are M20 grade concrete and HYSD fe415 Grade reinforcement.

Q.29 What are the functions of longitudinal and transverse reinforcement?

Q.30 List the advantages and disadvantages of prestressed concrete.

Q.31 Find the area of reinforcement required for a singly reinforced beam of size 250mm x 500mm to resist the factored load of 70KN-m. Use M15 concrete and Fe 250 grade steel.

Q.32 Draw an expression for maximum depth of neutral axis.

Q.33 Write the function of vertical stirrups.

Q.34 An RCC beam 250 mm x 500 mm effective has a shear force of 300 KN. If the tensile steel 1%. Find the nominal shear stress in the beam and comment upon shear design. Resume concrete used in of M20 grade.

Q.35 Explain the concept of reinforced cement concrete and give its advantages.

Section-D

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

Q.36 Write the design steps for one way RCC slab.

Q.37 A simply supported RCC slab of a corridor of a school building has a clear span of 3.0m and is supported on beams of 230mm width. Design the slab if it is carrying the live load of 6.5kN/m^2. Use M20 concrete and Fe415 steel.

Q.38 An RCC beam 200 mmx500mm (effective) is subjected to a factored moment of 200KNm. Find the area of steel reinforcement required if m20 grade of concrete and Fe 415 steel are used. Assumed d' = 50mm.

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Roll No. .....

4th Sem.

Branch: Civil, Constr./ Mgmt./ Highway Engg.

Sub : Reinforced concrete design

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (10x1=10)

Q.1 It is preferable to measure cement in terms of

a) Volume b) Weight

c) As per choice d) None of these

Q.2 The factor of safety in working stress method for concrete indirect compression is

a) 1.78 b) 3.

c) 4. d) 2.

Q.3 Bond stress of deformed bar is

a) Less than that of plain bars.

b) More than that of plain bars.

c) Equal to that of plainbars

d) No comparison

Q.4 Partial safety factor for concrete is.

a) 1.3 b) 1.4

c) 1.5 d) 1.6

Q.5 Limiting value of moment of resistance for Fe250 is given by

a) 0.148 fck bd^2 b) 0.138 fck bd^2

c) 0.133 fck bd^2 d) 0.120 fck bd^2

Q.6 When the Loads are reversing, the beam is designed as.
a) Singly reinforced beam
b) Doubly reinforced beam
c) Under reinforced beam
d) Over reinforced beam

Q.7 A T-Beam is identical to a rectangular beam with the width equal to flange in case.
a) Neutral axis coincides with the geometrical axis of the beam
b) Neutral axis remain within the flange of the beam
c) Neutral axis remain within the web.
d) None of these

Q.8 The c/c Distance of main reinforcement bars in a slab shall not exceed
a) 250 mm b) 300 mm
c) 350 mm d) 400 mm

Q.9 For deflection control the ratio of span to depth for a simply supported one way slab is
a) 7. b) 26.
c) 20. d) 35

Q.10 Near the midspan. Of the beam the cracks are
a) Vertical b) 60 degree
c) Horizontal d) At 40 Degree

Section-B

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

Q.11 .....Bars are preferred over mild steel bars.

Q.12 .....Sections are preferred in our RCC design.

Q.13 .....Maximum spacing of shear stirrups is 0.75 d or ..... mm whichever is less.

Q.14 .....Method assumes that concrete and steel are elastic.

Q.15 IS 456-2000 recommends that ..... beam sections should be redesigned.

Q.16 Doubly reinforce beam are provided when the dimensions of the beam are .....

Q.17 The portion of the T-Beam. Below the slab is called.....

Q.18 In one way, slab bending takes place along..... Span only.

Q.19 When corners of the 2 way slabs are not held down, it is known as .....

Q.20 Not more than ..... percent of bars may be spliced at one section.

Section-C

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

Q.21 What is the difference between under reinforced and over reinforced beam sections.

Q.22 Write the design steps for a singly reinforced beam.

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

Q.24 Explain balanced, under reinforced and over reinforced beam sections.

Q25 Under what conditions the doubly reinforced beams are provided?

Q.26 Define inverted T-beam What? Why sometimes inverted T-beams are provided?

Q.27 Why distribution reinforcement is provided in one way slabs.

Q.28 A short column. 450 mm x 450 mm is reinforced with 4-20 mm diameter bars. Find the ultimate load carrying capacity of column if the minimum eccentricity is less than 0.05times the lateral dimensions. The material used