electric traction	05
28.	A train weighing 120 tons is to be driven up an incline of 2 percent at a speed of 36 kmph. If the train resistance at this speed is 2kg per ton. Find the current required at 1500 V dc if the efficiency of the motors and gearing is 88%. If the current were cut-off how long world the train take to come to rest.	05
29.	List the energy saving opportunities in a pumping system.	05
30.	Explain flow control strategies for fans.	05
31.	Explain energy saving measures of DG. Set.	05
32.	Explain flow control strategies for fans.	05
33.	Discuss energy-saving opportunities in the Fan	05