MODEL QUESTION PAPER

MFC3

I Semester M.TECH Examination, August 2011
BEHAVIOUR & DESIGN OF REINFORCED CONCRETE STRUCTURE

Time: 3 Hours Max. Marks: 75

GROUP A : Answer any three questions.

Q.1 State the basic steps involved in the concrete mix design..
Q.2 Define characteristic strength and load. Distinguish between LSM and WSM.

Q.3 Design a simply supported one-way slab with clear span of 4m and support width 230 mm. It is subjected to a live load of 4kN/m2 and surface finish of 1 kN/m2. Consider grade of concrete M20 and grade of steel Fe 415.
Q.4 Explain the working stress method for the design of Column Section.
Q.5 Design a gravity retaining wall for retaining 3m high earth above ground level whose horizontal surface is subjected to live load of surcharge ($W_{s)\ of}$ 15kN/m2. Consider unit weight of soil, W_e = 15 kN /m3, Angle of repose, Ø = 30°, Allowable bearing capacity of soil q_o = 135kN/m3, coefficient of friction at base μ =.5.

GROUP B : Answer any three questions.

Q.6 State the factors governing concrete mix design.
Q.7 Give the I.S. recommendation of development length.
Q.8 Discuss plastic concrete and hardened concrete.
Q.9 Design a square and circular column sections subjected to an ultimate axial load of 1500 kN. Consider concrete of grade M25 and steel of grade Fe 415.
Q.10 Briefly explain the steps involves in design of One way slab.

GROUP C: All Questions are Compulsory.

Q.11 Fill in the blanks

(i) In limit state of design the design strength of concrete is _____ fck..
(ii) The B.M at the center of a simply supported beam carrying a uniformly distributed load is _____.
(iii) In an axially loaded spirally reinforced short column, the concrete inside the core is subjected to _____.
(iv) The allowable compressive stress in a reinforced cement concrete wall is _____ that of RCC columns
(v) The two principal limit states are the _____ limit state and the _____ limit state.

Q.12 Multiple choice question.

(i) Foundation in which strip or isolated footings merge results in _____.
(a) Mat Foundation (b) strap footing
(c) Combined footing (d) Grid foundation.

(ii) The flexural reinforcement should not terminate normally in _____.
(a) Tension zone (b) compression zone
(c) Both of the above (d) irrelevant question

(iii) Slabs supported on walls or on beams are called _____.
(a) Flat slab (b) Waffle slab
(c) Edge supported slab (d) None of the above

(iv) In singly reinforced beams, steel reinforcement is provided in _____.
(a) Tensile zone (b) Compressive zone
(c) Both Tensile & Compressive (d) Neutral zone

(v) Live load for staircase for offices and public houses is _____.
(a) 1.5kN/m2 (b) 3.0kN/m2
(c) 2.0kN/m2 (d) 5.0kN/m2

Q.13 True or false

(i) In limit state method of design the design strength of concrete is $.446f_{ck.}$

(ii) Shear capacity of a concrete beam increases with the increase in tension reinforcement

(iii) The assumption plane section remains plane after bending is not valid for deep beams.

(iv) In a compound lever, the leverages of all simple levers is added.

(v) Deflection can be controlled by using the appropriate modular ratio.

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