

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-216
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (Civil)
Elective-II: Advanced Structures
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

N.B

Please check whether you have got the right question paper.

- 1) Solve any two questions from each section.
- 2) Use of IS 456, non-programmable calculator is allowed.
- 3) Assume suitable data if necessary & state it clearly.

Section A

- Q.1 A building rests on six columns 500mm diameter & arranged as shown in fig.1. Each central column carried a load of 800 KN & the end column carry 500KN each. Design main beam ABC & secondary beam BE of the raft foundation. Considering total wind load moment of 1200 KN-m. SBC of soil is 75 KN/m² use M₂₀ & Fe₄₁₅. 20

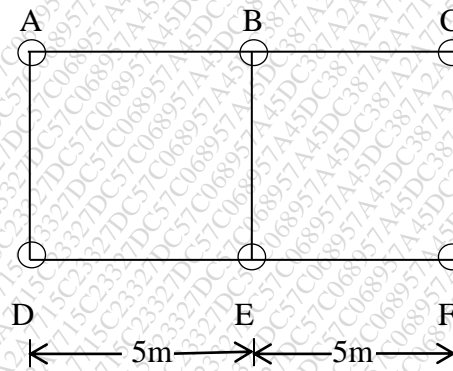


Fig.1

- Q.2 A 600mm square column is supported on four piles of 250mm diameter each. The Centre of each pile is located at a distance of 0.5m from the central column. The column carries a service load of 1000KN & moment of 75KN-m. There is a moment of 250KN-m due to wind acting in any direction at a time. Design the pile cap use M₂₀ , Fe415. 20
- Q.3 Design a beam for a circular hall of 5m radius supported on eight supports. The slab is carrying load of 5KN/m² & floor finish at 1.5 KN/m². Beam is also subjected to a brick masonry load having 2.5m height. K₁=0.066, K₂=0.033, K₃=0.005, $\phi = 9.5^\circ$. Show reinforcement details. 20

Section B

- Q.4 a) Explain following terms with reference to bridges 12
- 1) IRC loading
 - 2) Ground contact area
 - 3) Dispersion of load along span
 - 4) Distribution of wheel load on slab
- b) Derive the relation for edge shear in folded plates. 08
- Q.5 a) Explain various types of transmission towers & their utility in load resistance 10
- b) Explain following terms 10
- 1) Solidity ratio
 - 2) Guyed towers
 - 3) Lattice towers
- Q.6 a) Explain design procedure of deep beam by IS code & British code. 10
- b) A beam 3500 mm deep & 250mm wide continuous over 3m spans & carries Udl. Service load of 160 KN/m & is supported on walls of 600mm thick on each end. Use M_{20} , Fe_{415} . Design deep beam. 10