ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : MAY 2021** (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech.	**Semester:**	IV
Paper Title :	Structural Mechanics II	**Paper Code:**	ECE42102
Maximum Marks :	40	**Time duration:**	3 hrs.
Total No of questions:	8	**Total No of Pages:**	3
	Instruction to the Candidate: **1.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **2.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **3.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Answer all the Groups

Group A

Answer all the questions of the following $\mathbf{5 \times 1 = 5}$

1. **a)** What is Degree of Freedom?

b) Calculate Degree of Redundancy for Propped cantilever beam.

c) Calculate Degree of Freedom for Fixed beam.

d) Depict the principle of Unit load Method.

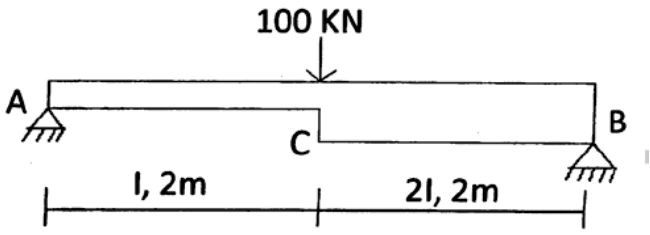
e) Depict Castigliano's second theorem.

GROUP –B

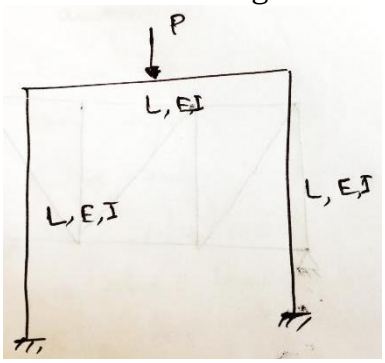
Answer *any three* of the following $\mathbf{3 \times 5 = 15}$

2. Find out the deflection at point *C* under the load by Strain energy method.

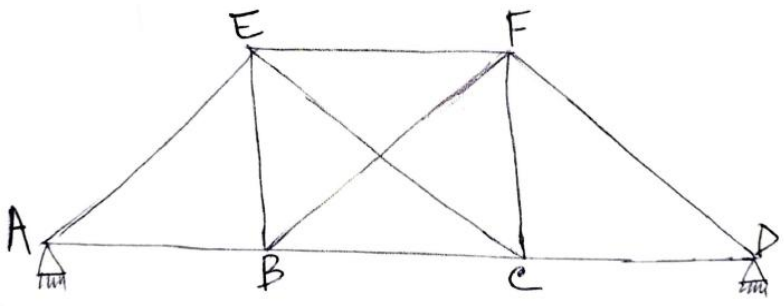
(I = 50 X 10^6 mm^4, E = 200 X 10^6 KN/m^2)

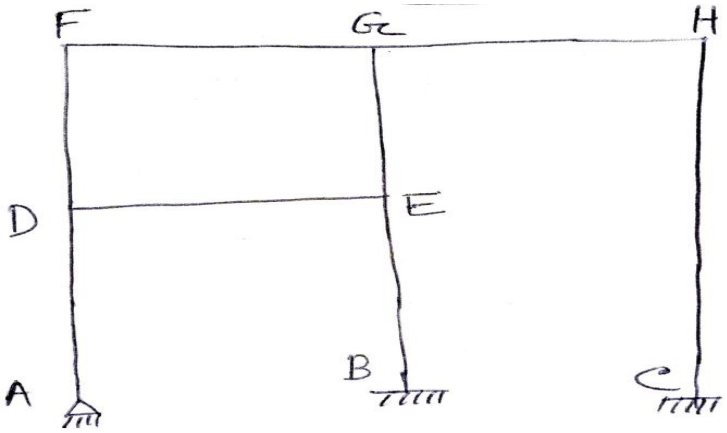


3. Determine BM diagram for the following structure by slope deflection method.



4. Determine Statically indeterminacy for the following structures.





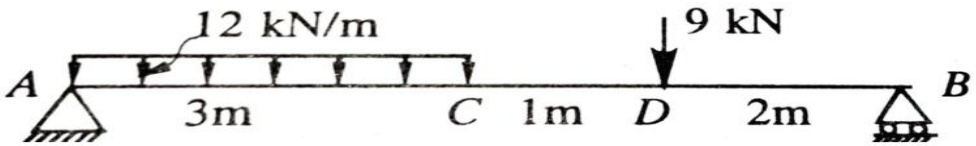
5. Derive the equation of Horizontal thrust for Two hinged arch as stated below.
(All notations are as usual)

$$H = \frac{\int \mu \cdot y \, dx}{\int y^2 dx}$$

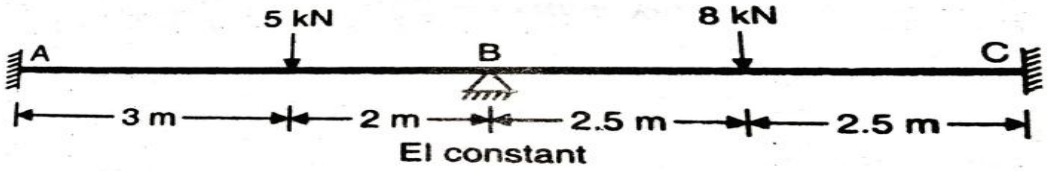
GROUP –C

Answer *any two* of the following $\mathbf{2 \times 10 = 20}$

6. Determine the slope at A and deflection at C in the beam by Unit load method shown in Fig. below (EI is constant).



7. Determine BM diagram for the following structure by Moment distribution method.



8. Calculate the horizontal thrust & the reactions at the hinges and the maximum bending moment anywhere on the arch shown in Fig. below.