CV501

M S RAMAIAH INSTITUTE OF TECHNOLOGY

(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU)
BANGALORE – 560 054

SEMESTER END EXAMINATIONS – JANUARY 2016

Course & Branch : **B.E.- Civil Engineering**		**Semester** : **V**	
Subject : **Structural Analysis-II**		**Max. Marks** : **100**	
Subject Code : **CV501**		**Duration** : **3 Hrs**	

Instructions to the Candidates:
* Answer *one* full question from each unit.
* Any data missing can be assumed suitably.

UNIT – I

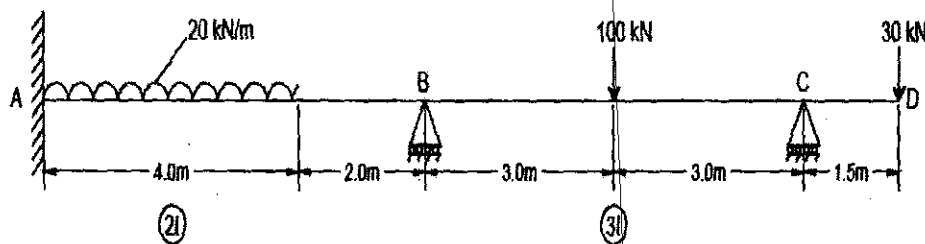1. Analyze the continuous beam shown in fig-1 by slope deflection method. Draw SFD,BMD & EC. CO1 (20)

fig 1

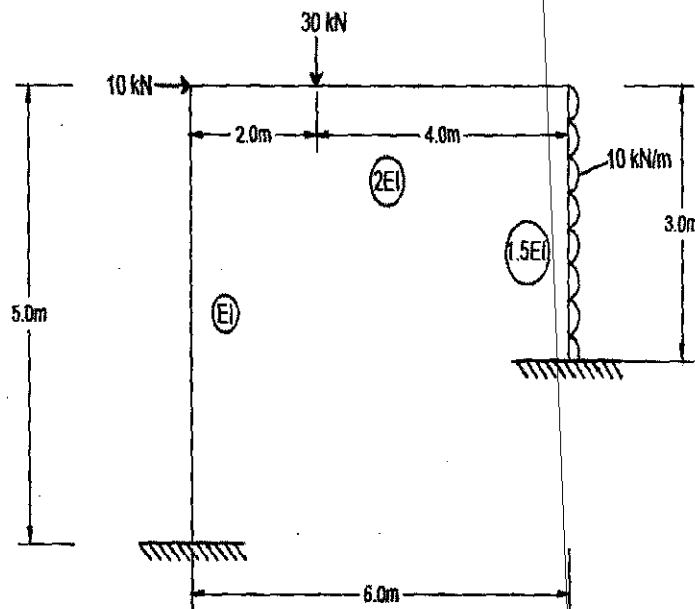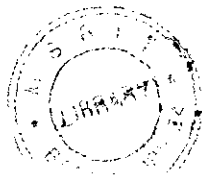2. Analyse the rigid frame shown in fig-2 by slope deflection method. CO1 (20)

fig 2

UNIT – II

3. Analyze the continuous beam shown in fig-3 by moment distribution   CO1   (20)
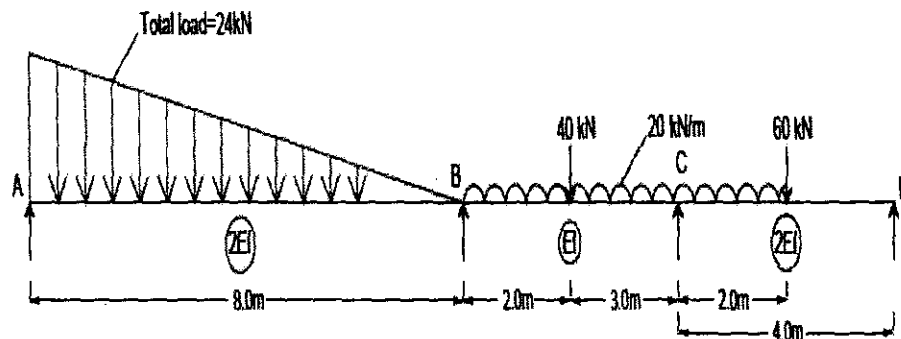method and draw BMD.

