

Duration – 3 Hours

Total Marks - 80

- N.B.:-** (1) Question No.1 is compulsory.
 (2) **Attempt** any **three** questions out of remaining **five** questions.
 (3) Assume suitable data if necessary and justify the same.

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| Q 1. | Answer the following questions. | 20 |
| | A) What are the various welding techniques? | |
| | B) Explain the effect of weight transfer in traction. | |
| | C) Draw and explain the electric circuit of domestic refrigerator. | |
| | D) What are the different configurations of Hybrid Electric Vehicle? | |
| Q 2 a) | Write a detailed note on photometers. | 10 |
| Q 2 b) | What do you mean by quadrilateral speed time curve. Explain. | 10 |
| Q 3 a) | Design the interior illumination required for a workshop with example. | 10 |
| Q 3 b) | Why it is required to study the heating methods used? | 10 |
| Q 4 a) | What are the different types of track electrification? | 10 |
| Q 4 b) | Draw and explain speed control methods for traction purpose | 10 |
| Q 5 a) | Write a short note on specific energy consumption of traction. | 10 |
| Q 5 b) | Explain and Compare the types of motors used for traction in EV/HEV | 10 |
| Q 6 a) | What are the factors which are affecting the scheduled speed of train? | 10 |
| Q 6 b) | Explain and the working principle of arc furnace with emphasis on power supply requirements for the same. | 10 |
