## [Total No. of Printed Pages:2] CODE NO:- Z-60

FACULTY OF ENGINEERING \& TECHNOLOGY

## B.E (Civil) Year Examination - May - 2015

## Design of Structures-III

(Revised)
[Time: Four Hours]
[Max. Marks: 80]
"Please check whether you have got the right question paper."
i) Solve any two questions from section A \& B each
ii) Use of IS: 456, IS:3370, IS: 875 is permitted
iii) Assume suitable data if required and mention it clearly.

## SECTION-A

a) State the situations in which trapezoidal \& rectangular footing design is preferred. ..... 03
b) Design a combined rectangular tooting for the following data. ..... 17
i) c/c distance between the columns is 3.7 m
ii) column A is $400 \mathrm{~mm} \times 400 \mathrm{~mm}$ with load 1000 kN
iii) Column B is $500 \mathrm{~mm} \times 500 \mathrm{~mm}$ with load 1300 kN
iv) $\quad \mathrm{SBC}$ of soil $220 \mathrm{kN} / \mathrm{m}^{2}$
v) Grades - $\mathrm{M}_{25}$ and $\mathrm{Fe}_{415}$
vi) Width of footing $=1.8 \mathrm{~m}$
Show reinforcement detailing
Q. $2 \quad$ What are the advntages of flat slab construction. Design an interior panel of $6 \mathrm{~m} \times 7 \mathrm{~m}$ of a flat slab to 20 carry a live load of $3.5 \mathrm{kN} / \mathrm{m}^{2}$ and floor finish of $10 \mathrm{kN} / \mathrm{m}^{2}$. Draw a neat sketch to illustrate the details of reinforcement


## SECTION-B

Q. 4 a) Explain magnet Blaton system of prestressing using neat sketch 09
b) Differentiate between pretensioning and post tensioning methods of prestressing. 08
c) State the principles of prestressing. 03
Q. 5 a) Design a circular water tank of capacity 200,000 litres. The depth of the tank is limited to 3 m from 07 inside. Keep the joint between the wall and the base slab as flexible. The base slab rests on ground use $\mathrm{M}_{30}$ concrete.
b) Design a R.C.C. water tank having the following data.
i) Inner plan dimension $=3.5 \mathrm{~m} \times 6 \mathrm{~m}$
ii) Depth of water in tank $=3.2 \mathrm{~m}$
iii) Free board $=0.2 \mathrm{~m}$
iv) $\quad \mathrm{M}_{25}$ and $\mathrm{Fe}_{415}$ grades
v) $150 \mathrm{~mm} \times 150 \mathrm{~mm}$ splays are provided at junctions of walls and base slab.
Q. 6 a) Design a circular slab for a room of 6 m effictive diameter with fixed edges. Total superimposed load on 07 the slab is $6.0 \mathrm{kN} / \mathrm{m}^{2}$. Use $\mathrm{M}_{20}$ \& $\mathrm{fe}_{415}$ grades show reinforcement detailing
b) Design the forwork for the beam and slab floor, for the following data.
i) Thickness of floor -120 mm
ii) Centre to centre spacing of beams -3 m
iii) Width of beam is 300 mm
iv) And depth 400 mm below slab
v) Height of ceiling of the roof $=4 \mathrm{~m}$ above floor
vi) Live load $=4 \mathrm{kN} / \mathrm{m}^{2}$
vii) Dead weight of concrete (wet) as $26.5 \mathrm{kN} / \mathrm{m}^{2}$

