B.M.S. College of Engineering, Bengaluru-560019

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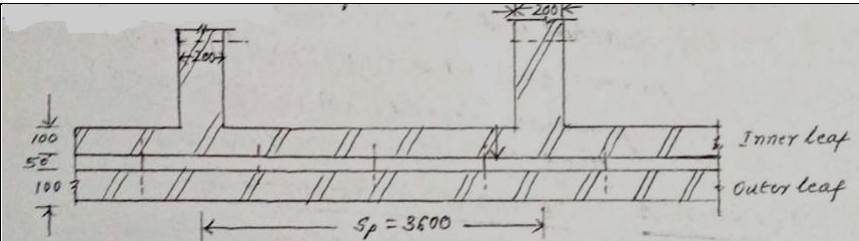
June 2025 Semester End Main Examinations

Programme: B.E.   Semester: VI

Branch: Civil Engineering   Duration: 3 hrs.

Course Code: 23CV6PESMA / 22CV6PESMA   Max Marks: 100

Course: Structural Masonry

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.
3. Use of IS 1905 code book is permitted.

			UNIT - I	CO	PO	Marks
1	a)		List the various ingredients of good brick earth and explain their role played in imparting quality to the brick	CO1	PO 1	**10**
	b)		List out the various tests and standard values recommended in IS 1077 for evaluating the quality of burnt clay bricks. Explain any one test in detail.	CO1	PO1	**10**
			OR			
2	a)		"Engineered Masonry can be a feasible alternative for low to moderate height buildings in the Indian context". Support this statement with suitable justification and illustrations	CO 1	PO 1	**10**
	b)		The Table below shows the values obtained after testing in the lab from two vendors. Determine the compressive strength, water absorption. Comment on the results of concrete block and conclude as to from which vendor has be chosen;	CO 1	PO 2	**10**

Vendor	Load at Failure in compression (N)	Initial and Final weight after 24 hours	Dimensions (Lx B xD) in "mm"
Vendor A	180000	25500 g & 25690g	400x150x200
Vendor B	300000	25575 g & 25800 g	401x151.5x200
Vendor C	175000	25715 g & 25835 g	400x151x200

			UNIT - II			
3	a)		Elaborate on the common workmanship mistakes/ errors that are seen in masonry construction.	CO 2	PO 1	**10**
	b)		List out the several factors that govern the compressive strength of masonry. Explain any two factors in detail	CO 2	PO 1	**10**
			OR			

				CO 2	PO 1	**10**
4	a)	With sketches, Explain the following • Solid wall with piers • Cavity wall • Faced wall • Veneered wall				
	b)	A brick masonry prism is made of 5 bricks joined by mortar of thickness 15mm. The brick is 75mm thick. Ther prism is subjected to uniform vertical stress of 4MPa. The brick has a modulus of 550MPa and mortar has a modulus of 8500MPa. Determine the horizontal lateral stress in brick and mortar. Assume the poisson's ratio of brick and mortar=0.10		CO 2	PO 2	**10**
		UNIT - III				
5	a)	Explain in detail how the shear strength of masonry evaluated using Diagonal tension test?		CO 2	PO 1	**10**
	b)	How is the flexural bond strength of masonry evaluated? Explain in detail		CO 2	PO 1	**10**
		OR				
6	a)	Explain as to how the shear strength of masonry is determined by triplet test?		CO 2	PO 1	**10**
	b)	Discuss the various factors affecting the bond strength of masonry.		CO 2	PO 1	**10**
		UNIT - IV				
7	a)	Explain in detail the box action observed in masonry building subjected to earthquake		CO 3	PO 1	**10**
	b)	With sketches, describe the various modes of introducing reinforcement in masonry		CO 3	PO 1	**10**
		OR				
8	a)	Explain the following i. Confined Masonry ii. Role of different bands in masonry		CO 3	PO 1	**10**
	b)	Describe the failure mechanisms of masonry domes and arches		CO 3	PO 1	**10**
		UNIT - V				
9	a)	Design an interior wall of a three storeyed building, the ceiling height of each wall being 3250mm. The wall is stiffened by intersecting walls 200mm thick at 3600mm c/c as shown in Fig Q 9(a). Assume loading from roof = 17.5 kN/m. loading from each floor = 13.5kN/m.		CO 4	PO 3	**20**

Fig 9(a)

			OR			
	10	a)	An interior solid wall of a two storeyed building is 230mm thick with a ceiling height of 3650mm which is constructed with brick of 10MPa strength and H1 type mortar. The wall is restrained at top and bottom. Solve for permissible compressive stress. What is the change in permissible compressive stress if eccentricity of 57.5mm is present?	CO 4	PO 2	**10**
		b)	Explain the following i. Stress reduction factor ii. Shape modification factor iii. Increase in permissible stress for eccentric loads iv. Area Reduction factor	CO 4	PO 1	**10**

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