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M.Tech. 3rd Semester (Civil Engg.) Specialization in Structural Design Examination, May–2017

DESIGN OF STRUCTURES–III

Paper–MTSD-301

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt **five** questions in all. All questions carry equal marks. Assume data, if missing.*

1. Design a rectangular bunker of 12 m length and 5 m width supported on eight columns arranged in two rows to store coal of density 10KN/m^3 and angle of internal friction 35°.

   Height of vertical portion = 4m

   Height of Hopper = 4m 20

2. Derive expression for horizontal pressure on the walls of silos using Janssen's Theory. 20

3. Give a brief description of lining types for chimneys. 20

4. A self supported chimney is 60 m high and has a diameter 3 m at top. Design base plate and anchor bolts of the chimney. Assume necessary data. 20

5. Explain the different loads taken into consideration while designing a marine structure. 20

6. A cylindrical silo has an internal diameter of 4.5 m and 20 m deep filled with wheat weighting 8.5 KN/m^3. Angle of repose is 25° and coefficient of friction between wall and wheat is 0.44. Ratio of horizontal to vertical pressure is 0.40. Determine lateral pressure intensities at intervals of 2 m and plot the variation with depth. 20

7. (a) Write a short note on the types of foundation for marine structure. 10

   (b) Name special composite materials for under water construction. 10

8. Explain :

   (a) Flood atterns

   (b) Design steps of bottom core of bunkers. 20