DRCS IMPORTANT QUESTIONS FOR GTU EXAMS

MOST IMPORTANT **LEAST IMPORTANT**

1 2 3 4 5 6 7 8 9 10.....

IMPORTANCE ARRANGEMENT OF QUESTIONS

THEORETICALS:

1. Explain various elements of Flat slab with neat sketches. Mention advantages & Disadvantages of Flat slab.
2. Explain various Joints used in water tank.
3. Explain the philosophy of earthquake resistant design of structures.
4. Classify the methods of improving ductility in a structure.
5. Give the guidelines for efficient earthquake resistant design of structures.
6. Write the steps with codal provisions for determination of lateral loads acting at nodal points of a residential building due to wind.
7. Explain 'Strong column-Weak beam' design concept.
8. Write the codal provisions for designs of one way continues slab.
9. Explain in detail
   (i) Rigid floor Diaphragm effect
   (ii) Torsionally coupled and uncoupled system.
10. Explain ductile detailing of column as per IS: 13920.
11. Explain the codal provision of Direct Design Method for flat slab.

12. Explain requirements of shear wall as per IS: 13920
13. Explain in center of mass and center of stiffness.
14. Explain the codal provision of seismic coefficient method
15. Write the advantage and disadvantage of flexible and stiff structure
16. Enlist the Force acting on retaining wall with Sketch.
17. Draw the Intze tank and explain various structural elements of Intze tank.
18. Explain effect of Irregularities on performance of RC buildings during earthquakes.
19. Explain Short Column Effect.
20. Explain the different types of Retaining Wall.
21. Write the steps of analysis of multistoried building subjected to seismic force by seismic coefficient method.
22. Explain capacity design concept.
23. State the guide lines for preparation of structural layout for building
24. Explain the check for one way shear and two way shear for flat slab with codal provisions.
25. Elaborate the limitations of direct design method used for flat slab.

NUMERICALS: (Values can be changed)

1. Design a cantilever retaining wall to retain the earth 4.5 m high behind the wall, Fix the dimension of retaining wall and carry out all stability checks. The unit weight of soil is 18 KN/m3 and angle of internal friction is 300. The bearing capacity of soil is 150 KN/m2 and coefficient of friction between base and soil is 0.55. Use M20 – Fe 415.
2. Design an interior panel of flat slab having equal panels of 5m × 5m. The internal columns are 500 mm in diameter and column head is 1000 mm in diameter. The storey height above and below slab is 4m. Design the flat slab with drop and column head. Live load 4 Kn/m2. M-20 concrete and Fe-415 steel.
3. Estimate wind forces for a water tank for the following data. Total height of tank=30 m. which includes height the supporting shaft = 22m, height of the bottom conical portion = 3 m, height of cylindrical portion = 4 m and rise of top dome =1m, diameter of supporting portion = 5 m and diameter of cylindrical portion =12m, location is Surat , Terrain category = 2 and class = B , ground plane with upwind slope less than 30, Design life year 100 years.
4. Prepare structural layout and nominate all the members like slabs, beams, columns of G+3 building (whole structure) of having 4 bays of 5 m in X –direction and 4 bays of 3 m in Y-direction. Design any one slab penal having one long edge discontinues.
5. The counter fort retaining wall has to retain the earth with a horizontal top 5.0 m above ground level. Density of earth is 16 kN/m3. Angle of internal friction φ is 30 degree. SBC of soil is 190 kN/m2. Coefficient of friction μ is 0.6. Determine dimensions of the retaining wall.

6. Draw the load distribution diagram and estimate the loads on a typical floor beams. Number of storey: G+3 Floor to floor height: 3.15 m External walls: 250 mm including plaster Internal walls: 150 mm including plaster Imposed load: Roof = 1.5 kN/mm2, Floor = 4.0 kN/mm2 Floor finish: Roof = 1.5 kN/mm2, Floor = 1.0 kN/mm2.
7. Determine the design moment for the interior panel of flat slab without drop and column head with following data: i) Slab = 20 m x 30 m ii) Panel size = 4m x 6m iii) Live load = 4kN/m2 iv) Floor finishes = 1kN/m2 v) Size of column = 500 mm x 500 mm vi) Floor to floor height = 4.0 m. Use M20 and Fe 415.
8. Fix the basic dimension of rectangular underground tank and design constants of capacity 70,000 liters. Use M30 concrete and Fe415 grade steel. Take saturate unit weight of soil 18 kN/m^3 and Φ = 300.
9. The rectangular water tank rest on the ground. Length of tank = 6 m, width of tank = 4 m & Depth of water = 3.5m. Use M30 concrete and Fe 415 grade of steel. Design long walls. Design short walls with checks.
10. Fix the basic dimensions of Intze type container of an elevated water tank to store 5.8 lacs liter of water. Height of staging =15 m up to bottom of tank, wind load = 1.5 KN/m2 throughout the height. Use M30 grade concrete and Fe 415 grade steel.
11. A 200 mm thick R.C.C. flat slab is loaded by live load of 4 KN/m2 and floor finish load of 1 KN/m2. It is supported by 4 columns of size 300 x 400 mm, without providing drop and column head. The columns are placed at 4.5 m x 6 m centre to centre. Design the slab considering an interior panel. Check the slab for shear considering an interior panel.

12. Draw and detail the typical qualitative reinforcement detailing of two span reinforced concrete continuous rectangular beam of dimension 230 mm X 450 mm as per IS 13920-1993.
13. A five storey office building has size of 30 m x 30 m. It is located in Bhuj and resting on hard soil. The total weight of building is 11600 kN and height of the building is 18.5 m. The building is provided with special moment resisting frame with infill brick panels, calculate design base shear and distribute the shear along the height considering ground storey height 4.5 m by seismic coefficient method.

ALL THE BEST