PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech. Winter 2019 - 20 Examination

Semester: 2   Date: 19/12/2019
Subject Code: 203209187   Time: 2:00 pm to 4:30 pm
Subject Name: Design of Industrial Structures   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

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Q.1	A) What are the checks to be carried out for stability analysis of foundation of a chimney? Explain any one in detail.	**(05)**
	B) State the factors to be considered for the planning and site selection of an industrial building.	**(05)**
	C) Explain how the analysis of bunker wall and silo wall is different.	**(05)**
Q.2	**Answer the following questions**. (Attempt any three) (Each five mark)	**(15)**
	A) Which IS code is referred for chimney design, according to the provision. Give a brief about specifications regarding the dimensioning of a self-supporting chimney	
	B) Explain various components of a gantry girder with suitable sketches.	
	C) Compute the collapse load in portal frame shown in Figure 1.	
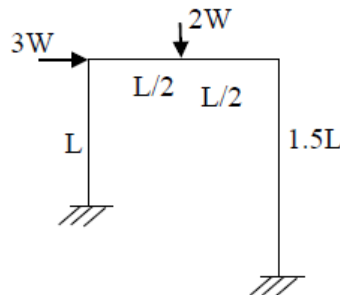
Figure 1

D) Sketch and explain cross sections and longitudinal profiles for gantry girders.

Q.3	A) Find longitudinal stresses on the hopper bottom for the circular silo to store cement, If Vertical Pressure, Pv = 70 kN/m^2, Height of silo = 10 m, Height of hopper = 4.5 m, Slope of hopper = 2.175 in 1, Internal dia. of silo = 4 m, Bulk density of cement = 15.5 kN/m^3, Angle of internal friction = 25°.	**(07)**
	B) A circular water tank has outer cylindrical wall 15m diameter, 4m high, supporting shaft 2.5m diameter. Design the top dome and top ring beam. Use M30 concrete grade.	**(08)**

OR

	B) Design a gantry girder considering following data: Crane capacity = 180 kN, self-weight of crane girder = 180 kN, self-weight of trolley = 30 kN distance between crane hook and the gantry girder = 1 m, wheel base = 3 m, c/c distance between gantry rails = 15 m, span of gantry girder = 6 m, self-weight of rail section = 280 N/m, diameter of crane wheels = 125 mm. Checks for buckling and deflections are not required. Connections design is not required.	**(08)**
Q.4	A) Derive the value of stresses generated in steel and concrete due to temperature in a RCC Chimney.	**(07)**

OR

	A) Design an elevated cylindrical tank with conical bottom of 180000 capacity. Roof type is conical for the tank. The ring bean of the tank is at a height of 10 m from GL. Tank is to be built at Delhi.	**(07)**
	B) Design a bunker wall of 220 mm thick to resist moment of 50 kNm. Perform all necessary checks.	**(08)**