10CV53

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Structural Analysis – II

Time: 3 hrs. Max. Marks:100

Note: 1. *Answer FIVE full questions, selecting at least TWO questions from each part.*
2. *Assume missing data if any suitably*

PART – A

1 a. Define influence line diagram and state the importance of influence lines. **(04 Marks)**
   b. Draw ILD for shear force at section of the simply supported beam of span 'L'. **(06 Marks)**
   c. Two wheel load of 20kN and 10kN at a fixed distance of 2m apart cross a simply supported beam of span 20m. Find maximum bending moment and positive and negative shear force at section 8m from left support of the beam. Any load can lead the other load. **(10 Marks)**

2 Analyse the continuous beam shown in Fig Q2, by using slope deflection method. Draw BMD, SFD and Elastic curve.
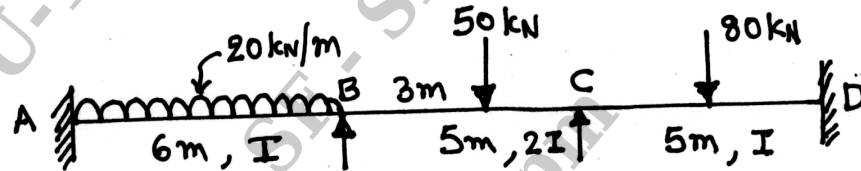

Fig Q2 **(20 Marks)**

3 Analyse the continuous beam shown in Fig Q3, by using moment distribution method. During loading support 'B' sinks by 20mm. Draw BMD and Elastic curve. Take EI = 10000kN – m^2.
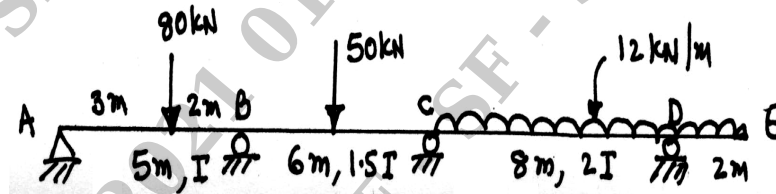

Fig Q3 **(20 Marks)**

4 Analyse the frame shown in Fig Q4, by using slope deflection method of using moment distribution method. Draw BMD and Elastic curve.

Fig Q4 **(20 Marks)**
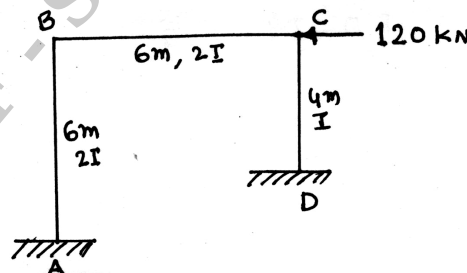
1 of 4

10CV53

PART – B

5 Analyse the Frame shown in Fig Q5, by using Kani's method and draw BMD.
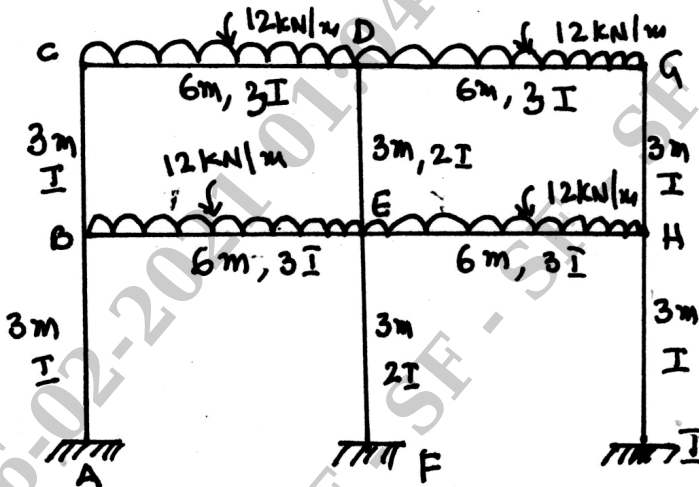

Fig Q5 **(20 Marks)**

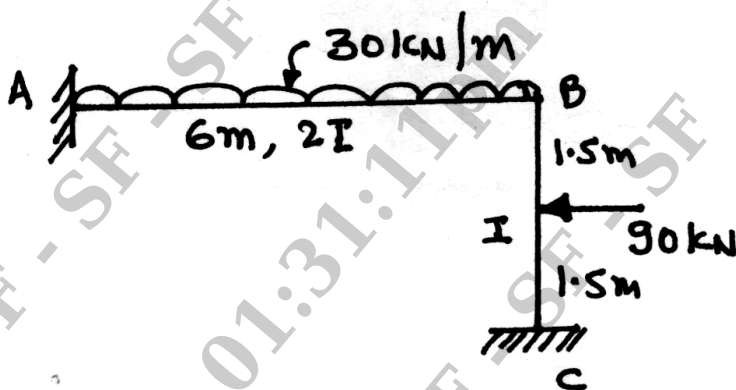**6** Analyse the frame shown in Fig Q6, by using flexibility method. Draw BMD.

Fig Q6 **(20 Marks)**

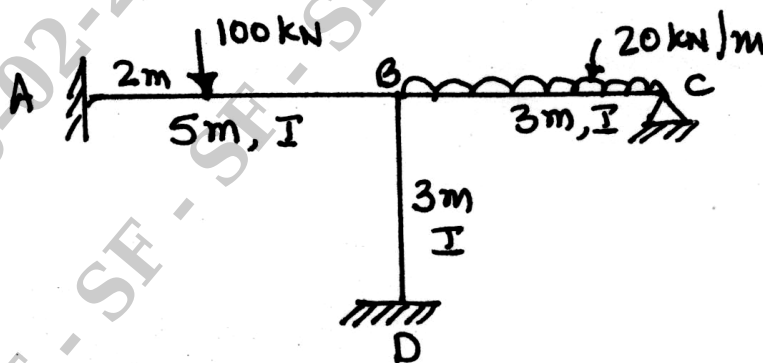**7** Analyse the frame, shown in Fig Q7, by using stiffness method. Draw BMD.

Fig Q7 **(20 Marks)**

8 a. Define :
   i) Natural frequency
   ii) Free and Forced vibration
   iii) Degree of freedom
   iv) Periodic motion **(08 Marks)**

   b. Determine the Natural frequency and period of the system shown in Fig Q8(b). Take $E = 210$GPa and moment of inertia of the section in 1300 cm^4.
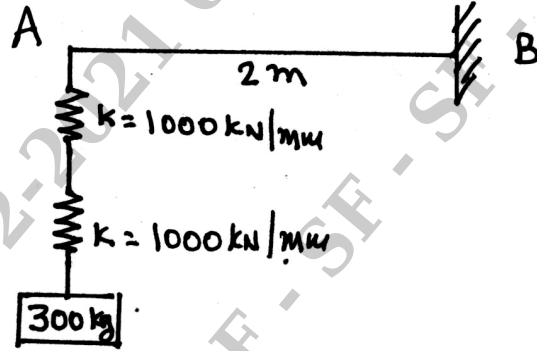
A ───── 2m ───── B
$k = 1000$ kN/mm
$k = 1000$ kN/mm
300 kg

Fig Q8(b) **(12 Marks)**

* * * * *