

Ex/CE/PC/B/T/322/2023

B.E. CIVIL ENGINEERING THIRD YEAR SECOND SEMESTER EXAM 2023

Subject: THEORY OF STRUCTURES-II

Full Marks:100

Time: 3hours

(Use Separate Answer scripts for each Part)

Part-I (Marks 60)

1. Determine the bending moment and shear force on beams and columns shown in Fig.1. Use **Portal Method**. Also draw bending moment diagram. (CO-1) (35)

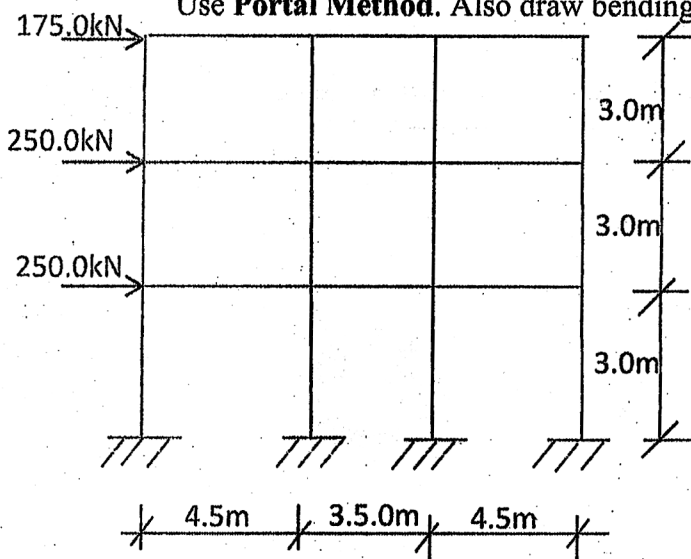


Fig.1

2. Draw the shear flow for the channel section shown in Fig. 2. Also find the shear centre of this channel section. (CO-2) (25)

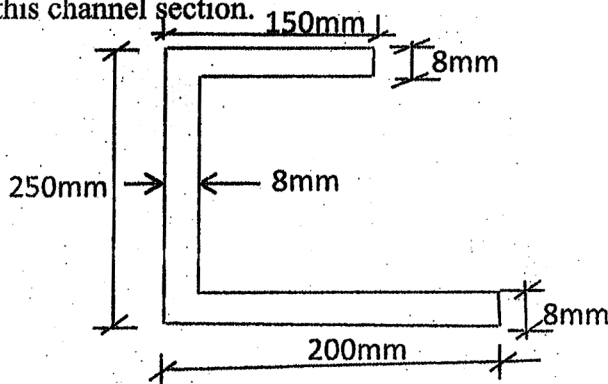


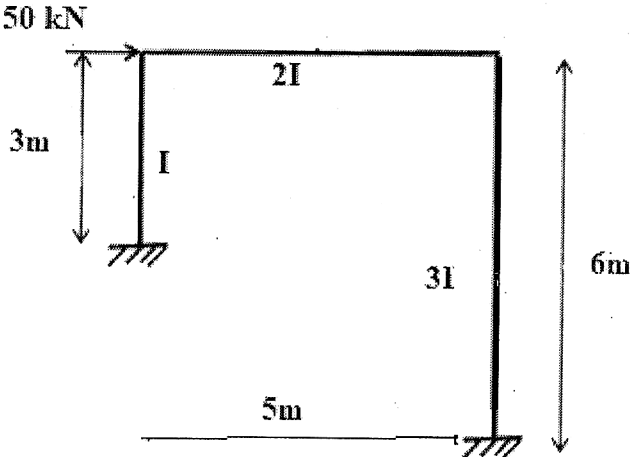
Fig.2

B.E. Civil Engineering - Third Year - Second Semester
Theory of Structures II
PART-II

Time: Three Hours

Full Marks 100
(40 marks for 2nd part)

Use a separate Answer-Script for each part
[No code or handbook is allowed]

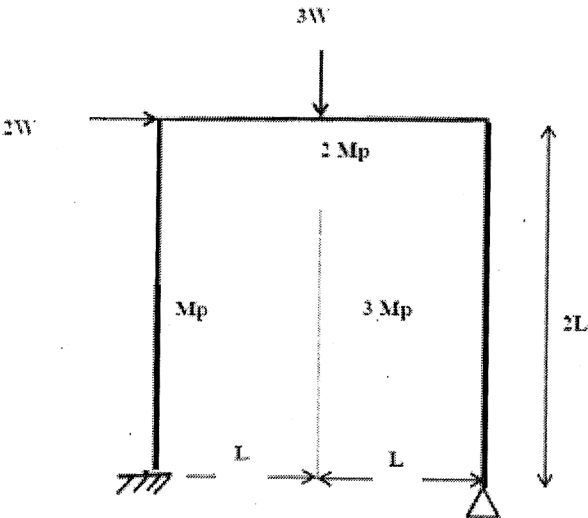
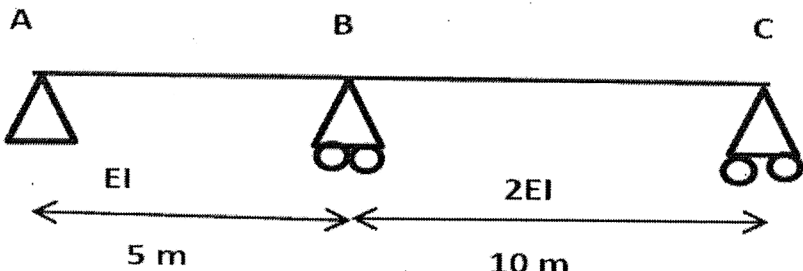
No. of questions	(answer all questions) PART II (40 Marks)	Marks (12+14+14)
CO3 1)	Derive the basic equation of Column Analogy method. <p align="center">OR</p> Analyze the following frame by column analogy method 	12
CO4 2 (a)	Find out the ultimate point load W , acting on a propped cantilever beam of length L , by upper bound theorem and lower bound theorem, if the plastic moment carrying capacity of the beam is M_p .	7
2(b)	Find the collapse load for the following portal frame.	7

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No. of questions	(answer all questions) PART II (40 Marks)	Marks (12+14+14)
		
<p>CO3 3)</p>	<p>Find the maximum value of B.M. at midpoint of BC of the beam ABC, if 10kN/m UDL load of length 50m load passes over ABC. The beam is made of M30 grade of concrete. $I=0.1 \text{ m}^4$.</p> 	<p>14</p>