

# 22602

**21222**

**3 Hours / 70 Marks**

Seat No. 

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15 minutes extra for each hour

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers 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) State any four objectives of building maintenance.
  - b) List any four causes of crack formation in masonry wall.
  - c) Define the term - Retro fitting and restoration.
  - d) Enlist any four additional repairing materials used for structure.
  - e) State any four causes of RCC failure.
  - f) Write any four techniques used to reduce the rate of damping in building.
  - g) State any four points due to which structural audit is necessary.

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- 2. Attempt any THREE of the following. 12**
- a) Write four factors affecting while measuring the pulse velocity passing through concrete element.
  - b) Explain the phenomenon of bulging of wall. Also mention the causes of it's occurrences.
  - c) State and explain in brief different types of maintenance.
  - d) Explain in brief any four factors influencing Periodical maintenance.
- 3. Attempt any THREE of the following. 12**
- a) Define the concept of steel bar corrosion and how does the corrosion process takes place.
  - b) Explain step by step procedure for Ferrocement Water Proofing technique of roof slab.
  - c) State any four importance of structural audit for the structure.
  - d) Suggest any two materials necessary to repair the following -
    - i) Dampness of RCC roof slab
    - ii) Dampness in exterior brick wall
    - iii) Repairs of 0.4 mm wide crack for total depth of a RCC slab
    - iv) Concrete surface protection.
- 4. Attempt any THREE of the following. 12**
- a) Explain in brief four stages of repairs work in general.
  - b) Explain any two methods of improving the bearing capacity of foundations.
  - c) Explain the step by step procedure of Grouting, repair method for cracks in RCC structure.
  - d) State any three repairing methods for major cracks and explain any one of them.

- 5. Attempt any TWO of the following. 12**
- a) Write the step by step procedure for the following repair methods.
    - i) Guniting.
    - ii) Jacketing.
  - b) In renovation of residential building, a RCC slab is to be casted to cover an opening surrounded by beams. Apply the step by step procedure of joining the new slab with surrounding beams.
  - c) State any four methods used for repair of corroded RCC elements. Also, explain in brief any two of them.
- 6. Attempt any TWO of the following. 12**
- a) List any two suitable materials for the anti-corrosion, adhesives and mortar repairs. Also write one property of each material.
  - b) Prepare the format involve any eight information data of building for structural audit.
  - c) A brick wall has developed diagonal and other vertical crack then illustrate the suitable repair method using mild steel U-shaped dowel bars along with sketch.
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