Q.21 Illustrate the role of the conductor rail system in an electric traction network. (CO5)

Q.22 Summarize the main considerations in coach wiring for safety and efficiency. (Co5)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Discuss the role of auxiliary equipment in maintaining efficient traction services. (CO5)

Q.24 Explain in detail the differences between rheostatic and regenerative braking systems, including examples of each. (CO4)

Q.25 Analyze the impact of different types of braking systems on the safety and efficiency of electric trains. (CO4)

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5th Sem / Electrical

Subject : Electrical Traction System

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which traction system is preferred for high-speed urban transport? (CO1)

a) Diesel traction b) Steam traction

c) Electric traction d) Hybrid traction

Q.2 What is the voltage of the single-phase AC system commonly used in Indian railways? (CO1)

a) 11 KV b) 25 KV

c) 50 KV d) 33 KV

Q.3 Which speed-time curve parameter affects fuel economy the most? (CO2)

a) Maximum speed b) Acceleration rate

c) Average speed d) Schedule speed

Q.4 Name the braking system that is widely used in parking. (CO4)

a) Hand brake b) Regenerative brake

c) Vacuum brake d) Rheostatic brake

Q.5 What type of braking can return energy to the power supply? (CO4)

a) Rheostatic braking b) Mechanical braking

c) Hand braking d) Regenerative brake

Q.6 What is the purpose of the overhead catenary system? (CO5)

a) To provide support to the rails

b) To supply power to the train via the pantograph

c) To act as a backup power system

d) To control the train's speed

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define 'Schedule speed' in traction services. (CO2)

Q.8 List two key disadvantages of the DC traction system. (CO1)

Q.9 State one reason why the three-phase induction motor is suitable for traction. (CO3)

Q.10 Name the control technique used for smooth acceleration in DC locomotives. (CO3)

Q.11 Define rheostatic braking. (CO4)

Q.12 What is the primary function of coach lighting devices? (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Describe the advantages and disadvantages of the DC system for traction. (CO1)

Q.14 Explain the composite system and its applications in electric traction. (CO1)

Q.15 Identify and describe the main features of mainline traction service. (CO2)

Q.16 Describe how the speed-time curve helps optimize energy consumption. (CO2)

Q.17 List the desirable characteristics of a traction motor. (CO3)

Q.18 Differentiate between chopper control and series-parallel control in DC traction. (CO3)

Q.19 Describe the functions of the thyristor in the control system of AC locomotives. (CO3)

Q.20 Compare mechanical and electric braking in terms of maintenance and cost. (CO4)