

DEPARTMENT OF CIVIL ENGINEERING, IIT DELHI

MINOR II :CVL756

ADVANCED STRUCTURAL ANALYSIS (2021-22)

Time allowed: 40 mins

Venue: Online

Date: 10 Nov 2021

Max marks : 20

NOTE: (a) All questions are compulsory. (b) Draw neat and clear sketches wherever required. (c) Assume suitable data if necessary. (d) Assume members as extensible unless otherwise stated. (e) All answers must be supported by calculations/ justification to secure assigned marks.

Q1.

For the frame shown in Figure1, which has the plastic moment capacity of 250 kNm:

- Draw the possible collapse mechanisms.
- Obtain the ultimate collapse load.

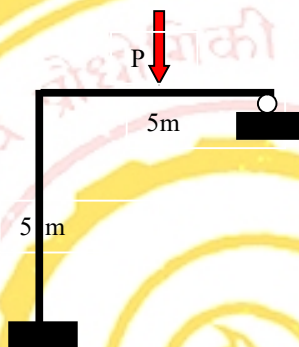
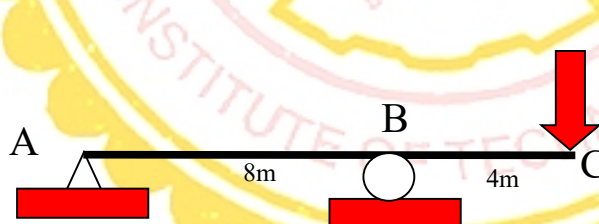


Figure 1

(12 marks)

Q2.

Use the matrix flexibility approach to obtain the deflection of the structure at point C. $EI = 8 \times 10^9$ kNm².



(8 marks)

Figure 2