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B. Tech. V - Sem. (Main / Back) Exam., Feb.-March - 2021
PCC/PEC Civil Engineering
5CE4 - 02 Structural Analysis - I

[To be converted as per scheme]

Time: 2 Hours **Max. Marks: 65**

Min. Marks: 23

Instructions to Candidates:

Attempt all five questions from Part A, four questions out of six questions from Part B and one questions out of three from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

PART – A

(Answer should be given up to 25 words only) **[5×2=10]**

All questions are compulsory

Q.1 Define Degree of Freedom.

Q.2 Explain Maxwell's Reciprocal Theorem.

Q.3 Define degree of static indeterminacy.

Q.4 Explain Simple Harmonic Motion.

Q.5 State D – Alembert's Principle.

PART – B

(Analytical/Problem solving questions) **[4×10=40]**

Attempt any four questions

Q.1 Explain Betti's Law with Proof.

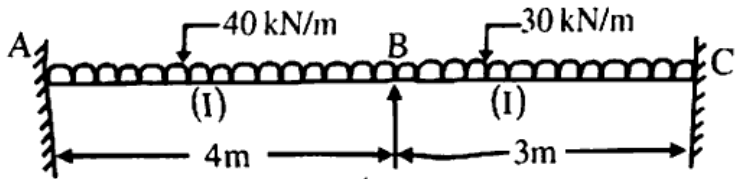
Q.2 Describe basic elements of Vibratory system.

Q.3 Explain Distribution theorem and define Distribution factor.

Q.4 Discuss Damped and Forced Vibration.

Q.5 Describe development of slope deflection equation? Also give the steps of slope deflection method for Analysis of Continuous beam.

Q.6 Analyse the continuous beam as shown in Fig. 1 by using slope deflection method. EI is constant.



(Fig.1)

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[1×15=15]**

Attempt any one questions

Q.1 Analyse the continuous beam loaded as shown in Fig.2 by using slope deflection method. Also draw the Bending Moment diagram and Shear Force diagram.

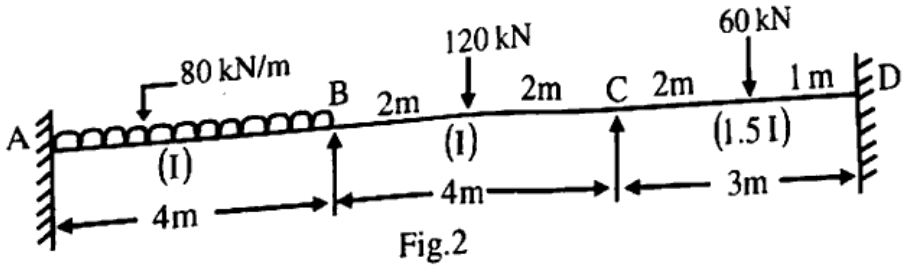


Fig.2

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Q.2 Analyse the portal frame loaded as shown in Fig.3 by using Moment Distribution Method. Also draw the Bending Moment diagram and sketch the deflected curve for the frame.

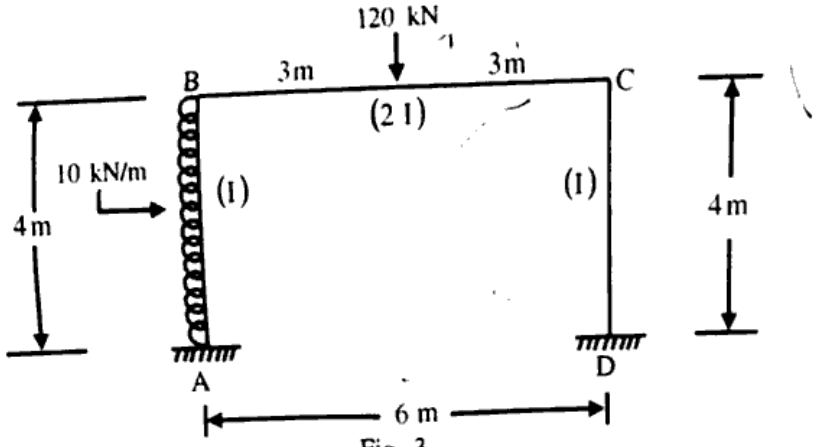

Fig. 3

Q.3 Describe solution of differential equation of Motion in undamped free vibration of SDOF system.

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