

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name : Repair & Rehabilitation of Structures

Subject Code : 4TE07RRS1

Branch: B.Tech (Civil)

Semester : 7

Date : 26/03/2018

Time : 10:30 To 01:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1 Attempt the following questions: (14)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| a) Define distress in structure. | 1 |
| b) Give the uses of profometer. | 1 |
| c) If the UPV is 3-3.5 km/s then the quality of concrete is _____. | 1 |
| d) If the resistivity is 5000-10000 (ohm-cm) then the corrosion probability is _____. | 1 |
| e) Define durability of concrete. | 1 |
| f) Maximum total acid soluble chloride content expressed as kg/m^3 of concrete as per IS 456 2000 for RC or plain concrete containing embedded metal is _____. | 1 |
| g) Give the full form of AAR. | 1 |
| h) Define efflorescence. | 1 |
| i) Define permeability of concrete. | 1 |
| j) Give the causes of macro cracks in concrete. | 1 |
| k) Give the chemical reaction that takes place during rusting of steel bars. | 1 |
| l) As per IS 456 2000 sulphate content of mixing and curing water should not exceed _____. | 1 |
| m) Give the characteristic of ferrocement. | 1 |
| n) The inherent ability of concrete to heal cracks withing itself is termed as _____. | 1 |

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions (14)

- | | |
|-----------------------------------------------------------------------------------------------------------|---|
| a) Explain the corrosion process and mechanism for steel bars. Explain half-cell potential survey method. | 8 |
| b) Give the classification of repair material. | 6 |



Q-3 Attempt all questions (14)

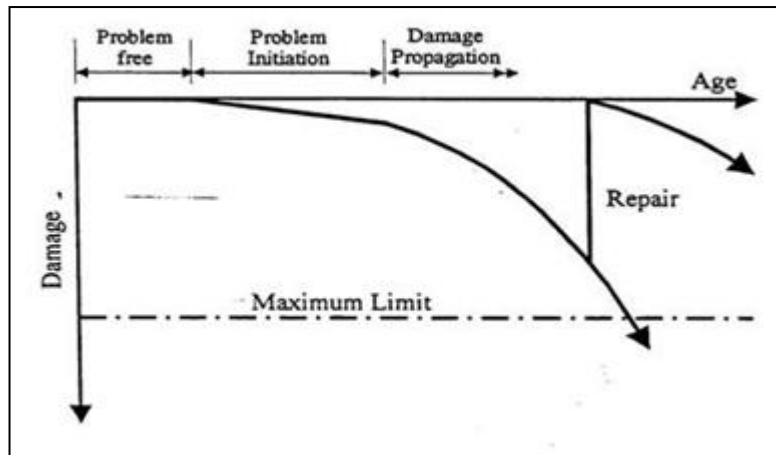
- a) Explain the complete procedure for a beam section as shown below. Draw neat sketches to explain each step. 6



- b) Explain condition survey in detail. Mention the things to be described in condition survey for decision making. 8

Q-4 Attempt all questions (14)

- a) Explain what does the graph shown below signifies for any given structure. Give one example to demonstrate it. 8



- b) Explain ultrasonic pulse velocity test in detail. 6

Q-5 Attempt all questions (14)

- a) Explain the causes of cracks in concrete. 7
b) Only with figure explain crack repair techniques (at-least seven). 7

Q-6 Attempt all questions (14)

- a) Explain the principles of structural demolition. 6

- b) Explain cathodic protection method for reinforcing steel. 6
- c) How to detect the severity of a crack i.e. whether it is a surface crack or deep crack. 2

Q-7 Attempt all questions (14)

- a) Write a short note on underpinning for foundation rehabilitation. 8
- b) Write the steps to be followed while performing repairs of distressed structures. 6

Q-8 Attempt all questions (14)

- a) Write a note on ferrocement. 6
- b) Explain the general reason for the type of distress mentioned in Fig-a below. 8
Diagnose the situation and suggest remedial measures.



(Fig-a: Cantilever slab over balcony)