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Total No. of Pages :3

Seat No.	

T.E. (Civil) (Semester-VI) (New) (Revised) Examination, April - 2016
THEORY OF STRUCTURES
Sub. Code: 66873

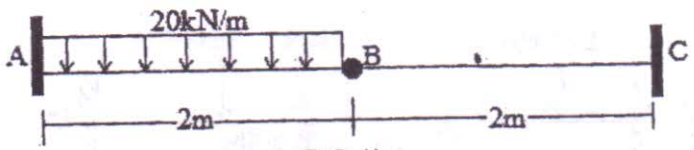
Day and Date : Saturday, 16 - 04 - 2016 **Total Marks : 100**
Time : 3.00 p.m. to 6.00 p.m.

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

SECTION - I

Q1) a) Explain in brief 'Compatibility method' of structural analysis. **[4]**

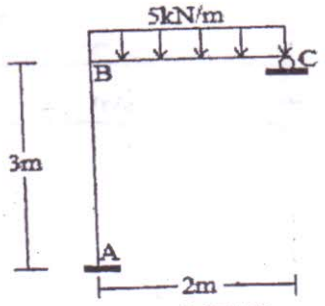
b) Analyze the beam ABC with internal hinge at B as shown in the fig. 1 below by method of consistent deformation. Draw SFD and BMD. $EI_{AB} = EI_{BC}$. **[12]**



(FIG.1)

Q2) a) State and explain 'Castigliano' s theorem' of minimum energy. **[4]**

b) Analyze the bent ABC shown in the fig.2 below by Strain energy method. **[12]**
Take $2EI_{AB} = EI_{BC}$



(FIG.2)

OR

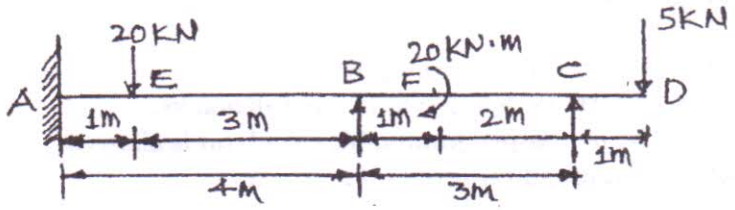
Analyze the two span continuous beam ABC in which AB= 4m and BC =5m, is simply supported at A,B and C. A UDL of 20kN/m is applied on span BC and a central point load of 60kN on span AB. Use Castigliano's theorem. Take reaction at A as Redundant force. Plot SFD and BMD. **[16]**

P.T.O.

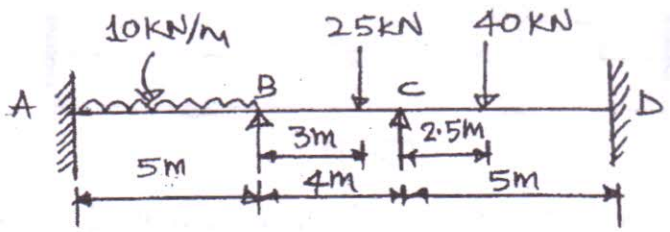
Q3) Draw SFD and BMD for three span simply supported continuous beam ABCD with AB=BC=CD= 4m. A UDL of 10kN/m is acting on span AB and a point load of 50kN at mid-point of span CD. Use Claperyon's theorem of three moments. Also find maximum positive span moments, if any. Assume EI constant for all spans. **[18]**

SECTION - II

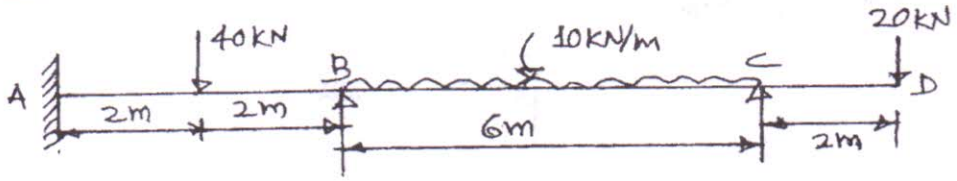
Q4) Analysis the continuous beam loaded as shown in fig. by slope deflection method. Sketch the BMD and SFD. **[17]**



Q5) Analysis the continuous beam loaded as shown in fig. by moment distribution method. Sketch the BMD and SFD. **[17]**



Q6) Analysis the beam as shown in fig. by stiffness matrix method. Sketch the BMD. **[16]**



OR

Develop the flexibility matrix for the beam as shown in fig. **[16]**