B.E. CIVIL ENGG. (PART TIME) 3ᴿᴰ YEAR 1ˢᵀ SEM. EXAM. 2018

Subject: THEORY OF STRUCTURE -II   TIME: 3 Hours

Full Marks: 100

(50 marks for each part)

Use a **separate** Answer-Script for each part
Assume necessary data if required

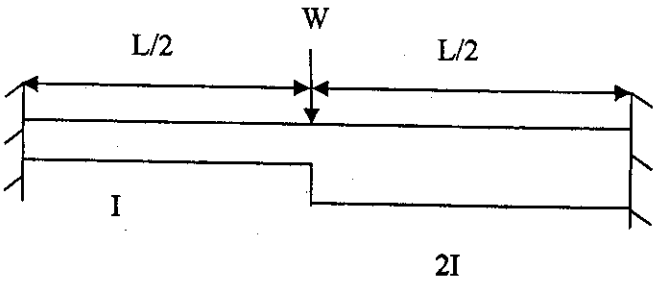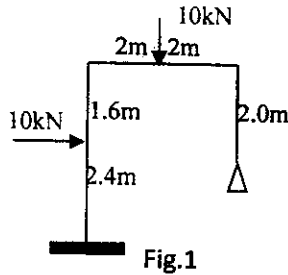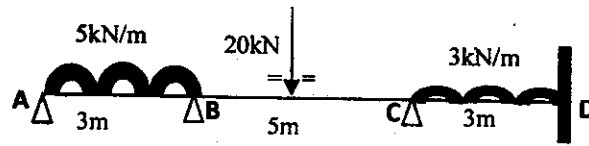| No. of Question	PART – I	
	Answer any TWO	
1.	Analyze the portal frame (Fig. 1) by "Moment Distribution method". EI is constant for all members. Draw SFD and BMD. Fig.1 Fig.2	25
2.	Analyze the continuous beam in Fig. 2, (by slope deflection method) if supports B and C sink by 3mm and 2mm respectively. $I = 4 \times 10^7$ mm⁴, $E = 200$ KN/mm². Draw SFD and BMD.	25
3. a)	Explain the principle of analyzing fixed arch.	
b)	What do you mean by the term relative stiffness of the member? Explain with example.	
c)	What is static and kinematic indeterminacy? Find the indeterminacies for the structure in Fig.1 and Fig 2.	8+8+(5+2+2)=25

B.E. CIVIL ENGG. (PART TIME) 3RD YEAR 1ST SEM. EXAM. 2018
Subject: THEORY OF STRUCTURE -II   TIME: 3 Hours   Full Marks: 10(

(50 marks for each pa

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Assume necessary data if required

| No. of questions	Part II (Answer any two) Full Marks = 50	Marks (2x25=50)
1. a)	A fixed beam of span L carries a point load W at mid span. The moments of inertia of the section are I for the left half of the span and 2I for the right half of the span. Find the fixed end moments by column analogy. Fig 1.	15+10 =25
b)	A fixed beam of span L carries a point load P on the span at a distance 'a' from the left end and 'b' from the right end. Find the fixed end moment at the ends of the beam by column analogy. EI constant. L= a+b.	
2. a)	Draw the BMD, SFD and TMD of the beam which has bend in the plan as shown in figure 2. Load P is acting downward.	15+10=25
b)	Determine the displacement under the load P on the quarter circular curved beam shown in fig 3. Load P is acting downward.	

Fig 1.
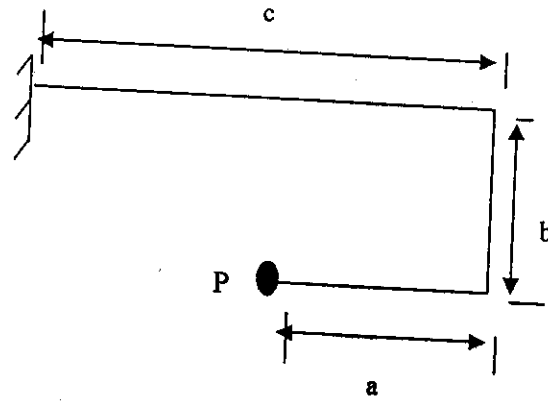
Fig. 2.
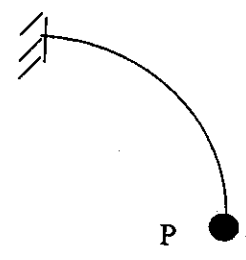
Fig. 3.

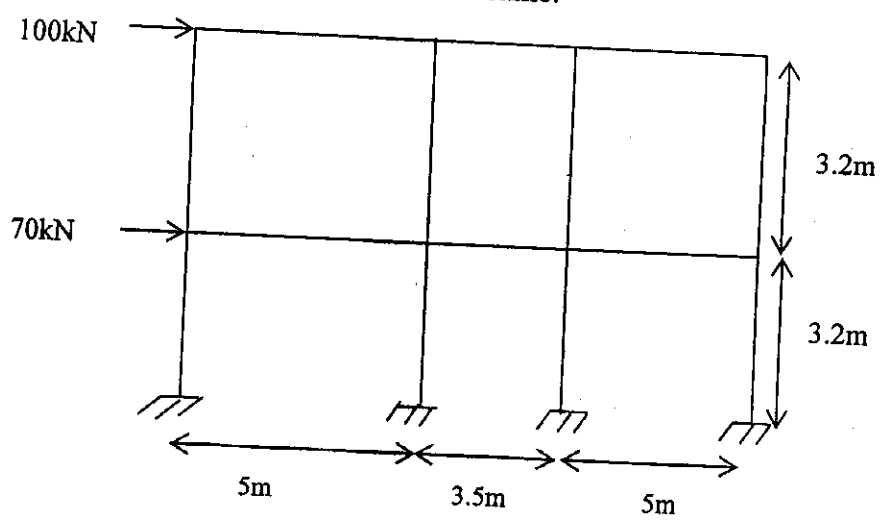| 3. | a) | Write down the assumptions of portal and cantilever method. | 5+20=25 |
| | b) | Analyze the frame shown in figure 4 by cantilever method and draw the bending moment diagram of the frame. | |

100kN

3.2m

70kN

3.2m

5m   3.5m   5m

Figure 4.