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JAYĀ GROUP OF INSTITUTIONS-THIRUNINRAVUR
4th SEM- B.E. / B.Tech
INTERNAL ASSESSMENT-II(MODEL EXAM-II)

Sub. Name: Aircraft Structures -I
Sub. Code: AE 6403
Duration: 180 minutes

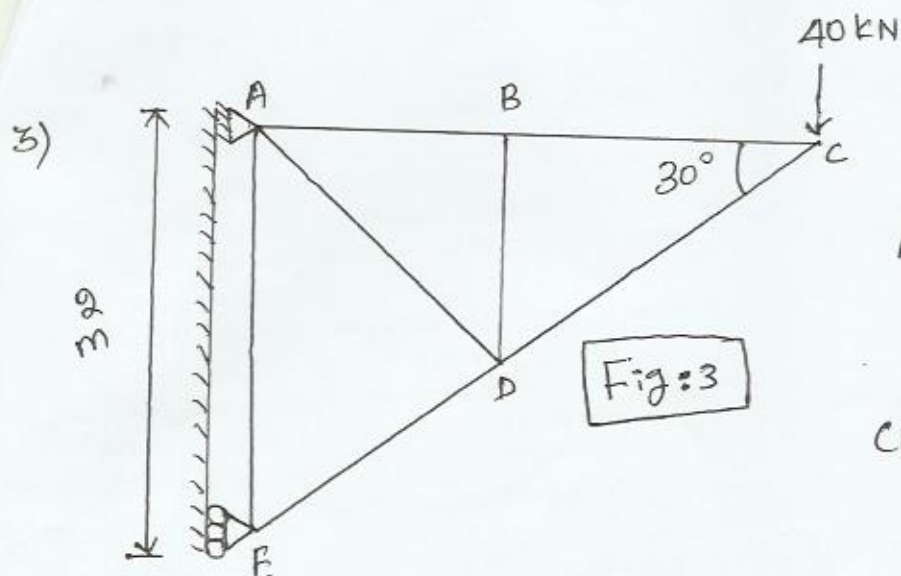
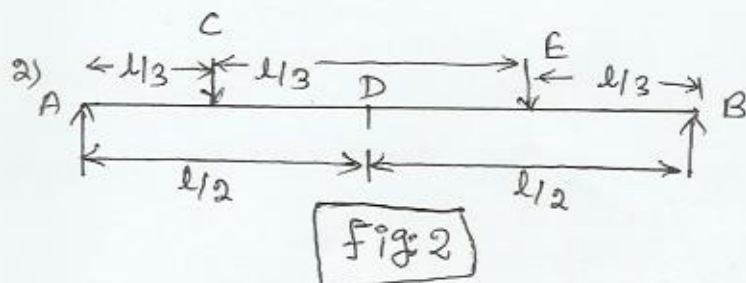
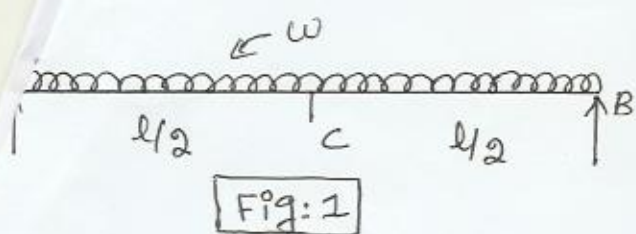
Date: 10-03-2015
Branch: Aeronautical
Max.Marks: 100

PART-A (10 x 2 =20)

1. Write castigliano 's first theorem.
2. Write castigliano 's second theorem.
3. Explain Maxwell's reciprocal theorem.
4. What is strain energy?
5. write formula for horizontal and vertical deflection
6. Explain various types of column.
7. Write rankine and eulers formula.
8. Write formula for buckling of column four different end condition
9. Define slenderness ratio
10. Write assumption made on eulers theory

PART-B (5 x 16 =80)

- 11.a) Find midpoint deflection. Refer fig (1)
(or)
- 11.b) Find midpoint deflection. Refer fig (2)
- 12.a) Find vertical deflection. Refer fig (3)
(or)
- 12.b) Find vertical deflection. Refer fig (4)
- 13.a) Find vertical deflection. Refer fig (5)
(or)
- 13.b) Derive buckling load expression for
(i) Both ends hinged
(ii) one fixed other free.
- 14.a) Derive buckling load expression for
(i) Both ends fixed
(ii) One fixed other hinged
(or)
- 14.b)(i) Derive rankine formula(10)
(ii) Explain south well plot(6)
- 15.a) Derive expression for maximum bending moment of beam column carries point
Load at mid span.
(or)
- 15.b) Derive expression for maximum bending moment of beam column carries UDL
Load for entire span.



