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# Civil Engineering

**Vision: "To impart quality technical education beneficial to industry and the society in the field of Civil Engineering."**.

**Mission:**

- To arrange academic and technical expertise**.**
- To improve the practical knowledge of the student as per current scenario of industry.
- To make the students socially and ethically responsible.

**Course Title :- Theory of structure** **Date :-**

**Course Outcome:- CO 402a**

**Chapter Name:-** Direct & Bending stress in vertical members.

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## Assignment No:- 1

1) **Define core of section.**

2) **Derive the expression for limit of eccentricity for rectangular section (b X d) dimension.**

3) **State the middle third rule.**

4) **State the expression for deflection of simply supported beam carrying point load at mid span.**

5) **Draw stress distribution diagram for** $6_0 = 6_b$ , $6_0 > 6_b$, $6_0 < 6_b$.

6) **Explain with expression four conditions of stability of dam.**

7) **A hollow circular column having external diameter 500 mm and Internal diameter 300 mm carries an vertical load of 200 kN acting at an eccentricity of 60 mm from CG Calculate maximum and minimum stresses developed.**

8) **Find maximum and minimum stress intensities induced on the base of a masonry wall 6 m high, 4 m wide and 1.5 m thick subjected to a horizontal wind pressure 1.5 kN/m$^2$ acting on 4 m side. The density of masonry material is 24 kN/m$^3$.**

9) **Calculate core of section for circular section having diameter 400 mm and draw sketch of it.**

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**Course Title :- Theory of structure** **Date :-**

**Course Outcome:- CO 402b**

**Chapter Name:-** Slope & Deflection

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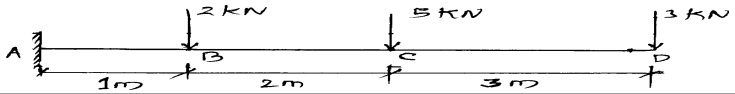
## Assignment No:- 2

1) **Give relationship between slope, deflection and radius of curvature.**
2) **A simply supported beam carries u.d.l of 4 kN/m over entire span of 4 m. Find the deflection at mid span in terms of EI.**
3) **Using Macaulay's method calculate slope under point load of 15 kN acting at 3 m from left hand support of simply supported beam of spam 5 m in terms EI.**
4) **Calculate slope and deflection at free end of cantilever beam as shown in Fig. No. 6. having cross section 160 mm width and 220 mm depth. Using standard formulae and take E = 201 GPa.**


**5) Calculate slope at 'B' and deflection at 'C' of cantilever beam in terms of EI as shown in Fig. by using Macaulay's method.**

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**Course Title :- Theory of structure** **Date :-**

**Course Outcome:- CO 402c**

**Chapter Name:-** Fixed Beam

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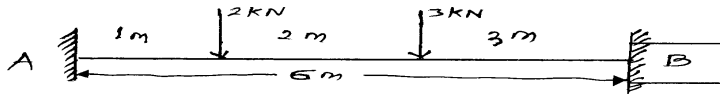
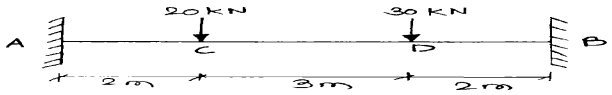
## Assignment No:- 3

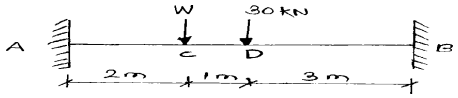
**1) Calculate fixed end moments and draw BMD for fixed beam shown in Fig.**




**2)Calculate fixed end moments and draw B.M.D as shown in Fig.**




**3) Calculate value of load 'W' for a fixed beam as shown in Fig**




**4)Explain principle of super position with example.**

**5)Explain the concept of fixity with effect in fixed beam.**

**6)State two advantages of fixed.**

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**Course Title :- Theory of structure.** **Date :-**

