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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **Ph.D. Course Work End Term Examinations – JAN-FEB 2025** |
| **Date:** 31- 01- 2025 **Time:** 09:30 am – 12:30 pm |

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| **School:** SOE | **Program:** Ph.D. | |
| **Course Code:** CIV823 | **Course Name:** Geometric Design of Railway Track | |
| **Semester**: | **Max Marks**:100 | **Weightage**:50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **20** | **40** | **40** | **-** | **-** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

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| **Answer ALL the Questions. Each question carries 10 marks. 6Q x 10M=60Marks** | | | | |
| **1** | Outline the steps involved in preparing a project report for a railway track alignment, including data collection, survey methods, and alignment selection. | **10 Marks** | **L1** | **CO1** |
| **2** | Discuss the role of modern technologies like Track Renewal Train (TRT) in Indian Railways. | **10 Marks** | **L1** | **CO1** |
| **3** | Compare traditional and modern methods of railway track construction, highlighting the advantages of modern techniques in large-scale projects. | **10 Marks** | **L2** | **CO2** |
| **4** | Explain the stages of track renewal and the materials required for relaying railway tracks. | **10 Marks** | **L2** | **CO2** |
| **5** | Explain the necessity of geometric design in railway tracks and its impact on train safety and efficiency. | **10 Marks** | **L2** | **CO2** |
| **6** | A circular railway tunnel has a diameter of 8 m and a length of 5 km. Calculate the volume of material to be excavated, and suggest a method for its disposal. | **10 Marks** | **L2** | **CO2** |

**Part B**

**Answer all the Questions. Each question carries 20 marks. 2Q x 20M=40Marks**

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| **7.** | Compare the construction methodologies of the Seikan Tunnel (Japan) and Gotthard Tunnel (Switzerland), focusing on engineering innovations and challenges. | **20 Marks** | **L3** | **CO3** |
| **8.** | Provide a detailed overview of the Pir Panjal Railway Tunnel project in Jammu and Kashmir, highlighting its construction challenges and solutions. A train travels on a curve of radius 500 m with a speed of 90 km/h. Calculate the required super elevation (cant) to maintain equilibrium. Assume gauge width = 1.676 m. | **20 Marks** | **L3** | **CO3** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***