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## GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER-VIII • EXAMINATION – SUMMER 2013

Subject Code: X80605 Date: 15-05-2013 **Subject Name: Repairs and Rehabilitation of Structures** Time: 10.30 pm - 01.00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. Q.1 (a) Which are the major signs of deterioration in concrete. Write a brief 07 note on each. (b) Explain the distinct stages to be recognized before taking up any repair 04 work. (c) What are the basic differences involved in the execution of a repair 03 work in contrast to a new construction work. 07 Q.2 (a) With respect to the corrosion of steel in concrete explain the following (i) Thickness of the cover to concrete Chloride Ingress & Carbonation (ii) (iii) Expansion of concrete & Cracking (b) Explain the various causes of cracks in Reinforced Concrete 07 Structures. Explain the same specifically in terms of cracks due to volumetric changes & corresponding stresses. (b) What do you understand by the term Durability. How would you 07 ensure the durability of the structure. Q.3 (a) Mention the various types of repair materials available and their 07 application range. (b) Explain the Preliminary and Detailed Conditional Assessment of 07 structures. Describe in detail the Structural Investigation Q.3 (a) Explain any one repair material in detail. Also state its application 07 technique and its use to treat the distress. (b) Define "Conditional Assessment" of Structures. Explain in detail the 07 various stages of the same. Q.4 (a) Enlist the various objectives of Conditional Survey. Explain the **07** grouping of the structural members in this context. (b) Explain various methods of demolition techniques. State the 07 precautions to be taken when the building is pulled down. OR **Q.4** (a) State the types of Cracks. Also make a list of the parameters that you 04 will look for while recording the cracks

| Q.4 | (b)        | <ul> <li>(i) Essential Parameters for the Repair Material</li> <li>(ii) Classes of Damage and Repair Classification</li> <li>(iii) Methods of Corrosion Protection</li> <li>(iv) Weathering effects on concrete</li> <li>(v) Durability requirements as per IS:456</li> </ul> | 10 |
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| Q.5 | (a)<br>(b) | Discuss any one real life building failure in detail & also explain lessons learnt from structural engineering aspect.  Discuss various schemes of retrofitting RCC column for different types of structural deficiency.                                                      | 07 |
|     |            | OR                                                                                                                                                                                                                                                                            |    |
| Q.5 | (a)        | Discuss various schemes of retrofitting RCC beam for different types of structural deficiency.                                                                                                                                                                                | 07 |
|     | (b)        | Explain any one in detail: (a) Ferro Cement (b) Fibre reinforced                                                                                                                                                                                                              | 07 |
|     |            | concrete (c) Shoring & Underpining (d) Mortar repair for cracks.                                                                                                                                                                                                              |    |

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