ACE
Engineering College

(An Autonomous Institution)

Question Paper Code: CE406PC

ACE-R20

Semester End Examination
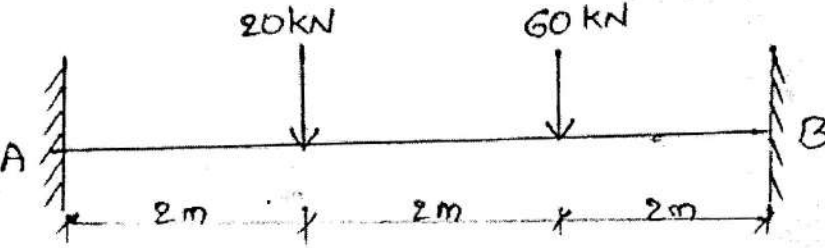### II B. Tech- II Semester- AUGUST/SEPTEMBER -2022
STRUCTURAL ANALYSIS – I
CIVIL ENGINEERING
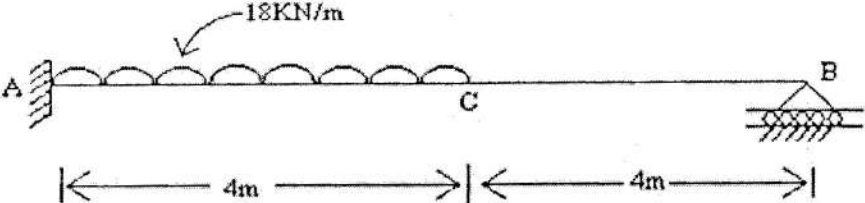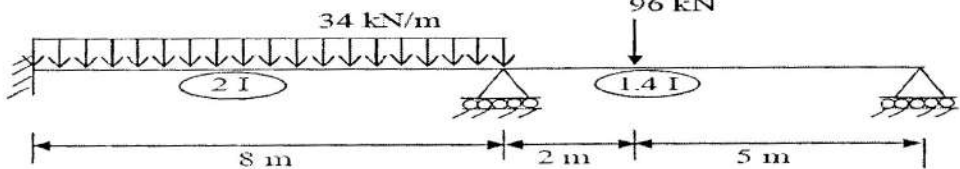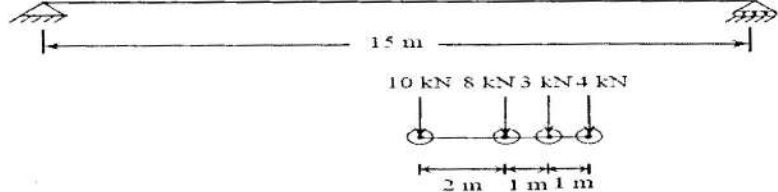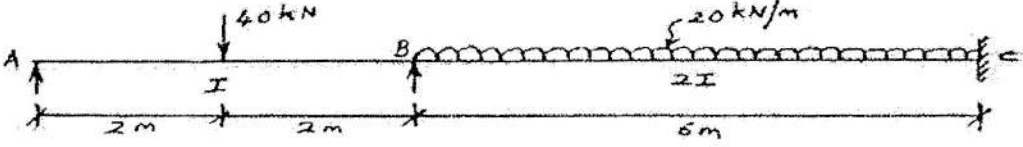
Time: 3 Hours   Max. Marks: 70

H. T. No

Answer any 5 Questions out of 8 Questions from the following

Q.No	Question	Marks
1. a)	Stare clearly the difference between a perfect frame and imperfect frame.	4
b)	Find the forces in all members of the pin-jointed truss shown in figure below. State if the members are in tension or compression (Assume equilateral triangle of side 3 meters each).	10
2. a)	State and explain the terms in Castigliano's first theorem.	4
b)	A cantilever beam shown below is subjected to a concentrated load 20 kN at B. Determine the magnitude and direction of the deflection at B using Unit load method.	10
3. a)	State and differentiate between the rigid prop and elastic prop.	4
b)	Determine the fixed end moments for a fixed beam carrying point loads as shown in fig. by? Also draw SFD and BMD?	10

	20kN 60 kN A B 2m 2m 2m	
4.	A 3-hinged parabolic arch of horizontal span 20 m, central rise 4 m carries a u.d.l. of 20 kN/m on the left 8 m length starting from the left support hinged. a) Obtain the normal thrust and radial shear at 4m from left end. b) Determine the maximum +ve and –ve B.Ms. Sketch the B.M.D.	14
5.	Analyze the propped cantilever beam shown in Fig. and draw bending moment diagram. -18KN/m A C B 4m 4m	14
6.	Analyze the continuous beam using Slope deflection method as shown in figure. Take EI =200 x 10^6 N/mm^2. 34 kN/m 96 kN 2 I 1.4 I 8 m 2 m 5 m	14
7. a)	Define Influence Line Diagram(ILD) and state the difference between ILD & BMD.	4
b)	Determine absolute maximum live moment in the girder due to loading shown. 15 m 10 kN 8 kN 3 kN 4 kN 2 m 1 m 1 m	10
8.	Analyse the continuous beam shown in Figure by Clapeyron's theorem of three moments. Also sketch the BMD and SFD. 40 kN 20 kN/m A B C I 2I 2 m 2 m 5 m	14