

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: Advanced Transportation Engineering
Programme: B. Tech. (Civil Engineering)
Time: 03 hrs.

Semester: VII
Course Code: CEEG338
Max. Marks: 100

Instructions: Please provide answer, which is relevant to the Question and support it with Suitable diagrams/Sketches.

SECTION A (5 X 4 = 20 Marks)

S. No.		Marks	CO
Q 1	Explain Pilot tunnel and its Applications in tunnel construction with the help of diagram.	04	CO1
Q 2	Define traction and explain different types of traction in Indian Rail System. What is the latest trend followed by Indian Railways with regard to traction?	04	CO2
Q 3	Compare between high speeds and Super high Speeds for railways. Why we need high speeds for train operations?	04	CO2
Q 4	Explain the functions and requirements of Sleepers as a Track component.	04	CO3
Q 5	Define key essentials of Track maintenance process.	04	CO4

SECTION B (10 X 4 = 40 Marks)

Q 6	With the help of Suitable diagrams, Briefly explain the different methods of tunneling in Soft Soils?	10	CO1
Q 7	What are the advantages of Electric traction in High Speed train operations?	10	CO2
Q 8	Compare the advantage and disadvantages of different types of sleepers. Which kind of sleepers are recommended for high-speed operation and Why?	10	CO3
Q 9	Explain various strength requirements of the various track components viz. Rail sections, sleepers and ballast from the perspective of high-speed train operations? OR Define Maglev Trains and its key advantages. What are key technology used in such trains? What could be the way forward for such trains in terms of its feasibility?	10	CO4 CO3

SECTION-C (2 X 20 = 40 Marks)

Q 10	Write a short note on following: a) Dedicated Freight Corridor – Project of National Importance b) Forces acting on the track during train operations OR What do you mean by Modernization of Indian Railways? Explain in detail, at least three developments which fall under the category of Modernization of Indian Railways?	20	CO3 CO2
Q 11	Why advanced track maintenance is important to run high-speed trains? Briefly explain at least three modern track construction / maintenance machine and their	20	CO4

	applications.		

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SECTION A (5 X 4 = 20 Marks)

S. No.		Marks	CO
Q 1	Define Tunnel. Explain three different criterion based on which tunnels can be classified.	04	CO1
Q 2	Explain the requirement of High-powered locomotives? How Ministry of Railways is Planning for new generation Electric Locomotives?	04	CO2
Q 3	Write a short note on mechanized track maintenance. List the key machineries needed for this.	04	CO3
Q 4	Define Track tolerances. What are the track parameters on which it is based?	04	CO4
Q 5	List down measuring equipment and maintenance tools for tracks maintenance and mention its brief function.	04	CO4

SECTION B (10 X 4 = 40 Marks)

Q 6	Explain the key elements of New Austrian Tunneling Method. List down its key features as a design philosophy and construction method.	10	CO1
Q 7	Write a detailed note on the various new examples of modern process of Automation in following aspects of Indian Railways	10	CO2
Q 8	How can modernized tracks support the high-speed rail operations? Explain basic requirements for development of high-speed tracks.	10	CO3
Q 9	What are the effects of the high speeds on the track structures? Explain limitations of the super high speeds? OR What is the importance of the “measured shovel packing” as an improved method of the track maintenance. List and briefly explain about various equipment used.	10	CO4 CO3

SECTION-C (2 X 20 = 40 Marks)

Q 10	Write a short note on following: a) Dedicated Freight Corridor – Project of National Importance b) Maglev Trains, its principles and key advantages OR “Indian Railway is the lifeline of our country”. Comment on this statement. How Vision 2020 helps to provide future vision to Indian Railways.	20	CO3 CO2
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Q 11	Critically analyze the importance of surveying during the planning stage of tunnels? Briefly explain different steps in Tunnel surveying procedure. How will you plan to transfer the surface survey to underground of the tunnel?	20	CO4