



Enrolment No. _____

HASMUKH GOSWAMI COLLEGE OF ENGINEERING, VAHELAL

MID SEMESTER EXAMINATION, SEPTEMBER-2016

Subject Code: 2170607

Date: 23/09/2016

Subject Name: DRS

Sem: 7TH CIVIL

Time: 10:00 TO 11:00 AM

Total Marks: 20

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Codes used for Design are IS-456, SP16, IS-875(PART I TO IV)

QUE.1 (A) Estimate wind forces for a water tank for the following data. 6

Total height of tank = 27m, which includes height of the supporting shaft = 20m, height of the bottom conical portion = 2 m, height of cylindrical portion = 4m and Rise of top spherical dome = 1m, diameter of supporting shaft = 4m and diameter of the cylinder portion = 10m, location is Ahmedabad, Terrain Category= II and class-B, Ground Slope = 1 vertical to 7 Horizontal, hill Height = 280m, location from crest 100m windward. Design life 100 years.

QUE.2 (A) G + 3 storey building having 4 bays of 5 m in X – direction and 5 bays of 4 m in Y- 7 direction. Design a two way slab with one long edge discontinuous. Floor height is 3.3 m and Live load is 3 kN/m². Use M-20 Grade of concrete and steel Fe-415.

OR

(A) Design a footing of G + 3 building. 7

Total working load on footing = 2325 kN

Size of column = 300 X 600 mm

S.B.C. = 200 kN/m²

Use M-20 Grade of concrete and steel Fe-415. (checks are not compulsory)

QUE.3 (A) Design a cantilever retaining wall to retain the earth of height 4 m above lower 7 ground level. Fix the basic dimension and carry out the stability check of retaining wall.

Surcharge Pressure = 15 kN/m²

Take SBC of soil = 150 kPa

Angle $\phi = 30^\circ$, Coefficient of friction = 0.55

Unit weight of soil = 18 KN/m³

Use M20 grade of concrete and Fe 415 grade of steel

OR

(A) Design and detail counterfort retaining wall up to fix dimension and stability 7 check for the following data:

Angle $\phi = 30^\circ$

Unit of weight of soil = 16 kN/m³

Height wall above G.L = 7m

Safe bearing capacity of soil = 150 kN/m³

Co-efficient of friction between the base and the soil is 0.60.

Use M20 concrete and Fe 415 steel.

***** ALL THE BEST *****