

SUBJECT CODE NO:- P-314
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E. (Civil) Examination May/June 2017
Advanced Structures [Elective-II]
(Revised)

[Time: Four Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Attempt any two question's from each section
- ii) Use of IS 456 : 2000 is allowed
- iii) Use of Non-programmable calculator is allowed
- iv) Assume suitable data it required & state it clearly

Section A

Q.1 Fig-1) shows a layout of the columns of building. The outer columns are 400×900 mm in size & carry a load of 600kN each. The inner column are 450×450 mm in size & carries a load of 800kn each. In addition to this it is subjected to moment of 1000 kN-m due to wind load along the length of the building SBC of soil is 100 kN/m². Use m₂₀ & Fe₄₁₅ grade steel. 20

Design the following

- i) Slab
- ii) Secondary beam BE
- iii) Calculate the loading on main beam ABC

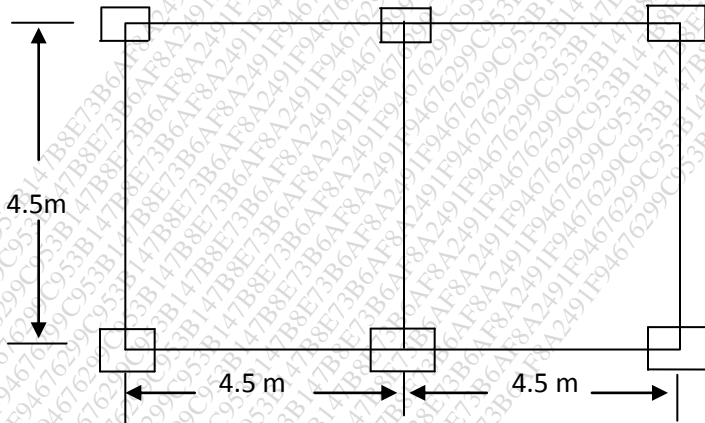


Fig -1

- Q.2 a) Design a pile of a foundation to carry an axial load of 500kN. The pile is to be driven to a hard stratum, which is available at a depth of 8.5 m. Use M₂₅ & Fe₄₁₅ grades 10
- b) Design a pile cap supported by three piles 250 mm ×250 mm in size. The center to center distance between piles is 1.4 m. the load coming on pile cap of a column 450 mm ×450 mm in size is 700kN Use M₂₅ & Fe₄₁₅ grades. show reinforcement detailing 10

Q.3 A curved beam is in the form of a full continuous circle in plan with a radius of 4 m & supported continuously on six supports. The beam carries a Udl of 2.5 kN/m, inclusive of its own weight. Determine the B. M. twisting moment & shear force at salient locations & plot B. M, T. M. & S. F. diagrams

No. of supports	2θ	C_1	C_2	C_3	ϕ
06	60°	0.089	0.045	0.009	12.75°

Section B

- Q.4 a) Explain the following terms with reference to bridges. Distribution of wheel load on slab, Dispersion of load along span, ground contact area 12
- b) Explain various types of transmission towers & their utility in load resistance 08
- Q.5 a) What are types of folded plates their components & their action & assumption made in analysis of folded plate? 12
- b) Derive the relation for edge shear in folded plates 08
- Q.6 a) Design a deep beam 300 mm wide & 4 m deep, simply supported over a clear span of 6 m. the beam carries a live load of 160KN/m at the service state & is supported on walls of 600 mm thick on each end. Use M_{20} concrete & Fe_{415} steel having permissible tensile stress of $230N/mm^2$. Show reinforcement details 12
- b) Compare the design of deep beam by British & American code 08