Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1721506 **Date: 12/07/2012**

Subject Name: Rehabilitation & Retrofitting of Buildings

Time: 10:30 am – 13:00 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)**	What do you understand by the term Durability. Compared to other considerations, how much importance should be given to durability in the design & construction of concrete structures.	**04**
	(b)	What do you understand by Permeability of Concrete. Explain the effect of the same on durability of concrete	**03**
	(c)	Enlist repair materials available in the market for building maintenance. Discuss any one maintenance problem in detail.	**07**
Q.2	**(a)**	With respect to the corrosion of steel in concrete explain the significance of the following terms: (i) Passivity of steel (ii) Electrochemical Process (iii) Expansion of concrete & Cracking (iv) Electrical Resistivity of Concrete	**07**
	(b)	Explain the various causes of cracks in Reinforced Concrete Structures. Explain the same specifically in terms of cracks due to volumetric changes & corresponding stresses.	**07**
		OR	
	(b)	What are the various signs of distress / deterioration in concrete structures. State the causes for the same.	**07**
Q.3	**(a)**	State the classification of the defects in the stone and brick masonry. Explain each defect in detail.	**07**
	(b)	What are the various sources of defects in brick masonry structures. Explain each source in detail.	**07**
		OR	
Q.3	**(a)**	Explain briefly the Structural & Non-structural cracks in buildings. Support your description with examples for each type.	**07**
	(b)	Define "Conditional Assessment" of Structures. Explain in detail the various stages of the same.	**07**
Q.4	**(a)**	Enlist the various objectives of Conditional Survey. Explain the Structural Inspection in detail.	**07**
	(b)	Explain any 2 Non-Destructive tests carried out for the assessment of concrete strength in detail	**07**
		OR	
Q.4	**(a)**	Enlist various aspect to be taken care of while diagnosing the cracks	**03**
Q.4	**(b)**	Differentiate between the following (any four) (i) Repair / Rehabilitation (ii) Strengthening / Retrofitting (iii) Porosity / Permeability (iv) Micro cracking / Macro cracking (v) Abrasion / Erosion (vi) Diffusion / Sorption	**04**
Q.5	**(a)**	Discuss any one real life building failure in detail & also explain lessons learnt from structural engineering aspect.	**07**
	(b)	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 the role of quality control in construction as preventive measure against deterioration.	**07**

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