



Reg. No. :

Name :

First Semester M.Tech. Degree Examination, March 2014
(2008 Scheme)

Branch : Civil

Structural Engineering

CSC 1003 : ADVANCED METAL STRUCTURES

Time: 3 Hours

Max. Marks : 100

Instructions : 1) Answer **any five** questions.

2) **All** questions carry **equal** marks.

3) Use of **IS 800, IS 801, IS 811, IS 8147** and steel tables permitted.

1. a) What are the assumptions in the plastic theory of bending ? 5
- b) Determine the collapse load W_u for the frame with loads and plastic moment capacities as shown in fig. (i). 15

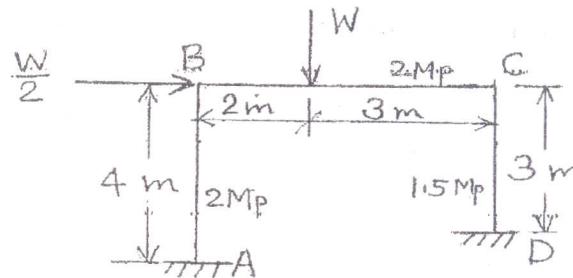


fig. (i)

2. a) Explain moment resistant connections. 5
- b) Design a bolted web angle connection for a ISMB 400 beam to carry a reaction of 140 kN due to factored loads. The connection is to the flange of a column ISHB 200 in grade Fe 410 steel. 15

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3. a) What is a plastic hinge ? In what way is it different from an ordinary hinge ? 5
 b) Find the plastic moment required for the continuous beam of uniform section shown in fig. (ii). The given load system is the collapse load system. 15

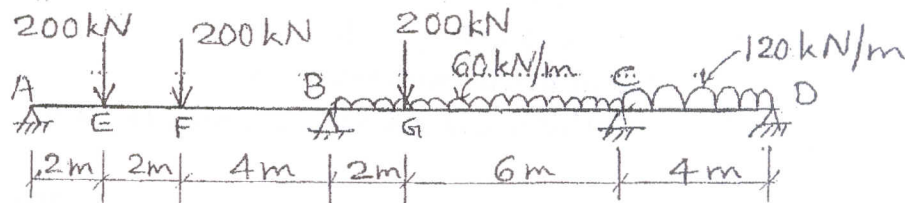


fig. (ii)

4. a) Explain post buckling of thin elements. 5
 b) Two simple channels each of 100 mm \times 50 mm \times 2 mm thickness have been used to form I section of 100 mm depth and 100 mm flange width. Find load carrying capacity of the I section when effective height of the column is 3 m. 15
5. a) What are advantages of Aluminium structures ? 5
 b) Design an Aluminium beam to carry a udl of 10 kN/m over a span of 3m
 $\sigma_y = 235$ MPa. 15
6. a) Explain the fabrication details of a welded steel roof truss of 12m span, 2.4 m rise. 10
 b) What are the loads to be considered in the design of transmission line towers ? 10