

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: **07**
- (i) Passivity of steel
- (ii) Electrochemical Process
- (iii) Expansion of concrete & Cracking
- (iv) Electrical Resistivity of Concrete
- (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) **04**
- (i) Repair / Rehabilitation
- (ii) Strengthening / Retrofitting
- (iii) Porosity / Permeability
- (iv) Micro cracking / Macro cracking
- (v) Abrasion / Erosion
- (vi) Diffusion / Sorption
- 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**
