

22602

12425

03 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answer with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following:** **10**
- a) Define the term rehabilitation.
 - b) Define the term retrofitting and rehabilitation.
 - c) State any four non destructive test on concrete.
 - d) State four properties of anti-corrosion coating materials used.
 - e) List any four causes of crack formation in wall.
 - f) State any four causes of RCC failure.
 - g) State any four points due to which structural audit is necessary.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State necessity of maintenance and repairs of structure.
 - b) Explain in brief, the terms preventive maintenance and remedial maintenance.
 - c) Describe any four approaches involved for the effective management of maintenance and along with its cycle.
 - d) Write the step-by-step procedure for assessing the quality of concrete using ultrasonic pulse velocity apparatus along with its schematic diagram.
- 3. Attempt any THREE of the following:** **12**
- a) State the factors influencing material selection for maintenance and repairs.
 - b) Define the concept of steel bar corrosion and how does the corrosion process takes places.
 - c) Write any two important characteristics of each of the following bonding aids:
 - i) Epoxy resins
 - ii) Poly resins.
 - d) Suggest any two materials necessary to repair the followings:
 - i) Dampness of RCC roof slab
 - ii) Dampness in the exterior brick wall.
- 4. Attempt any THREE of the following:** **12**
- a) Describe the step by step procedure of rebound hammer test.
 - b) Write the purpose of the following materials used for maintenance and repair as:
 - i) Adhesive material
 - ii) Mortar repair material
 - iii) Grout material
 - iv) Polyester putty material.
 - c) State any four importance of structural audit for the structure.
 - d) A brick wall has developed diagonal cracks. Illustrate a suitable repair method using mild steel U shaped dowel bars along with a sketch.
 - e) Explain the step by step procedure of Grouting, repair method for cracks in RCC structure.

5. Attempt any TWO of the following:**12**

- a) Enlist eight locations of occurring probable cracks in the RCC building.
- b) Write the step by step procedure for the following repair methods:
 - i) Guniting
 - ii) Jacketing
- c) Explain in short the four stages to be carried out while repairing the process of corroded RCC elements.

6. Attempt any TWO of the following:**12**

- a) Describe in brief, any four causes of cracks in masonry wall along with their appropriate sketches showing cracks formation due to each case.
 - b) Prepare the format include eight items with respect to structural audit for complain reported by user of a building.
 - c)
 - i) Write the general steps involved in budget estimation of damaged structure.
 - ii) Prepare a format for collection of general information of the building including only any six informational data.
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