Q.32 A short column 400mm x 400mm is reinforced with 4-20 mm diameter bars. Find the ultimate load carrying capacity of the column if the minimum eccentricity is less than 0.05 times the lateral dimensions. The materials used are M 20 grade concrete and HYSD Fe 415 grade reinforcement.

Q.33 Differentiate between singly & Doubly R.C.C. beam.

Q.34 Write short note on Effective length of column.

Q.35 Explain various types of foundation.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Write design step for singly RCC beam in limit state method.

Q.37 Design a simply supported RCC one way slab having clear span of 4.0 m and is supported on beams of 230 mm width. If it is carrying a live load of 5000 N/m^2. Use M 20 concrete and Fe 415 steel.

Q.38 Design a square R.C.C. column subjected to an ultimate axial load of 3000 KN. The column is effectively held in position as both ends but restrained against rotation at one end only. The actual length of the column is 4m. Use M20 grade concrete and Fe 415 steel.

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5th Sem / Arch
Subject:- Reinforced Cement Concrete (RCC)

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 Effective depth of a beam is the distance from topmost compressive fibre to
- a) centre of tensile reinforcement
- b) Bottom of tensile reinforcement
- c) Bottom of beam
- d) Neutral axis

Q.2 Unit weight of RCC in Kn/m^3 is
- a) 20 b) 22
- c) 25 d) 26

Q.3 It is preferable to measure cement in terms of
- a) Volume b) Weight
- c) As per choice d) None of these

Q.4 The main steel is provided along the longer span in one way slab
- a) True b) False

Q.5 The modular ratio (m) for M15 concrete is taken as
- a) 18:66 b) 10.98
- c) 13.33 d) 23.33

Q.6 Concrete is strong in

a) Compression b) Tension

c) Shear d) Torsion

Q.7 Min. no. of longitudinal bar for circular column are

a) 4 b) 5

c) 6 d) 8

Q.8 The nominal cover to longitudinal steel bars in a column is

a) 20 mm b) 30 mm

c) 40 mm d) 50 mm

Q.9 Prestressing helps in avoiding the formation of

a) Cracks b) temperature stresses

c) shrinkage stresses d) all of these

Q.10 The portion of slab which acts with the T-beam is called

a) Flange b) web

c) Column d) none of these

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 Define R.C.C.

Q.12 Define singly R.C.C. beam.

Q.13 Define Pre-Tensioning.

Q.14 Define One way Slab.

Q.15 What do you understand T-beam.

Q.16 In a two way slab bending takes place in_____ direction.

Q.17 For Fe 250 steel $M_{u,lim}$ is =_____

Q.18 Define Live load.

Q.19 Factory of safety for steel is_____

Q.20 Define B.M.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Write any five Advantage of RCC.

Q.22 Write short note on over-reinforced sections.

Q.23 Write down the assumptions made in limit state of collapse in flexure.

Q.24 Under which conditions the doubly reinforced beams are provided.

Q.25 What are the functions of the transverse reinforcement in column?

Q.26 Write short note on partial safety factor for load.

Q.27 Draw stress blocks diagram / Parameter.

Q.28 Write specification for longitudinal steel for column as per I.S.

Q.29 Find M.O.R for beam having width 200 mm, effective depth 400 mm with 3 No. 20 mm di. Bar. Take stress in steel 230 N/mm^2 and in concrete $7N/mm^2$.

Q.30 Differentiate between one way slab & two way slab.

Q.31 Write short note on Transverse reinforcement.