Total No. of Printed Pages:1

SUBJECT CODE NO:- P-106

FACULTY OF ENGINEERING AND TECHNOLOGY

B.E.(CIVIL) Examination MAY/JUNE-2016

Design of Structures- III

(Revised)

[Time: Four Hours] **[Max Marks:80]**

"Please check whether you have got the right question paper."

N.B i) Solve any two questions from section A and B each.
ii) Use of IS: 456, IS: 3370 is allowed.
iii) Assume suitable data, if necessary & state it clearly.

Section A

Q.1 Design an interior panel of a flat slab 5.5m×6.5m. Drops are to be provided. Assume live load on the slab 4.5 KN/m^2 .Show reinforcement details. Use $M_{20,}$ Fe_{415} grades of concrete and steel respectively. 20

Q.2 Design a combined rectangular footing for the following data. 20

a) c/c distance between the columns is 3.5 m
b) column A is 400mm×400mm
Load 1000 KN
c) column B is 550mm×550mm
Load 1300 KN
d) S B C of soil =250 KN/m^2
e) Grades M_{20} , Fe_{415}
f) Width of footing restricted to 2m show the reinforcement details

Q.3 Design the vertical wall of an RCC cantilever retaining wall supporting an earth embankment 5.5m high, the top surface of which is horizontal. Unit weight of earth is 19 KN/m^3 and has an angle of repose 30° . The bearing capacity of soil is 220 KN/m^2 Also check the stability of retaining wall. Use M_{20} and Fe 500 grades 20

Section B

Q.4 a) A circular slab is to be provided for a room circular in plan having a diameter of 8m.The live load on the slab in 3KN/ m^2 Assuming partial fixity at the supports. Design the slab, use M_{20} and Fe 415 grades. Also show reinforcement detailing. 10

b) Explain advantages and disadvantages of prestress concrete construction. 07

c) What are the principles of prestressing? 03

Q.5 A rectangular tank of size 3.7m×4.5m and 4.0 m in height is supported by a four column of height 12m. The columns are having independent footing and their base may be considered as fix. If the self-weight of the water tank be 350 KN and weight of water 700 KN in tank. Design the supporting tower allowing for wind load of 1.5 KN/m^2 Adopt M_{20} and Fe 500 grades. 20

Q.6 a) Design the formwork for the beam for the following data. 16

i) Thickness of floor:120mm
ii) Centre to Centre spacing of beams=3m
iii) Width of beam=300mm
iv) Height of ceiling of the roof=4m

Take live load on sheathing 4000 N/m^2 and dead weight of wet concrete as 26.5 KN/m^3

b) Distinguish between 04

i) Internal and External prestressing
ii) Partial and full prestressing
iii) Linear and circular prestressing
iv) Pre-tensioning and post-tensioning.