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PRESIDENCY UNIVERSITY

BENGALURU

SCHOOL OF ENGINEERING

MAKE-UP EXAMINATION - JULY 2024

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| **Semester :** 7th Sem | **Date :** 01-07-2024 |
| **Course Code :** CIV2022 | **Time :** 9:30AM to 12:30PM |
| **Course Name :** Railway Engineering & Tunneling | **Max Marks :**100 |
| **Program :** B.Tech | **Weightage :**50% |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

**PART A**

**ANSWER ANY 6 QUESTIONS**  **6Q X 5M=30M**

1. Write a note on track junctions. (CO 3) [Knowledge]
2. Write a note on Components and safety measures in Railway Platform. (CO 3) [Knowledge]
3. Explain Loops and sidings in railways. (CO 2) [Knowledge]
4. List out different classification of tunnels. (CO 1) [Knowledge]
5. List out the safety measures to follow during tunnel construction. (CO 4) [Knowledge]
6. List out the advantages of tunnels. (CO 4) [Knowledge]
7. What are the indications of creep? (CO 2) [Knowledge]

**PART B**

**ANSWER ANY 4 QUESTIONS**  **4Q X 10M=40M**

1. The major terms in geometric design of railway also includes Equilibrium speed, Maximum permissible speed, Cant deficiency, Cant excess, Superelevation. Summarize these terms by considering the curved alignment of a railway line. List out the main functions of superelevation (CO 2) [Comprehension]
2. Due to passage of moving loads and friction between the rail and wheel, the rails will eventually wear out. Elaborately explain rail wear with the types, defects and also causes for rail failure.

(CO 1) [Comprehension]

1. “Subgrade is the naturally occurring soil prepared to receive ballast the prepared flat surface” which is the other technical terminology of this phrase? List out the function of the same. Explain any 2 reasons for failure of railway embankment. (CO 1) [Comprehension]
2. Answer the following:
3. Draw the diagram to show permanent way with the component parts.

B. Define rails and list down the types. (CO 3) [Comprehension]

1. A. Define coning of wheels in railway engineering? Explain how it works on different railway alignment with a neat diagram.
2. Define railway alignment. Explain the basic requirements of the same. (CO 3) [Comprehension]
3. Calculate the superelevation and the maximum permissible speed for a 2° BG curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. (CO 3) [Comprehension]

**PART C**

**ANSWER ANY 2 QUESTIONS**  **2Q X 15M=30M**

1. A. Tunnel road lighting must provide comfort and safety and maximize the visual performance of users. Write a detailed note on tunnel lighting and ventilation. (10 Marks)

B. Write a note on Interlocking of points. (5 Marks) (CO 4) [Comprehension]

1. A. Points and crossings are crucial components in railway systems. Write a detailed note on the same with the types. (10 Marks)

B. Tunnels are underground passageways that serve various purposes. List out what is the necessity of tunnels. (5 Marks) (CO 3) [Comprehension]

1. A. Explain in detail about different Classification of railway station. (10 Marks)

B. Define mucking in tunneling. Write a note on the same. (5 Marks) (CO 1) [Comprehension]