GUJARAT UNIVERSITY QUESTION BANK
(B.E. CIVIL ENGINEERING SEMESTER-VIII)

SUBJECT: Design of Special Structures (E.P.-II)

Questions (1 to 4) – 10 Marks Each

Questions (5 to 13) – 40 Marks Each

Q. 1.	Differenciate between bunker and silo.	**10**
Q. 2.	Explain various forces acting on transmission line towres.	**10**
Q.3.	Explain uses of Pigaud's curves in detail.	**10**
Q. 4.	Explain types of superstructure and substructure for bridges in detail.	**10**
Q. 5.	Check the adequacy of dimension of a pier with circular end for following data: Span of bridge = 22 m, Top width of pier = 2.2 m Height of Pier = 8 m, High flood level = 1.0 m below bearing level Side batter = 1 in 10, Consider 3 longitudinal girders of 1.8 m depth and 0.3 m width. Thickness of slab = 200 mm, consider Two lane road	**40**
Q. 6.	The foundation for substructure of a bridge consists of 16 piles to carry a load of 4800 kN. The piles are spaced at 1.2 m c/c distance. They are driven through soft ground to hard strata at a depth of 12 m. Design the pile foundation using M-20 grade concrete and Fe-415 grade steel/ Permissible stresses in concrete in compression is 5 MPa. Permissible stresses in steel in tension is 230 MPa, permissible stress in concrete in bending compression is 7MPa. Sketch reinforcement Detailing.	**40**
Q.7.	Design a mild steel rocker steel bearing for transmitting the superstructure load of 2500 kN. Take allowable pressure on bearing block = 165 MPa, Permissible bending stress = 100 MPa, Permissible shear stress = 100 MPa.	**40**
Q. 8.	Design and detail longitudinal and cross girder of reinforced concrete T-Beam girder bridge without footpath for following data. Clear width of road way = 7.5 m Span of bridge = 20 m (c/c between bearings) Average thickness of wearing coat = 80 mm Use M-20 grade concrete & Fe-415 grade steel Assume other relevant data if necessary.	**40**
Q.9.	Design and detail longitudinal and cross girder of reinforced concrete T-Beam girder bridge without footpath for following data. Clear width of road way = 7.5 m Span of bridge = 16 m (c/c between bearings) Average thickness of wearing coat = 75 mm Use M-25 grade concrete & Fe-415 grade steel Assume other relevant data if necessary.	**40**
Q.10.	A cylindrical silo has ab internal diameter of 8.0 m and depth of 30 m. Material to be stored is coal. Design and detail the silo for following data.	**40**

Density of coal = 9kN/m^3, Angle of repose = 30^0, Co-efficient of friction = 0.33, Ratio of horizontal to vertical pressure intensity = 0.3

Q.11. Design a circular bunker for storing 80 Tonnes of coal if the density of coal is 9 kN.m^3. **40** consider angke of repose = 30^0. Also design supporting columns and draw reinforcement detailing.

Q.12. A cylindrical silo has ab internal diameter of 8.0 m and depth of 30 m. Density of Material **40** to be stored is sulpher. Design and detail the silo for following data.
Density of Sulpher = 12 kN/m^3, Angle of repose = 30^0, Co-efficient of friction = 0.33, Ratio of horizontal to vertical pressure intensity = 0.3

Q.13. Design a circular bunker for storing 80 Tonnes of Sulpher, if the density of material is 12 **40** kN/m^3. Consider angke of repose = 30^0. Also design supporting columns and draw reinforcement detailing.

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