Total load=24kN

A
2EI
8.0m

B
40 kN   20 kN/m   60 kN
C
EI
2.0m   3.0m   2EI   2.0m
D
4.0m

fig-3

4. Analyze the frame shown in fig-4 by moment distribution method and   CO2   (20)
draw BMD.

10 kN/m   30 kN   30 kN   C
B
A   1.2I
3.0m   3.0m   5.0m
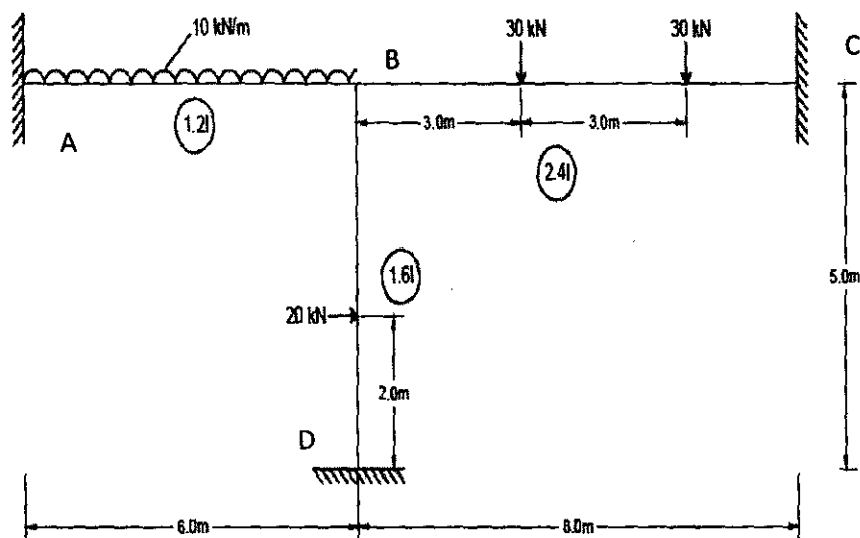2.4I
1.6I
20 kN →
2.0m
D
6.0m   8.0m

fig-4

UNIT-III

5. a) Define flexibility co-efficient and show that the flexibility matrix is   CO3   (05)
symmetrical.

b) Analyze the continuous beam shown in fig-5 by flexibility matrix   CO3   (15)
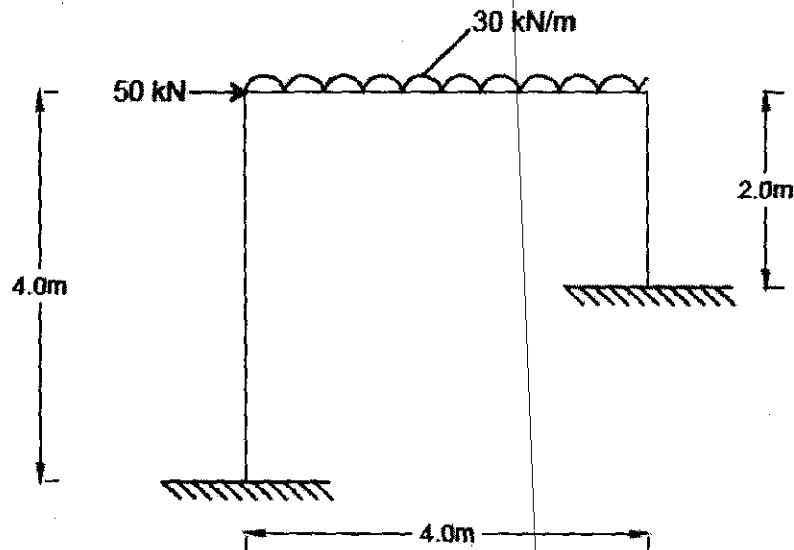method and draw BMD. Flexural rigidity is uniform.

30 kN/m

50 kN →

4.0m

2.0m

4.0m

fig⑧

UNIT – V

9. a) Determine the shape factor for rectangular section.   CO4   (05)

b) Determine the plastic moment capacity of the given continuous beam   CO4   (15)
shown in fig 9.take load factor =1.5

40 kN   60 kN   30 kN/m

A   B   C

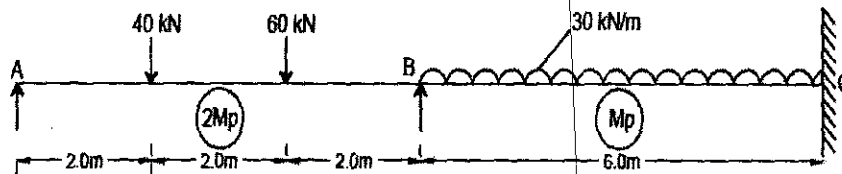(2Mp)   (Mp)

