

“Please check whether you have got the right question paper.”

- i) Solve any two questions from each section.
- ii) Uses of ZS 456 & non-programmable calculator is allowed.

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 600 KN each .The inner columns are 450×450 mm in size & carries a load of 800KN each . In addition to this it is subjected to moment of 1000KN-m due to wind load acting along the length of building & SBC of soil is 100KN/M².Use M20 Fe 415 grade steel

Design the following

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

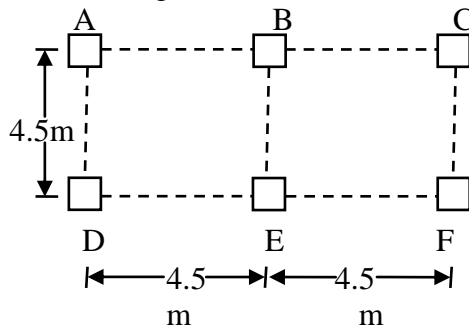


Fig.1

Q.2 a) Design a pile under a column transmitting an axial load of 600KN .The pile is to be driven to a hard stratum available at depth of 8m .Use M₂₀ concrete & Fe 415 steel. 10

b) A.R.C column 400mm×400mm carrying a load of 600KN is supported on three piles 400mm×400mm in section .The centre to centre distance between the piles is 105m. Design a suitable pile cap .Use M₂₀concrete & Fe 415 steel .Show reinforcement detailing. 10

Q.3 A cylindrical water tank is 6.5 m in diameter. Contains water upto a height of 2.8m excluding free bound .Tank rests on a ring beam at a bottom 6.5m in diameter .Dead weight of various components of water tank excluding water load transferred to ring beam is 50 kn/m Design the ring beam .Use free board 0.2m .Use M₂₀& Fe 415 . The ring beam is supported by eight beam is supported by eight symmetrically placed columns . 20

No. of Columns	2∅	β _s	β _m	β _T	∅
8	45	0.066	0.033	0.005	9.5°

Show the reinforcement details.

SECTION-B

- Q.4 a) Explain the following terms with reference to bridges. 12
- i) Distribution of wheel load on slab
 - ii) Dispersion of load along span
 - iii) Ground contact area
 - iv) IRC loading
- b) Derive the relation for edge shear in folded plates. 08
- Q.5 a) What are types of folded plates, their components & their action & assumption made in analysis of folded plates. 10
- b) Explain various types of transmission towers & their utility in load resistance. 10
- Q.6 a) A reinforced concrete deep girder is continuous over spans of 9m apart from Centre to center. It is 4.5 m deep, 300mm thick & the columns are 900mm in width. If the girder supports a uniformly distributed load of 200kN/m including its own weight design the beam, using M_{20} concrete & Fe415 steel. Show reinforcement detailing. 12
- b) Compare the design of deep beam by British code & American code 08