5E5065

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5E5065

B. Tech. V Sem. (Main/Back) Exam., Nov.-Dec.-2016
Civil Engineering
5CE5A Building Design

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks Main: 26
Min. Passing Marks Back: 24

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*
Units of quantities used/calculated must be stated clearly.
Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. IS: 1893 Part - I 2. IS: 875 Part - III

UNIT – I

Q.1 (a) Differentiate between the following: [8]
(i) Rigid frame and Braced frame structures.
(ii) Gravity load and lateral load resisting members in a building.

(b) Give short notes on the following: [8]
(i) Characteristic strength (explain with normal distribution curve)
(ii) Out rigger braced structures (give typical sketch)

OR

Q.1 Write short notes on following: [4×4=16]
(a) Shear wall. (b) Tube in tube structures.
(c) Load flow concept. (d) Symmetry of building.

UNIT – II

Q.2 (a) Define 'solidity ratio" of a framed structures. [2]
(b) Give the 'pressure coefficient' for the underside surface on the overhang portion of a pitched roof with pitch angle as 15°. [2]

(c) Define "cliff and Escarpment". [2]

(d) Calculate the design wind pressure on walls, and at corners of walls of a rectangular clad building with mono-slope roof as shown in figure: 1. [10]

(i) Plan size = 10m × 16m.

(ii) Openings in wells = 12% of well area.

(iii) Terrain category = 2

(iv) Class of structure = farm building

(v) Topography = fairly smooth.

(vi) Wind Zone = III

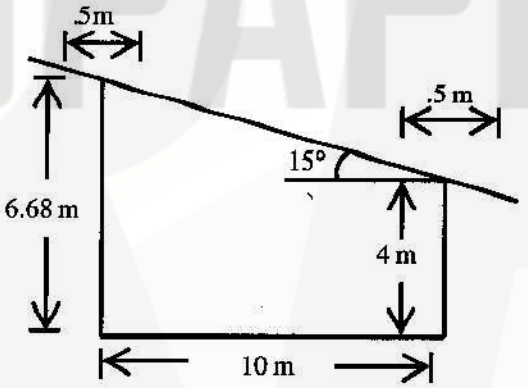

Figure :1

OR

Q.2 For the building shown in Fig: 1 and using data of Q.2(c) above, determine the followings:

(a) Design wind pressure on walls (without local pressure) [6]

(b) Design wind pressure on different parts of roof (without local pressure) [5]

(c) Design wind pressure on overhangs. [5]

UNIT – III

Q.3 (a) Give the values of following parameters / coefficients for the given conditions, (mention relevant clause of code) [4×2=8]

(i) Response reduction factor for steel frame having eccentric bracing.

(ii) Approximate fundamental natural period of a moment resisting frame building without brick-infill. The height of building is 12m base dimension 8m × 8m.

(iii) Zone factor for a building situated in Ahmadabad.