├─2.0m─┼─2.0m─┼─2.0m─┤├────6.0m────┤

fig⑨

10. a) Define plastic hinge, yield moment, plastic moment and shape factor.   CO4   (08)

b) Calculate shape factor of an unsymmetrical I-section having top   CO4   (12)
flange = 100x15, web =20 mm thick and bottom flange = 250x15
with total depth = 230 mm, if yield stress of the material is 350
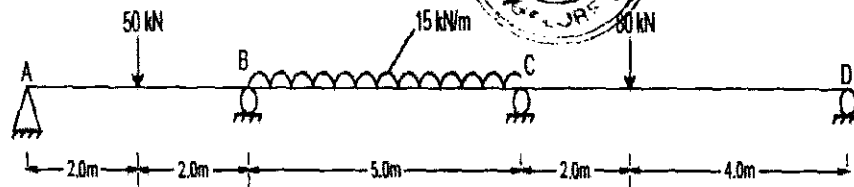N/mm^2. Calculate yield and plastic moment.

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50 kN   15 kN/m   80 kN

A   B   C   D

|—2.0m—|—2.0m—|———5.0m———|—2.0m—|———4.0m———|
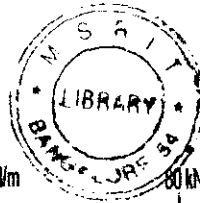
fig⑤

6.   Analyze the pin jointed frame shown in fig-6 by flexibility matrix   CO3   (20)
       method.

A   B   C   D   E

30°   45°   60°   45°

5.0m

→100 kN

200 kN
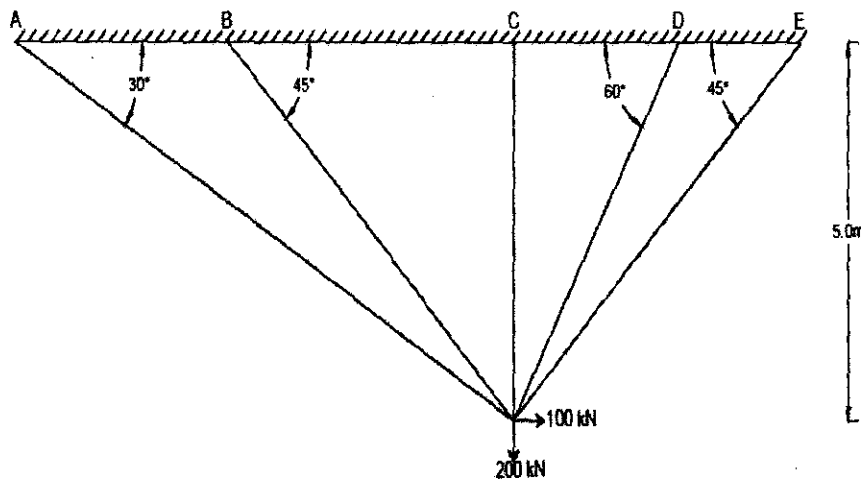
fig⑥

UNIT – IV

7.   Analyze the Continuous beam shown in fig7 by stiffness matrix   CO3   (20)
       method.

90 kN   80 kN/m   60 kN

A   B   C   D

(2I)   (I)   (I)

|—2.0m—|

|————6.0m————|————4.0m————|—2.0m—|

fig⑦

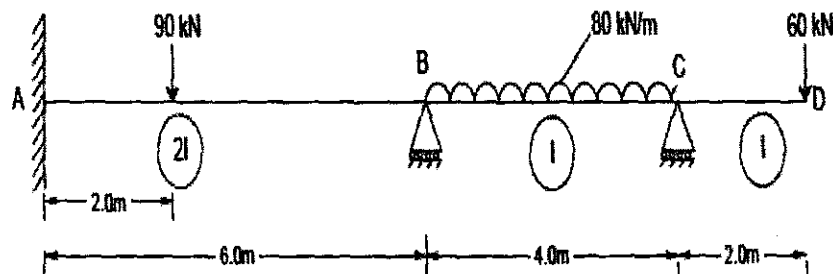8.   a)   Analyze the following frame shown in fig-8 by displacement method.   CO3   (20)
          Take EI as uniform.