S. B. Roll. No.....

REINFORCED CONCRETE DESIGN
5th Exam/Civil/3518/Nov'24
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

Note: Use of scientific calculator and IS 456:2000 should be allowed in the examination.

SECTION-A

Q1. Do as directed. **15x1=15**

a. Define Characteristic Strength of concrete.
b. Partial safety factor for steel in LSM is_____
c. HYSD stands for_____
d. Unit weight of R.C.C. is _____KN/m^3
e. In two way slabs bending takes place in _____directions.
f. The major loss of prestress is caused due to_____
g. Minimum grade of concrete required for pre tensioning is_____
h. The minimum reinforcement in a slab is _____% of cross sectional area for Fe 415 steel.
i. Value of Xu max for Fe 415 steel is_____
j. Bent up bars are provided at an angle of _____with horizontal.
k. Weight of one meter length of steel bar can be calculated by_____
l. Hooks are not required in _____steel.
m. Plain Cement concrete is weak in_____
n. Minimum grade of concrete to be used in RCC is_____
o. Minimum number of bars to be used in circular column are_____

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. Explain under reinforced, balanced and over reinforced sections.
ii. What are the conditions when doubly reinforced beam sections are provided?
iii. What are the advantages and disadvantages of post tensioning method?
iv. Why HYSD bars are preferred than mild steel bars?
v. What are the various types of loads acting on a structure?
vi. Differentiate between one-way and two-way slab.
vii. What are the IS specifications for reinforcement in columns?
viii. What are the assumptions made in limit state of flexure?

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. A double reinforced beam section is 300mm x 500mm overall. It is provided with 2-12 mm diameter bars as compression steel and 4 – 25mm diameter bars as tensile steel. These reinforcements are provided at an effective cover of 40mm. Determine the ultimate moment of resistance of the beam section, Use M20 Concrete and Fe 415 steel.
b. What are the various losses in pre-stress?
c. A short rectangular reinforced concrete column of cross-sectional dimensions 300mm x 600 mm is to be designed to support an ultimate axial load of 2000KN. Design suitable reinforcement in the column using M20 grade concrete and Fe 415 steel.
d. Design a simply supported rectangular beam for clear span 5m, superimposed dead load 20 KN/m and Live Load 15 KN/m. Use M20 concrete and Fe 415 steel.
e. Design a simply supported RCC slab to carry a factored load of 15KN/m^2 inclusive of its self weight on an effective span of 3.1m. Use M20 concrete and Fe 415 steel.