	Sanjay Ghodawat University, Kolhapur Established as State Private University under Govt. of Maharashtra. Act No XL, 2017		2018-19 EXM/P/09/00
Year and Program M.TECH. Structures 2018-19	School of Technology ADVANCED STRUCTURAL ANALYSIS	Department Civil Engineering	
Course Code CSE 501	Course Title	Semester – I	
Day and Date: Friday 28/12/2018	Examination: ESE	Time: Max Marks: 100 10 to 1 PM.	

- Instructions:** 1) All questions Compulsory.
 2) Figure to the right indicate full mark.
 3) Draw sketches wherever necessary.
 4) Assume suitable data if require

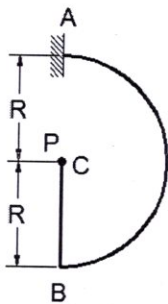
- | Q. | | Marks | Blooms level | CO |
|----|---|-------|--------------|----|
| 1 | A continuous beam ABC, simply supported at A,B &C having span AB=8m, BC=10m. Construct ILD for Shear Force at midpoint of BC. | 10 | 4 | 1 |
| | OR | | | |
| | Construct Influence line diagram for horizontal thrust, radial shear and bending moment at a section 'a' from left hand support of the two hinged parabolic arch of span 'L' and central rise 'h'. | 10 | 4 | 1 |
| 2 | A metal rod ABC fixed at A and free at B of circular cross section of radius 'r' has semicircular shape of radius R. it sharply bends at B and extended up to C as shown in fig.1. Find the central deflection at C if it carries concentrated load 'P' at C. Take $G=2.5E$. | 10 | 4 | 2 |
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fig. 1
- | | | | | |
|---|--|----|---|---|
| 3 | Derive equation for deflection, pressure , slope, bending moment and shear force for long beam (Semi-infinite) on elastic foundation subjected to 'Po' at one end. | 10 | 4 | 3 |
| | OR | | | |
| | Find the foundation pressure for the beam shown in fig.2. Assume $k=5 \text{ N/mm}^2$, $E= 20\text{kN/ mm}^2$. The loading is per 1m width of beam. | 10 | 4 | 3 |

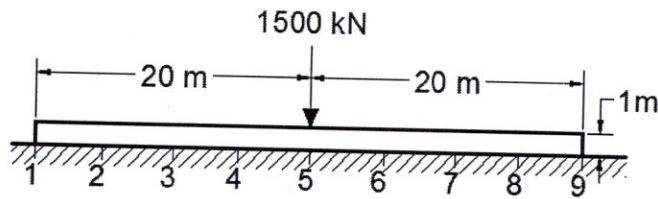
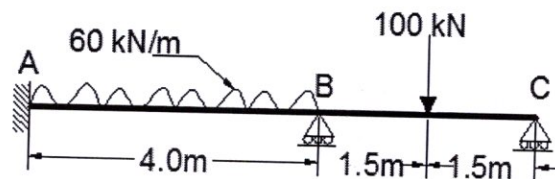


fig. 2

- 4 A beam column simply supported at the ends is subjected to an axial compressive force P at the both ends and a transverse uniformly distributed load of intensity w . Find the maximum deflection & bending moment. 10 4 4

5 Solve any two questions.

- a Analyze the continues beam shown in fig.3 by using force method. 15 4 5



$EI = \text{Constant}$

fig. 3

- b Analyze portal frame ABCD from fig. 4, by flexibility matrix method. 15 4 5

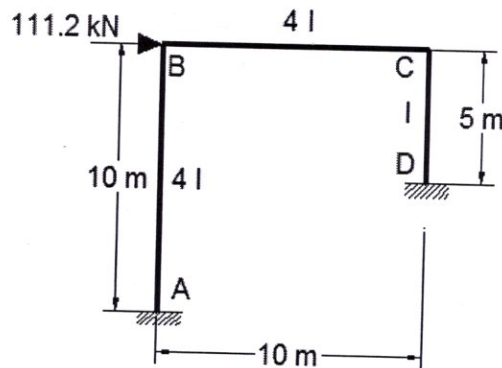


fig. 4

- c Analyze the pin jointed plane frame shown in fig.5. The flexibility of each member is 0.025 mm/kN . 15 4 5

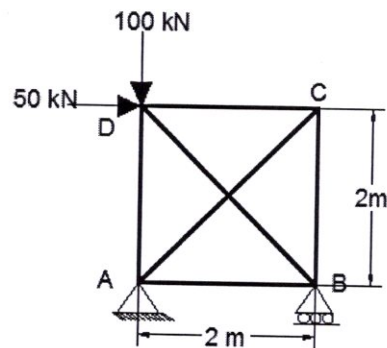


fig. 5

6 Solve any two questions.

- a Analyze the continuous beam ABCD loaded and supported as shown in figure 6, by using stiffness matrix method. 15 4 6

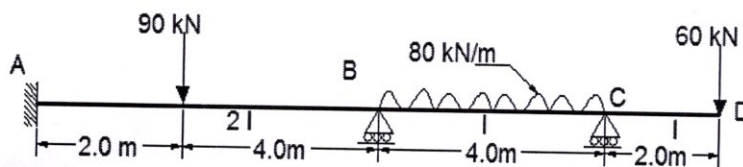


fig. 6

- b Find forces in members of truss loaded as shown in fig.7, by using stiffness matrix method. Take $E = 2 \times 10^5 \text{ N/mm}^2$, $A = 1000 \text{ mm}^2$ for all members. 15 4 6

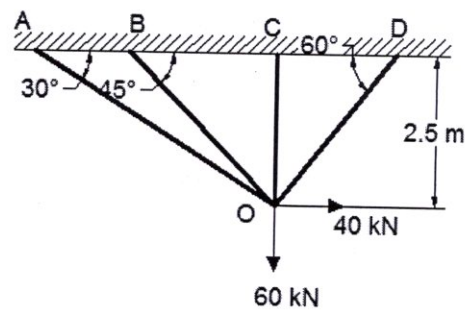


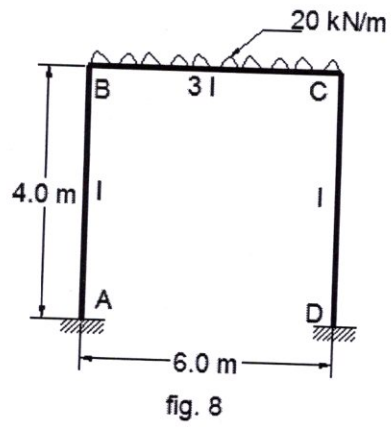
fig. 7

c Using displacement method analyze the frame shown in fig.8.

15

4

6



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