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Reg. No.: Question Paper Code B.E./B.Tech. DEGREE EXAMINATIO Sixth Semester Civil Engineerin CE 8601 — DESIGN OF STEEL STRU (Regulations 201) Time: Three hours Use of IS 800 is perm Answer ALL questive PART A — (10 × 2 = 20) 1. Mention are the two methods used for designed. 2. State allowable stress for designed. 3. List the three main types of fasteners used in the state of the structure of the structure of the structure. What is the concept of shear lag in bolted considered to the structure. Sixth Semester of the structure of the structure of the structure of the structure. PART A — (10 × 2 = 20) 1. Mention are the two methods used for designed of the structure of the structu	NS, APRIL/MAY 2023. CTURAL ELEMENTS
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10. Compare laterally supported and laterally u PART B — $(5 \times 13 = 65)$	
PART B — $(5 \times 13 = 65)$	
	supported beams.
11 (a) Design a laterally supported hot-rolled	marks)
The beam will support a uniformly dis be made of grade S355 steel. Use the a assume a live load factor of 1.5 and a contract of the same o	llowable stress design method and
Or	
(b) Discuss the design of angle tension a structures using the allowable stress d	
	esign method.
	esign method.

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	12.	(a)	(i) Describe the different modes of failure that can occur in bolted welded connections.	and (7)
			(ii) How can mode of failures be prevented during the design construction process?	and (6)
			Or	
		(b)	Design a bolted connection for two plates that are 10 mm thick 150 mm wide. The connection will be subjected to an axial load of 50 and will use grade 8.8 bolts. Assume that the bearing strength of bolts is 200 MPa and the allowable stress on the plates is 165 MPa.	kN
	13.	(a)	(i) Discuss the design of built-up tension members.	(7)
			(ii) Explain the advantages and limitations of using built-up tens members.	sion (6)
			or Three hours.	
		(b)	A built-up tension member consists of two L-shaped angles connected a gusset plate. The member is required to carry a tensile load of 120 Determine the minimum size of the angles and gusset plate require the allowable tensile stress is 150 MPa. Assume a bolt diameter of 16 and a bolt spacing of 50 mm.	kN. d if
	14.	(a)	(i) Explain the design of axially loaded solid section columns.	(7)
			(ii) Discuss the advantages and limitations of using solid sectoriumns.	tion (6)
			Define stenderness ratio of a tense of	3
		(b)	A built-up column consists of four ISA $100 \times 75 \times 8$ angles and two 10 think gusset plates. The length of the column is 3.5 m and it is required to carry a compressive load of 200 kN. The allowable compressive stricts 150 MPa. Determine the minimum size of the gusset plates required	red
	15.	(a)	(i) Discuss the design of plated beams with cover plates.	(7)
			(ii) Explain the advantages and limitations of using cover plates.	(6)
			be made of grade 5355 sized for the allowable seres design as a second a live load factor of 1.25	
		(b)	Explain the step by step perceive of design of laterally unsupported rosection as per IS.	lled
			structures using the allowers stress design archiva.	
			2 503	345
4				

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