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5th / Arch.

Subject : Reinforced Cement Concrete

Time : 3 Hrs. M.M. : 100

SECTION-A

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

Q.1 The I.S. code used for the design of reinforced concrete structure is _____

Q.2 Partial safety factor for concrete and steel are _____ and _____ respectively.

Q.3 _____ cracks occur near the mid span where bending moment is large and shear force is small.

Q.4 The axis in the beam section where the stresses are zero in _____.

Q.5 For M20 concrete, the value fo f_{ck} is _____.

Q.6 In singly reinforced beam, main steel is provided in _____ zone.

Q.7 _____ are designed when dimensions of the beam are restricted.

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. 3x10=30

Q.33 Find the limiting moment of resistance of the simply reinforced section 250 mm and 500 mm effective depth. The beam is reinforced with 4-20mm diameter. Take M20 concrete and Fe415 steel?

Q.34 A beam 200mmx200mm effective is required to resist a bending moment of 20 KNm. Find the steel required, if M20 concrete and Fe500 steel are used. Assume d=40mm.

Q.35 Design a simply supported RCC one way slab to carry a factored load of 16 kN/m^2 (including self weight) on an effective span of 3.1m. Bearing on wall=300mm. use M20 grade of concrete and Fe415 grade of steel. Assume any other missing data.

Q.36 A rectangular RCC short column of size 250mmx400mm is to be designed to support an ultimate axial load of 160 KN Design suitable HYSD reinforcement in the column using M20 grade of concrete. Assume e_{min}<0.05D.

Q.8 The T-bema in which web lies above the slab is _____.

Q.9 In one way slab, main steel is provided in _____ span.

Q.10 The length of column which takes part in buckling is called _____.

SECTION-B

Note: Very short answer type questions. Attempt any ten questions out of twelve questions. 10x2=20

Q.11 List two properties of HYSD steel?

Q.12 Define limit state?

Q.13 Define nominal shear stress?

Q.14 Define balanced section?

Q.15 Define partial factor of safety?

Q.16 Define isolated T-beam?

Q.17 What do you mean by restrained slab?

Q.18 Define effective length of column?

Q.19 Define pre stressed concrete?

Q.20 Define spiral reinforcement?

Q.21 Define development length?

Q.22 Write two losses in pre stressed concrete?

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. 8x5=40

Q.23 Why is steel suitable as best reinforcing in concrete?

Q.24 Enlist any five differences between WSM and LSM?

Q.25 Describe various types of shear reinforcement used?

Q.26 Tabulate any five differences between singly reinforced and doubly reinforced beam?

Q.27 Enlist any five assumptions made in the theory of simple bending for RCC beam?

Q.28 List any five conditions where doubly reinforced beam is provided?

Q.29 Why T-beams are considered better as compared to rectangular beam?

Q.30 Write any five differences between one way slab and two way slab?

Q.31 Write the specifications for longitudinal and lateral reinforcement in column?

Q.32 Enlist five advantages of pre stressed concrete over RCC?