

University of Mumbai
Examination First Half Summer 2022

Examinations Commencing from 18 May 2022 to 31 May 2022

Program No. & Name of the Examination : 1T00836 T.E.(Electrical Engineering)(SEM-VI)(Choice

Base Credit Grading System) (R- 19) (C Scheme)

Subject/Paper Code: 89306 Electric Traction DLOC-II

Time: 2 hour 30 minutes

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Long distance railways use which of the following?
Option A:	200 V D.C. Option
Option B:	25 kV single phase A.C.
Option C:	25 kV two phase A.C.
Option D:	25 kV three phase A.C.
2.	Power for lighting in passengers coach in a long distance electric train is provided
Option A:	directly through overhead electric line
Option B:	through individual generator of bogie and batteries
Option C:	through rails
Option D:	through locomotive
3.	The specific energy consumption for suburban services is usually
Option A:	18 to 25 watt-hours per tonne-km
Option B:	50 to 75 watt-hours per tonne-km
Option C:	125 to 150 watt-hours per tonne-km
Option D:	155 to 200 watt-hours per tonne-km
4.	Which of the following drives is suitable for mines where explosive gas exists?
Option A:	Steam engine
Option B:	Diesel engine
Option C:	Battery locomotive
Option D:	Electric locomotive
5.	The free-running speed of a train does NOT depend on the
Option A:	Duration of stops
Option B:	Distance between the stops
Option C:	Running time
Option D:	Acceleration
6.	For supply on 25 kV, 50 Hz single phase, the suitable motor for electric traction is
Option A:	Ac single-phase split phase motor
Option B:	Ac single phase universal motor
Option C:	Dc shunt motor
Option D:	Dc series motor
7.	----- is called encumbrance
Option A:	The axial distance between catenary and contact wire
Option B:	The axial distance between Mast and contact wire
Option C:	The axial distance between suspension clamp and contact wire
Option D:	The axial distance between steady arm and contact wire
8.	Overhead lines for power supply to tram car are at a minimum height of

Option A:	3m
Option B:	6m
Option C:	10m
Option D:	20m
9.	The current collector that can be employed with different speeds under all wind conditions and stiffness of OHE is known as the
Option A:	messenger collector.
Option B:	pantograph collector.
Option C:	trolley collector.
Option D:	bow collector.
10.	DC track circuit consists of
Option A:	Amplitude modulation equipment.
Option B:	A negative booster, feeding points and signals.
Option C:	An insulated joint and track, track bonding, regulating resistance, track battery to track relay.
Option D:	Amplitude modulation equipment and negative booster

Q2.	Solve any Four out of Six	5 marks each	20 Marks
A	Discuss the advantages of 25 kV ac system over DC system.		
B	What do you understand by train resistance and on what factor does this depend?		
C	Explain the desirable characteristics of traction motors.		
D	Illustrate the merits and demerits of DC system of track electrification.		
E	Explain the working of Pantograph current collector system in traction.		
F	Write short note on Principle of interlocking in railway signaling.		
Q3	Solve any Two Questions out of four	10 marks each	20 Marks
A	Derive the expression for specific energy consumption and illustrate the effect of various factors on specific energy consumption		
B	Discuss the suitability of dc series motor for its application in electric locomotive for traction duty.		
C	Explain the necessity of employing MHO relay in the protection scheme for 25 KV OHE.		
D	Illustrate the design requirements of catenary wire, contact wire, automatic weight tensioning system and section insulator used in traction.		
Q4	Solve any Two Questions out of four	10 marks each	20 Marks
A	What is Speed Time Curve? Draw and Explain actual Speed Time Curve for Suburban and Urban Service.		
B	Explain the theory, working and characteristic of linear IM for traction purpose.		
C	Describe a typical traction substation with the help of a sketch of substation equipment layout.		
D	Discuss different type of catenary construction for traction system		

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