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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 :** CIV803 | **Course Name :** Maintenance And Repair of Concrete Structures | |
| **Semester**: | **Max Marks**:100 | **Weightage**: 50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **20** | **10** | **40** | **30** | **-** |

**Instructions:**

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

**Part A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Answer ALL the Questions. Each question carries 10 marks. 6Q x 10M=60Marks** | | | | |
| **1** | Explain stitching method of repair of concrete with schematic | **10 Marks** | **L2** | **CO4** |
| **2** | Pre-placed Aggregate Concrete is commonly referred as PAC. Explain with sketch | **10 Marks** | **L2** | **CO3** |
| **3** | List chemical causes for distress in concrete. Explain any three. | **10 Marks** | **L2** | **CO1** |
| **4** | Shrinkage causes volumetric change in a concrete structure resulting in considerable cracking. List types of shrinkage and explain plastic shrinkage | **10 Marks** | **L2** | **CO1** |
| **5** | Explain surface preparation and protective treatment methods | **10 Marks** | **L3** | **CO3** |
| **6** | Core sampling and testing is the most accurate NDT method for direct assessment of strength of concrete, although it can leave the member partially damaged. Explain the factors affecting the strength of extracted cores? | **10 Marks** | **L2** | **CO2** |

**Part B**

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| --- | --- | --- | --- | --- | --- |
| **Answer the Questions. Each question carries 20 marks 2Q x 20 = 40 Marks** | | | | | |
| **7.** | **a.**  **b.** | Give the repair procedure for the following Case - Damaged Columns/Beams where carbonation depth of concrete has reached reinforcement level  Explain the role of condition assessment of concrete. How is Rapid Visual Inspection (RVI) relevant? | **20 Marks** | **L3** | **CO3** |
|  | | | | | |
| **8.** | **a.**  **b.** | The following photograph was taken during a visual inspection of a 25-year old building. Explain the possible reasons for the blistering/peeling-off of the paint on the wall. Note that the wall surface below the lower ventilation is not damaged?    Explain Cathodic protection in concrete structures with schematic. Where it is applicable | **20 Marks** | **L4** | **CO4** |

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