

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

MTech-I Semester (Civil)

COURSE CODE (CREDITS): 11MIWCE113

MAX. MARKS: 35

COURSE NAME: Design of Reinforced Concrete Structure

COURSE INSTRUCTORS:

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	Mark s
Q1	Design a single span deep beam with the following data: Effective Span = 6m Overall Depth (D) = 6m Width of Supports = 0.6m Width of beam (b) = 0.4 m Uniformly Distributed Load (Including Self Weight) = 400kN/m Concrete = M20 Grade Reinforcement = Fe 415 HYSD Bars	7
Q2	A Vierendeel girder spanning over 12m has six bays of 2m each. The vertical struts connecting the top and bottom chords are 2m in height. The girder supports loads of 10 kN each at each of nodes. Analyze the forces in the members of girder using any approach (Either Naylor's Moment Distribution/ Statically Determinate Analysis).	7
Q3	A concrete chimney of height 80m with an external diameter of shaft being 4m at top and 5m at bottom is required in a place where wind intensity is 1.5kN/m ² . Thickness of Fire Brick Lining is 10cm, temperature difference between inside and outside is 75deg and permissible bearing pressure on soil is 150kN/m ² . Adopt M25 concrete grade mix and tor steel Fe415 grade, design the base section and foundation for chimney.	7
Q4	In what situations, would you recommend the use of reinforced concrete trusses for the roofing system of structures? Mention their advantages. Also explain briefly the constructional features of reinforced concrete roof trusses indicating material requirements.	4
Q5	Discuss the following in reference to design of Reinforced Concrete Structures: (i) Control of Cracking and Estimation of Crack Widths according to IS code	4

	(ii) Methods of Fire resistance determination of RC slabs	
Q6	Explain the following in reference to design of Reinforced Concrete Structures: (i) Estimation of Short Term and Long Term Deflections (ii) Strong - Column Beak Beam Design Philosophy (iii) Design of Shear Walls and its various components	6

UNIT TEST 3 EXAMINATION, Dec-2024