315317

12526
3 Hours / 70 Marks Seat No. | | | | | | | | |

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 Precast concrete.

b) Define Autoclaved Aerated Concrete (AAC).

c) State any two requirements of structural joints.

d) Define module and modular co-ordination.

e) State the basic principle of prestressed concrete.

f) State the meaning of loss of pre-stress.

g) State any two basic assumptions in analysis of prestressed concrete beam.

P.T.O.

Marks

2. Attempt any THREE of the following: **12**

a) Describe advantages and disadvantages of precast concrete.

b) Discuss the following structural precast concrete elements :–

i) Fencing poles

ii) Parer block

iii) Manhole covers.

iv) Precast mesh.

c) State and explain the various elements used for non-structural precast concrete.

d) State different materials required for precast concrete structures.

3. Attempt any THREE of the following: **12**

a) Explain the term, "Prefabricated Building Construction" along with the process.

b) Discuss the requirements of structural joints of the given prefabricated elements.

c) Differentiate between pre-tensioning and post-tensioning process used in civil construction.

d) State any four applications of prestressed concrete.

4. Attempt any THREE of the following: **12**

a) Explain Hoyer system of pre-tensioning with labelled sketch.

b) Discuss the merits and demerits of Gifford Udall system.

c) Identify the reasons for loss of pre-stress in the given element.

d) Explain the effect of cable profile on maximum stresses at midspan and at support.

e) A concrete beam supports concentrated load at center on the simply supported span. Suggest a suitable profile.

Marks

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

a) Demonstrate the procedure of the storage, transportation and erection for given precast element

b) List the various equipments required for the constructions of prefabricated buildings with applications of each. (minimum 6 points)

c) Justify the need of high strength materials for prestressed concrete.

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

a) Explain the Freyssinet system of prestressing with respect to process and application with sketches.

b) Elaborate the IS specification and recommendations for various % losses in case of pre-tensioning and post-tensioning.

c) Draw the cable profile of simply supported rectangular beam section-concentric, eccentric straight and parabolic.

———