**Course Outcome:- CO 402d**

**Chapter Name:-** Continuouse Beam

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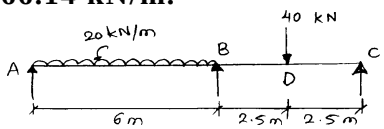
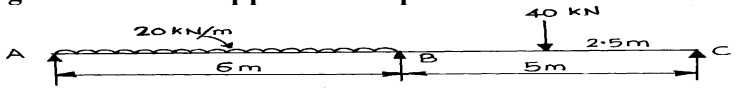
## Assignment No:- 4

1) **State effect of continuity on continuous beam.**
2) **Compare a simply supported beam and a continuous beam w.r.t. deflected shape of beam.**
3) **Draw SFD for a continuous beam as shown in Fig.having negative B.M at support B as 66.14 kN/m.**




4) **A continuous beam ABC of uniform M.I carries a central point load of 85 kN on span AB. A u.d.l of 30 kN/m is acting over the entire span BC. Plot BM diagram. Span AB and BC are 6 m and 4 m respectively. A and C are simple supports. Use three moment theorem.**
5) **State Clapeyron's theorem of three moments for continuous beam with same and different EI.**
6) **Draw SFD for a continuous beam as shown in Fig. No. 6. having negative bending moment at support 'B' equal to 66.14 kN - m.**

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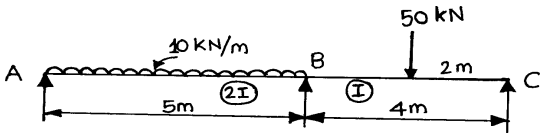
**Course Title :- Theory of structure.** **Date :-**

**Course Outcome:- CO 402e**

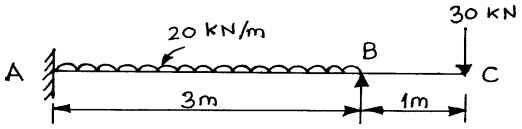
**Chapter Name:-** Moment Distribution Method

## Assignment No:- 5

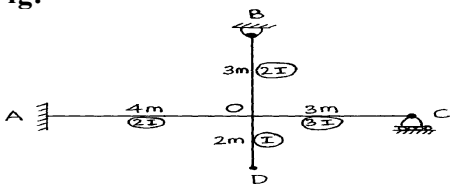
1) **Define carry over factor and stiffness factor.**
2) **Draw neat sketch of symmetrical and unsymmetrical portal frame.**
3) **Write the values of stiffness factor for beams**
   - **(i) Simply supported at both ends**
   - **(ii) Fixed at one end simply supported at other end.**
4) **Calculate the support moment using moment distribution method.**




5) **Calculate support moments and draw BMD of a beam as shown in Fig. No. Use moment distribution method.**



6) **Calculate distribution factors for the members OA, OB, OC, and OD for the joint 'O' as shown in Fig.**




**7) Using moment distribution method determine the moments at fixed end of a proped cantilever of span 5 m carrying a u.d.l of 25 kN/m over entire.**

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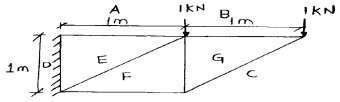
**Course Title :- Theory of structure.** **Date :-**

**Course Outcome:- CO 402e**

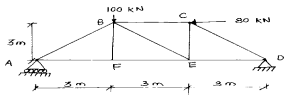
**Chapter Name:-**Simple Trusses

## Assignment No:- 6

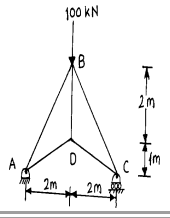
**1)Using method of section. Find the forces in the member BC, BE and FE of the frame as shown in Fig.**




**2)Using method of section. Find the forces in the member BC, BE and FE of the frame as shown in Fig.**




**3)Calculate magnitude and state the nature of forces in the members AB, BC, CD, AD and BD. of a truss as shown in Fig. No. 13. Use method of joints.**

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