

SECTION - D

8. Compute the design flexural strength of a plate girder which consists of an 8×1800 mm web and 30×450 mm flanges. Use grade 410 steel and assume that the compression flange is continuously supported. 15
9. A welded plate girder for a simply supported bridge deck with clear span of 20m. Subjected to the following. 15

Dead load including self weight = 20 kN/m

Imposed load = 10 kN/m

Two concentrated load of 600 kN each at the top flange at $1/3^{\text{rd}}$ points from secondary beam. The effective span of the girder is 15m. The compression flange of the girder is laterally unsupported. Design horizontal and vertical stiffeners. Assume $f_y = 260$ N/mm².

3522- (P-4)(Q-9)(22) (4)

Roll No.

3522

B. Tech 7th Sem. (Civil)
Examination - February, 2022

ADVANCED STEEL STRUCTURE

Paper : PCC-CE-403-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Questions No. 1 is *compulsory*. Each question carries equal mark (15 marks). Students have to attempt 5 questions in total at least *one* question from each section. Use of IS 800- 1984 or 2007, IS 875-1987 and IS 801-1975 is allowed. Use of Steel Table is allowed. Assume suitable data.

1. Explain the following : 6 × 2.5 = 15
- (a) Explain moment resistance connections ?
- (b) What do you mean by Local buckling of thin elements

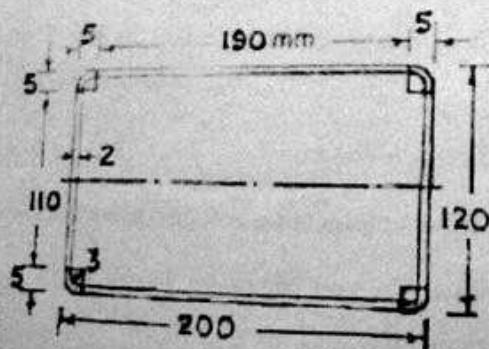
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- (c) Why intermeditated transverse stiffeners are provided? Explain.
- (d) Which section is best suited for a purlin?
- (e) Discuss different component of stack.
- (f) What is an end post?

SECTION - A

2. Design the corner connection between a column and a beam both having ISMB 300 size with Fe 410 steel. The factored moment and shear acting on the connection are 120 kNm and 300 kN respectively. 15
3. Find the allowable load for the rectangular tubular column section shown in fig. the effective length of the column is 3.6m. Take $f_y = 235 \text{ N/m}^2$ 15



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SECTION - B

4. Design the angle purlin for the following specifications : 15
- Span of truss = 9m c/c.
- Pitch = 1/5 of span
- Spacing of purlin = 1.4 c/c.
- Load from roofing material = 200 N/m².
- Wind load = 1200 N/m².
5. What do you mean by Microwave tower? What are design procedure and specification for the design of Microwave tower? 15

SECTION - C

6. Design an rectangular steel tank of 1,00,000 litres capacity. The height of columns of staging is 14m. Take wind intensity of 1.6kN/m³. 15
7. Design for guyed steel stack of height 60m above the foundation with two collar set. The diameter of the cylindrical part of the chimney is 2.5m. The foundation has to rest on medium soil having bearing capacity of 190 kN/m². The chimney has one breech opening the topography at the site is almost flat, and the location is of terrain category 2. 15

3522- (P-4)(Q-9)(22) (3)

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