

22602

22223

3 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 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 the necessity of maintenance and repair.
 - b) Define the terms- retrofitting and restoration.
 - c) List the methods of non destructive testing for the RCC structures.
 - d) Suggest any two materials used as anti corrosive coating material.
 - e) State various types of cracks observed in masonry works.
 - f) Enlist in general the causes of failure of RCC elements.
 - g) Define the term structural audit and its importance.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State and explain any 4 factors influencing on maintenance and repair.
 - b) State the importance of maintenance manual. Also write information to be recorded in maintenance manual.
 - c) Explain in short four stages to be followed for the systematic approach of doing damage detection.
 - d) Write step by step procedure of half cell potentiometer test with a neat sketch.
- 3. Attempt any THREE of the following:** **12**
- a) Write two characteristics of any two of the following:
 - i) Zinc rich epoxy
 - ii) Resin mortar
 - iii) Resin sealant
 - iv) Galvanized steel wire fabrics
 - b) Discuss Polymer Modified Cementitious Mortar in respect of following:
 - i) Ingredients
 - ii) Characteristics
 - iii) Advantages
 - iv) Applications
 - c) Write applications of each of the following:
 - i) PIB sheets
 - ii) Water Borne Adhesives
 - iii) Polymer Modified Cementitious Mortar
 - iv) Epoxy Grout
 - v) Zinc Rich epoxy
 - vi) Acrylic Resin Sealant
 - vii) GFRP
 - viii) Polyester putty
 - d) Write any four different types of materials used for repairs along with any two properties of each material.

- 4. Attempt any THREE of the following:** **12**
- a) State each two advantages and disadvantages of rebound hammer test.
 - b) Suggest any two materials necessary to repair the followings.
 - i) Dampness of RCC roof slab.
 - ii) Dampness in the exterior brick wall
 - iii) repair of 0.4 mm wide crack for total depth of a RCC slab
 - iv) Concrete surface protection.
 - c) Write steps involved in structural audit and budget estimation.
 - d) Enlist the four situations when joint sealant materials are suggested.
 - e) Explain in brief four stages of repair of work in general.
- 5. Attempt any TWO of the following:** **12**
- a) Enlist different types of cracks seen in RCC elements. Explain any one of them.
 - b) State the stepwise procedure to repair corrosion affected RCC elements.
 - c) Define honeycombing. And also state any one reasons of its occurrence.
- 6. Attempt any TWO of the following:** **12**
- a) State the step by step procedure of repair of crack in RCC slab by using epoxy injection method and also draw suitable sketch.
 - b) Prepare the format involve any eight information data of building for structural audit.
 - c) Write the necessity and limitation of doing structural audit. As per Government of Maharashtra, State the necessary frequencies of structural audit up to 30 years building age and for building age above 30 years.
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