Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - NOV 2023

Semester : Semester VII- 2020
Course Code : CIV3013
Course Name : Sem VII - CIV3013 - Advanced Design of Steel Structures
Program : B. TECH

Date : 3-NOV-2023
Time : 11:30AM - 1:00PM
Max Marks : 60
Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

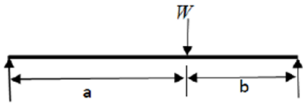
1. Write short notes on a) Web buckling and b) Web Crippling
(CO1) [Knowledge]
2. List out the various possible locations of the formation of plastic hinges in steel section.
(CO2) [Knowledge]
3. List out the differences between the elastic analysis and plastic analysis
(CO2) [Knowledge]
4. Define Fire Resistance Level (FRL) and Limiting steel temperature as specified in IS800.
(CO2) [Knowledge]
5. Define laterally unsupported beams.
(CO1) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(3 X 10 = 30M)**

6. The plastic collapse of a structure depends upon its redundancy. When a sufficient number of plastic hinges are formed to convert a structure into a mechanism, the structure collapses. Find Collapse load for Simply supported Beam of span L, with Point Load (W) at centre.
(CO2) [Comprehension]

7. The structure will collapse after the formation of a sufficient number of plastic hinges. Collapse load can be determined using the static method and kinematic method. Derive the expression for collapse load for the Simply supported beam of span L with the point load W acting as shown in Figure below:



(CO2) [Comprehension]

8. Steel structure fire protection systems are designated to protect the structure from fire for a specified amount of time. Various fire protection systems are available to be used. Explain different methods adopted for fire protection.

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION **(1 X 20 = 20M)**

9. Design a simply supported beam of span 6m carrying a reinforced concrete floor capable of providing lateral restraint to the top compression flange. The beam carries a total uniformly distributed load of 40kN/m including selfweight. Assume Fe410 grade steel.

(CO1) [Application]