This document is a part of Main Course File	Document No.: CFM – 8

	SARDAR VALLABHBHAI PATEL EDUCATION SOCIETY MANAGED
	# N. G. PATEL POLYTECHNIC
	## ELECTRICAL ENGINEERING DEPARTMENT

ASSIGNMENTS

Course Name (With Code): Electric Traction and Control (4350907)

Semester / Year: Fifth /Third

Assignment Number: 01

Assignment CO Number: 4350907.1

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	State advantages and disadvantages of electric traction system.
2	Define following terms: 1) Crest speed 2) Average speed 3) Schedule speed
3	Explain KANDU system.
4	Compare main line, sub-urban and urban services.
5	State advantages and disadvantages of 25 KV AC over DC System.
Part – B	**Questions carrying 4 Marks**
1	Derive equation of maximum speed by trapezoidal curve.
2	Explain factors affecting schedule speed.
3	If α =3.2Km/hr/sec,β=4Km/hr/sec,Vm = 57.2 Km/hr/sec,t2 = 26 sec Find K and total time T
4	If T= 160 sec , α = 2 Km/hr/sec and β=3 Km/hr/sec, D= 1.6 km, find Vm.
Part – C	**Questions carrying 7 Marks**
1	Draw a simplified speed time curve and explain each part.
2	A train has a scheduled speed of 60 kmph between two stops 6 km apart with a duration of stop of 60 Seconds. The rate of acceleration and retardation are 2 kmphps and 3 kmphps respectively. Calculate the value of average speed, maximum speed assuming simplified speed time curve.
3	An electric train has an average speed of 42 Kmph on a level track between stops 2.1 Km apart. Find maximum speed of train if value of acceleration and retardation are 1.7 Kmphps and 3.3 Kmphps respectively. Also find time for acceleration, free running and breaking. Assume trapezoidal speed time curve.
4	A train runs with an average speed of 45 kmph. Distance between station is 2.5 km. values of acceleration and retardation are 1.5 kmphps and 2.1 kmphps respectively. Find maximum speed assuming trapezoidal speed time curve.
Prepared By: Y. D. PATEL	**Signature of Head of Department**

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Semester / Year: Fifth /Third

Assignment Number: 02

Assignment CO Number: 4350907.2

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	State advantages and disadvantages of three phase induction motor for traction purpose
2	Explain multiple unit control.
3	State desirable features of traction motor.
4	State advantages and disadvantages of linear induction motor.
5	Write short note on master controller.
Part – B	**Questions carrying 4 Marks**
1	Explain why D.C. series motor is mostly used as a traction motor?
2	Explain series-parallel control of two D.C. series motor
3	Explain construction and working principle of AC series motor with diagram and applications.
4	State advantages of repulsion motor in traction system,
5	Explain bridge transition method for speed control of traction motor.
Part – C	**Questions carrying 7 Marks**
1	Explain plugging applied to dc series motor.
2	State the types of braking and explain regenerative braking system in detail.
3	Explain open circuit transition for starting of dc series motor.
4	Compare Plugging and rheostatic type electrical breaking system.
5	Calculate energy saving by series parallel control of 4 dc motors.

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ASSIGNMENTS

Course Name (With Code): Electric Traction and Control (4350907)

Semester / Year: Fifth /Third

Assignment Number: 03

Assignment CO Number: 4350907.3

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	Draw the key diagram of 25 KV AC substation.
2	Explain the negative booster.
3	Define specific energy consumption. State and explain factors affecting it.
4	Define dead weight, adhesive weight, tractive effort.
5	Explain feeding post for electrical traction system with diagram
Part – B	**Questions carrying 4 Marks**
1	Explain various factors related to location and spacing of substation.
2	Explain major equipment's in D.C. sub-stations.
3	List and explain the major equipment's of A. C. traction substation
4	Explain the concept of energy conservation in electric traction
Part – C	**Questions carrying 7 Marks**
1	Explain the classification of traction substations.
2	Explain methods of feeding traction substations.
3	Derive expression for tractive effort.

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ASSIGNMENTS

Course Name (With Code): Electric Traction and Control (4350907)

Semester / Year: Fifth /Third

Assignment Number: 04

Assignment CO Number: 4350907.4

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	State functions of battery change over switch with diagram.
2	Explain bow-collector in detail
3	State functions of various auxiliary equipment used in electric locomotive.
4	Describe working of nose suspension drive.
5	Describe working of direct quill drive.
Part – B	**Questions carrying 4 Marks**
1	Explain Rosenberg generator in detail
2	Draw and explain the Arno converter used for auxiliary power supply.
3	Explain catenary system with diagram.
4	Explain block diagram of diesel electric locomotive.
5	List types of overhead current collector and explain anyone.
Part – C	**Questions carrying 7 Marks**
1	Draw and explain block diagram of AC to DC-composite locomotive.
2	Draw and explain block diagram of D.C. locomotive
3	Explain pantograph collectors in detail.
4	Draw and explain magnetic light switch and single battery system.
5	Explain working of double battery system for coach wiring with diagram.

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Course Name (With Code): Electric Traction and Control (4350907)

Semester / Year: Fifth /Third

Assignment Number: 05

Assignment CO Number: 4350907.5

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	State the advantages of high speed trains.
2	State the advantages of monorails.
3	Explain latest trends in electric traction.
4	What are the features of magnetically levited trains?
Part – B	**Questions carrying 4 Marks**
1	Explain the principle of magnetic levitation.
2	Explain the variable frequency drive for three phase induction motors.
3	Explain working principle of monorail and metro system of traction.
Part – C	**Questions carrying 7 Marks**
1	Discuss various technologies used for high speed train.
2	Describe working of variable frequency drive for three phase induction motor.

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