



# PRESIDENCY UNIVERSITY

BENGALURU

Roll No.																			
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## Mid - Term Examinations - MARCH 2026

Date: 10 - 03- 2026

Time: 02:00pm - 03:30pm

<b>School:</b> SOE	<b>Program:</b> B.Tech Civil Engineering		
<b>Course Code:</b> CIV3004	<b>Course Name:</b> Design of Structural Steel Elements		
<b>Semester:</b> VI	<b>Max Marks:</b> 50	<b>Weightage:</b> 25%	

CO - Levels	C01	C02	C03	C04	C05
<b>Marks</b>	<b>10</b>	<b>20</b>	<b>20</b>		

### Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

### Part A

Answer ALL the Questions. Each question carries 2marks.

5Q x 2M=10M

1	List any 2 advantages of using structural steel.	2 Marks	L1	C01
2	Name the different grades of structural steel.	2 Marks	L1	C01
3	List any 4 types of rolled steel section.	2 Marks	L1	C01
4	State any 2 objectives of doing design of structural steel.	2 Marks	L1	C01
5	Name the 2 limit states in Limit State Method.	2 Marks	L1	C01

### Part B

Answer the Questions.

Total Marks 40M

6.	a.	Summarize the advantages and disadvantages of bolted connection.	10 Marks	L2	C02
<b>Or</b>					
7.	a.	Explain the different types of bolted connections with a neat sketch.	10 Marks	L2	C02

8.	a.	Design a lap joint to connect two plates each of width 100 mm, if the thickness of one plate is 12 mm and the other is 10 mm. The joint has to transfer a factored load of 100kN. The plates are of Fe410 grade. Use bearing type of bolts and draw connection details.	10 Marks	L3	C02
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**Or**

9.	a.	Determine the strength of an HSFG bolt of grade 10.9S and diameter 20 mm for the joint shown in figure if a) slip is not permitted b) slip is permitted.	10 Marks	L3	C02
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10.	a.	Explain the various defects in welds.	10 Marks	L2	C03
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**Or**

11.	a.	What are the different types of welded connections? Explain with a neat sketch.	10 Marks	L2	C03
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12.	a.	Two steel plates of thickness 20 mm and 12 mm are to be joined in a butt joint using a groove weld. The joint is subjected to a factored tensile load of 350kN. The effective length of the weld provided is 150mm. Using Fe410 grade steel and assuming shop welding, determine the safety of the joint using  1. a Single-U groove weld 2. a Double-U groove weld.	10 Marks	L3	C03
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**Or**

13.	a.	A flat bar of size 100 mm x 10 mm is used as a tension member to carry a factored tensile force of 250kN. The bar is to be welded to a 14mm thick gusset plate using fillet welds on three sides. Design the size of the weld using shop welding. Calculate the required overlap length for the bar. Assume Fe410 grade steel.	10 Marks	L3	C03
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