K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109
DEPARTMENT OF CIVIL ENGINEERING
SESSION: 2023-2024 (EVEN SEMESTER)
II SESSIONAL TEST QUESTION PAPER
SET-B

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Degree	: B.E	Semester :	VIII
Branch	: Civil Engineering	Course Code :	18CV81
Course Title	: Design of Pre stressed concrete Elements	Date :	06|05|2024
Duration	: 90 Minutes	Max Marks :	30

Note: Answer ONE full question from each part.

Q No.	Question	Marks	K-Level	CO mapping
PART-A				
1(a)	**Explain** the IS code method of determining the ultimate moment of resistance of rectangular and flanged section PSC members.	5	K2 Understanding	CO2
(b)	A post-tensioned bonded pre stressed concrete beam of T section has a flange width of 1400mm and thickness of flange is 200mm. The thickness of rib is 300mm. The area of high tensile steel is 8000mm^2, located at an effective depth of 1800mm. If the characteristics strength of concrete and steel are 40 N/mm^2, 1600 N/mm^2 respectively. **Determine** the flexural strength of T section.	10	K3 Applying	CO3
OR				
2(a)	**Explain** the different types of flexural failures of PSC beam.	5	K2 Understanding	CO2
2(b)	A Pre-Tensioned PSC beam of I section with 160mmx70mm flanges with thickness of web 70mm and overall depth is 650mm. The beam is pre stressed with 4-HTS wires of 7mm diameter at an effective depth of 265mm. If the characteristics strength of concrete and steel are 40 N/mm^2, 1600 N/mm^2 respectively. **Determine** the flexural strength of I section.	10	K3 Applying	CO3
PART-B				
3(a)	**Explain** the ways of improving the shear resistance of Structural concrete members by pre stressing technique.	5	K3 Applying	CO2
(b)	The support section of pre stressed concrete beam of rectangular section 230mm x500mm, supports a super imposed load of 10kN/m excluding the self-weight spanning over 10m. The cable is parabolic with maximum eccentricity of 75mm at center of span and zero at supports. **Design** the shear reinforcement using	10	K3 Applying	CO3

	IS-code recommendations for the following data. The pre stressing force is 150 kN , f_{ck}= 40 N/mm^2 ,Density of concrete is 24 kN/mm^3 and f_y is 415N/mm^2.				
	OR				
4(a)	**Explain** the modes of shear failure.	5	K3 Applying	CO2	
(b)	The support section of PSC beam (150mmx300mm) is to resist a shear of 150kN. The pre stress at centroidal axis is 5 N/mm^2, f_{ck}= 40 N/mm^2.The cover to the tension reinforcement is 45mm. Check the section for shear and **Design** suitable shear reinforcement ft=1.5 N/mm^2.	10	K3 Applying	CO3	

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