

Seat No.	
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SV - 21

Total No. of Pages : 3

T.E. (Civil) (Semester - VI) (Revised)

Examination, May - 2018

THEORY OF STRUCTURES

Sub. Code: 66873

Day and Date : Thursday, 03 - 05 - 2018

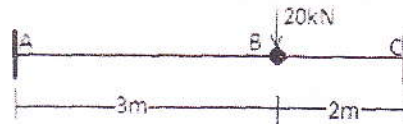
Total Marks : 80

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Use of non-programmable calculator is allowed.
 - 4) Assume suitable data if necessary.

SECTION - I

- Q1) a) Explain in brief 'Kinematic Indeterminacy' of structures. [5]
 b) Analyze the beam ABC fixed at A and C with hinge at B as shown in the fig. 1 below by consistent deformation method. Draw SFD and BMD. [12]

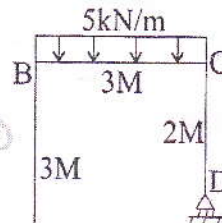


(FIG.1)

OR

- b) A fixed beam AB supports a uniformly varying load with intensity of 5kN/m at center and zero at ends A and B which are 5m apart. Draw SFD and BMD for the beam.

- Q2) Analyze the frame shown below in fig. 2 by Castiglione's theorem. Draw SFD and BMD. [16]



(FIG. 2)

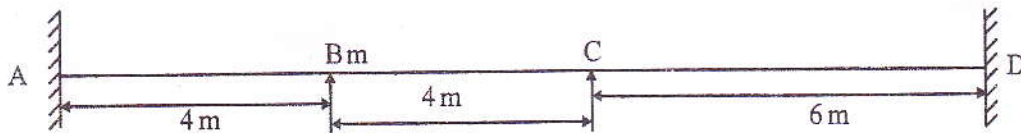
P.T.O.

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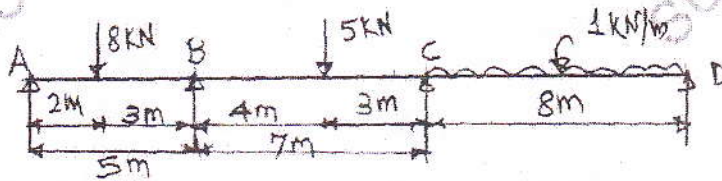
- Q3)** Analyze the continuous beam ABCD, simply supported at A, B, C and D, with span AB = 4m ($2EI$), BC = 3m ($1.5EI$) and CD = 3m (EI). Span AB is subjected to udl of 4kN/m throughout, span BC to a central anti-clockwise couple of 15kNm and span CD supports a central point load of 10kN . Draw SFD and BMD for the beam. Also determine the maximum positive bending moment anywhere in the beam. [17]

SECTION - II

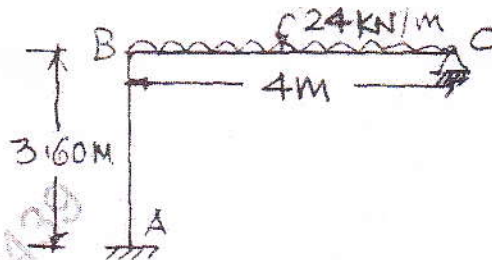
- Q4)** Analysis the continuous beam shown in fig. If the supports B and C sinks by 3 mm and 5 mm respectively for the beam. Take $I = 4 \times 10^7 \text{ mm}^4$ and $E = 200 \text{ KN/mm}^2$. Draw BMD. [17]



- Q5)** A continuous beam ABCD 20 m long is S.S. at its ends and is propped at the same level as shown in fig. If support B is sinks by 10 mm. Analysis the beam by moment distribution method and sketch the BMD. Take $E = 2.1 \times 10^5 \text{ N/mm}^2$ and $I = 85 \times 10^5 \text{ mm}^4$. [17]



- Q6)** Analysis the (Knee bent) as shown in fig. by stiffness matrix method. Draw BMD. [16]



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OR

Analysis the continuous beam as shown in fig. by flexibility matrix method.
Take EI constant throughout.

