

BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY
Question Bank (I-Scheme)

Name of subject: Utilization of Electrical
Energy

Unit Test: II

Subject code: 22626
Semester: VI

Course: EE6I

UNIT-IV

Electric Traction (CO4)

(2 Marks)

- 1 List any four requirements of an ideal traction system.
2. State any two special features of Metro Railway
3. Compare urban, suburban and mainline services on the following points:
i) Distance between substation ii) Value of acceleration.
4. State various types of track electrification system.
5. Draw speed time curve for main line service and mark all parameters in it.

(4 Marks)

1. Describe any four advantages of 25 kV A.C. traction system. t.
2. Define i) Average speed and ii) Schedule speed in traction system. Write any two factors affecting the schedule speed.
3. Compare electric locomotive over diesel locomotive on the basis of:
(i) Centre of gravity,
(ii) Running / maintenance cost,
(iii) Starting time and

- (iv) Regenerative braking.
4. A trapezoidal time curve of train consists of :
- Uniform acceleration of 6 kmphs for 25 seconds
 - Free running for 10 minutes
 - Uniform deceleration of 6 kmphs to stop the train
 - A stop time of 5 minutes.
- Find the distance between the stations, average and scheduled speed.
5. “DC series motor is used for traction purpose”. Justify.
6. A train has schedule speed of 60 kmph between stops which are 6 km apart. Determine the crest speed over the run assuming:
- Duration of stops as 60 sec
 - Acceleration as 2 kmphs
 - Retardation as 3 kmphs
- The speed time curve is trapezoidal.
7. Describe the working of Faiveley type pantograph with a neat sketch.
8. Draw a neat labeled block diagram of A.C electric locomotive.
9. Explain metro system of traction.

UNIT - V

Tariff and Power Factor Improvement (CO5)

(2 Marks)

1. Explain any four desirable characteristics of tariff .
2. State any two disadvantages of low power factor.
3. List any four causes of low power factor
4. What is KVA maximum demand tariff?

(4 Marks)

1. Describe a tariff mainly used to prepare bill for i) L.T. Residential consumer ii) H.T. Industrial consumer.

2. State any six advantages of power factor improvement.

3. A factory has a maximum demand of 300 kVA with a load factor of 0.6. The following tariffs are offered:

a) Two part tariff - Rs 125/kVA of M.D./year + Rs 5.50 per kWh.

b) A flat rate of Rs 6.90 /kWh.

Calculate tariff in both cases and recommend one of them with justification.

4. Explain synchronous motor can be used for power factor improvement.

5. Explain the following types of tariffs

i) Uniform rate simple tariff

ii) Step rate tariff

iii) Two part tariff

iv) Block rate tariff