



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

	In Sem Examination-I Winter 2023		
	Exam Seat No.:		
	Academic Year:2023-2024	Semester: I	
	Name of Programme: M. Tech	Pattern: 2022	
	Name of Course: Elec -.I Advanced Design of Steel Structures	Course Code: CIV225104 a	
	Max. Marks: 30	Duration: 1 Hrs.	

	<ol style="list-style-type: none">1. This question paper contains 2 page(s).2. Answer to each new question is to be started on a new page.1. Assume suitable data wherever required, but justify it.2. Draw the neat labelled diagrams, wherever necessary.3. Use of electronic pocket calculator and relevant IS code are allowed.	
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Question No. 1 Attempt following Question

- a) Explain stepwise procedure for analysis of Hoarding structure. (5) CO1

OR

- b) What is castellated beam? Explain different failure modes of Castellated beam. (5) CO1
- c) Calculate the wind pressure and design forces on hoarding of 10 m long and 5m in height to be fixed at the roof of 24 m high building near Delhi. The base of the hoarding board is 2 m above the roof level.. Consider terrain category-3. (10) CO1

OR

- d) (10) CO1
- Design a castellated beam of span 16 m. is to carry an imposed load 4 KN/m and dead load 4 KN/m. Check for elastic shear stress, combined moment & shear.**

Question No. 2 Attempt following Question

- a) Explain with neat sketches three different types of microwave tower configurations (5) CO2

OR

- b) Explain step-by-step procedure for analysis of a microwave tower. (5) CO2

c)

A 50m high microwave antenna lattice tower is to be built near madras, the terrain at the site is nearly a level ground with terrain of category 2. The top portion of towers is 10 m height straight & remaining three segment are 10m, 15m & 15m heights respectively below the top segment. The tower has to carry 3m dia. hemispherical disc antenna at top. Determine the maximum compressive and tensile force in the leg at the base and also maximum shear at the base, for following data.

1. Width at top of tower = 3m.
2. Width at bottom of tower = 6m
3. Weight of platform at top = 0,80 KN/m² (10) CO2
4. Weight of railing at top = 0.25 KN/m
5. Weight of ladder & cage = 0.60 KN/m.
6. Weight of antenna disc = 8.50 KN.
7. Self-weight of tower = 4.50 KN/m.
8. Weight of miscellaneous item = 2.5 KN

OR

- d) The design factored forces coming in member of a microwave tower are 170 KN tensile force, and 85 KN compressive force. Design a double angle section back-to-back on opposite faces of 8 mm thick gusset plate with M20 black bolt of 4.6 grade of steel. Take length of member as 3m c/c. Draw the design sketch. (10) CO2