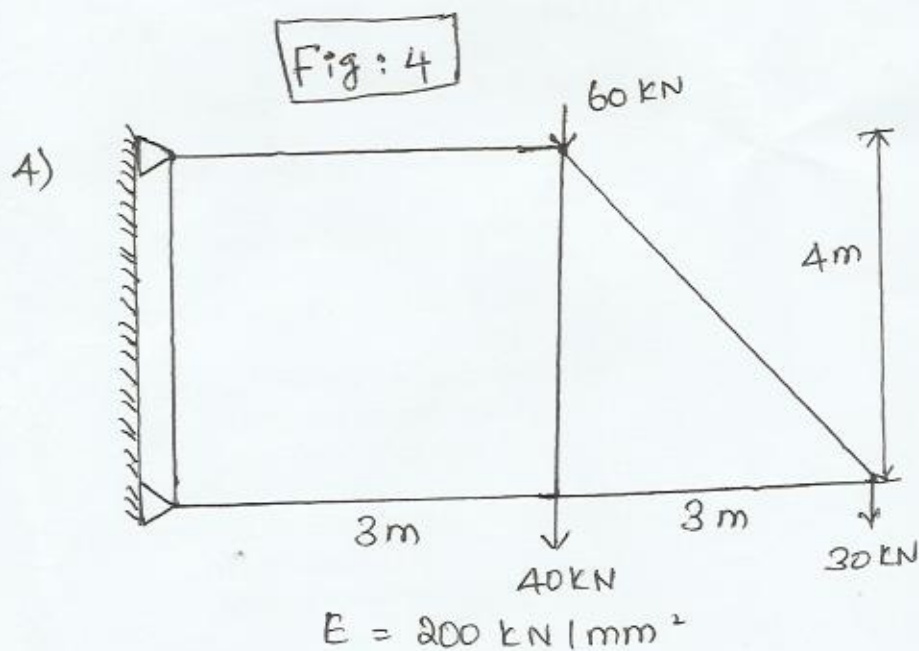
$$\text{Area of } CD = 2500 \text{ mm}^2$$

$$DE = 2500 \text{ mm}^2$$

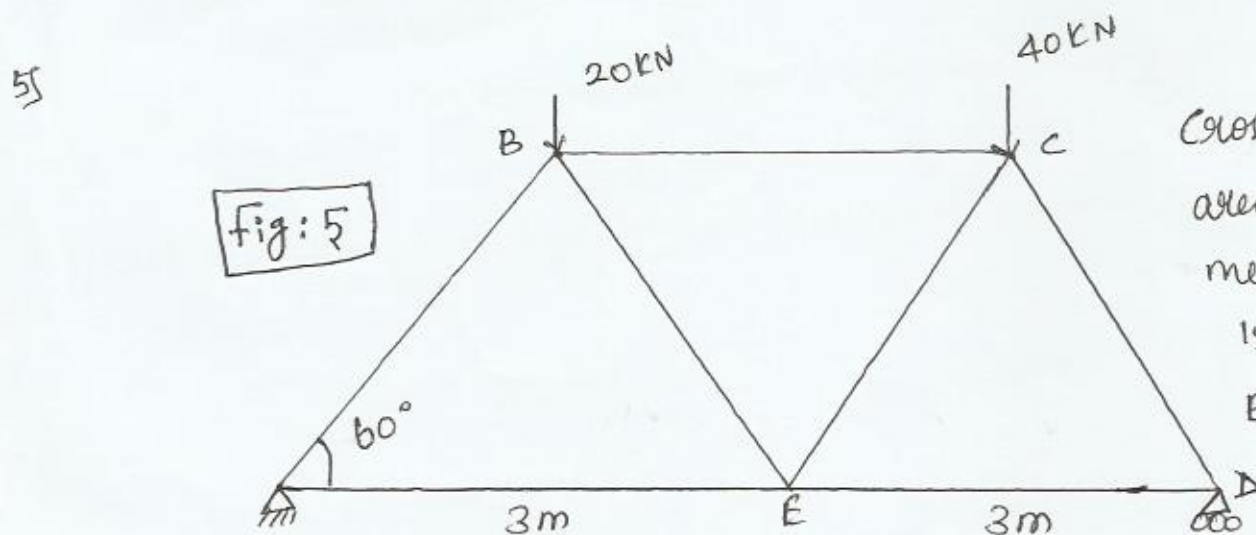
$$CB = BD = DA = AE = AB$$

$$\Rightarrow 1250 \text{ mm}^2$$

$$E = 200 \text{ kN/mm}^2$$



	Length	Area mm^2
Horizontal Member	3000	3000
Vertical member	4000	4000
Inclined member	5000	5000



Cross-sectional area of each member are 1500 mm^2

$$E = 200 \text{ kN/mm}^2$$