MANOHARGAD – V (2010 COURSE) : SUMMER – 2015
SUBJECT : THEORY OF STRUCTURES & BUILDING MATERIALS - V

Day : Tuesday
Date : 28-04-2015

Time : 2·00 P.M To 5-00 P.M
Max. Marks : 100

N.B.
1) Answer any **THREE** questions in Section – I. Answer all questions from Section –II.
2) Answers to the two sections should be written in **SEPARATE** answer books.
3) Use of electronic non-programmable calculator is allowed.
4) Figures to the right indicate **FULL** marks.
5) Neat diagrams must be drawn wherever necessary.
6) Assume suitable data if necessary.

SECTION – I

Q.1 Answer any **FOUR** of the following: **(20)**

a) Explain with sketch : 2 types of retaining wall.
b) Explain pre tensioning and post tensioning.
c) Explain with neat sketches 2 different staircases (based on supports).
d) Enumerate advantages and disadvantages of pre-stressed structures.
e) Explain with neat sketches RCC portal frames.

Q.2 a) Check the stability of a masonry retaining wall having: **(14)**

1. Height of wall = 4.20 m
2. Width of base = 3.25 m
3. Thickness of wall at top = 615 mm
4. Unit weight of soil = 18 kN/m^3
5. Angle of internal friction = 28^0
6. Unit weight of masonry = 20 kN/m^3
7. Coefficient of friction = 0.55

The vertical face of retaining wall retains the backfall in the horizontal.

b) Any two types of steel girders:- explain with short notes and sketches. **(06)**

Q.3 a) A simply supported beam with length 5.7 m and 200 mm x 520 mm cross section is subjected to udl of 37 kN/m (including self weight) over the entire length. Pre stressing force of 580 kN at an eccentricity of 215 mm from the centre. Find extreme fibre bending stresses for the same. **(08)**

b) Describe various types of soils and their bearing capacities. **(06)**

c) Explain with sketches active and passive earth pressure. **(06)**

Q.4 Design the staircase of a residential building, having following parameters: **(20)**

1) Floor to floor height = 3050 mm
2) Riser height = 155 mm, Tread projection = 300 mm
3) Width of landing = 1200 mm
4) Width of flight = 1600 mm

The staircase is supported on 300 mm wide beam at outer edges of landing sketch the reinforcement details. Use M20 concrete and Fe 415 steel.

P.T.O

SECTION – II

Q.5		What is Guniting? Explain in detail its applications with specific examples.	**(15)**
Q.6		What is difference between Light weight concrete (LWC) and Ready mix concrete (RMC)?	**(10)**
Q.7	**a)**	What is difference between water proofing and damp proofing?	**(08)**
	b)	Explain methods of water proofing.	**(07)**

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MANOHARGAD – V (2010 COURSE): SUMMER 2016
SUBJECT: HISTORY & BUILDING SCIENCES – V

Day: Saturday
Date: 30-04-2016

Time: 2:00 P.M. TO 5:00 P.M.
Max Marks. 100

N.B.

1) Q. No. **1** and **7** are **COMPULSORY**.
2) Attempt any **FOUR** out of questions No **2, 3, 4, 5** and **6.**
3) Attempt any **TWO** out of questions No **8, 9** and **10.**
4) Section I and II to be solved in **SEPARATE** answer book.

SECTION - I

Q.1 Write short notes on **(Any FOUR)** **(20)**

a) Charles Correa
b) De constructivism
c) Prierie style
d) Art Nouveu
e) Expressionism

Q.2 Explain the modern Architecture with suitable example. **(10)**

Q.3 Write a note on Mies van der Rohe and his philosophy with example. **(10)**

Q.4 Explain how new materials and techniques influenced the architecture of 19^{th} century. **(10)**

Q.5 Explain the Residential architecture of Peshwa period. **(10)**

Q.6 Explain the philosophy and works of any two Indian Architects with example. **(10)**

SECTION - II

Q.7 Write short notes on **(Any FOUR)** **(20)**

a) Refrigeration cycle
b) Evaporative cooling
c) Wing wall
d) Sky conditions
e) Need of Earthing

Q.8 Explain air distribution / ducting system in HVAC system and its components. **(10)**

Q.9 Explain different factors affecting Natural ventilation. **(10)**

Q.10 Explain the protective devices like fuse and MCB used in electrical supply. **(10)**