USN

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Structural Analysis – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What is influence line? Explain its importance in structural analysis. **(05 Marks)**

b. The loading system shown in Fig.Q1(b) crosses a girder 25 m span with 100 kN load leading. Determine:

i) Maximum BM at section X 8m from the left end of the girder and **(07 Marks)**

ii) Absolute maximum Bending Moment (BM) on the girder (ILD or otherwise) **(08 Marks)**

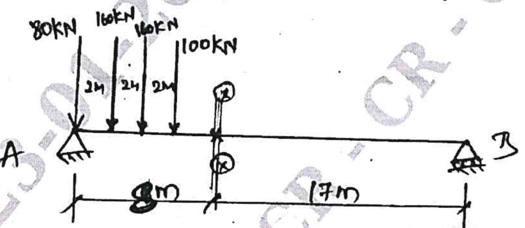

Fig.Q1(b)

2 Analyze the continuous beam shown in Fig.Q2 by slope deflection method. Draw BMD.

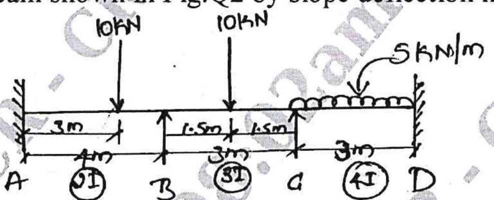

Fig.Q2 **(20 Marks)**

3 a. Define: (i) Stiffness factor (ii) Distribution factor **(04 Marks)**

b. Analyze the Portal frame by Moment Distribution Method and draw BMD for Fig.Q3(b).

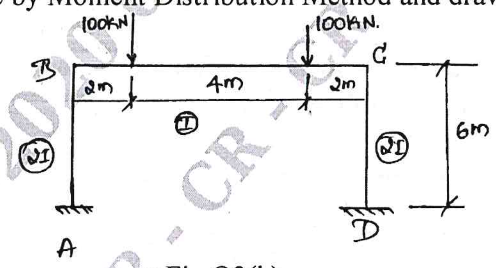

Fig.Q3(b) **(16 Marks)**

4 Frame ABCD is subjected to a horizontal force of 20 kN at joint C as shown in Fig.Q4. Analyze and draw BMD. Using Slope Deflection Method.

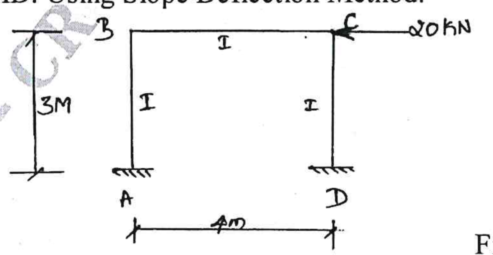

Fig.Q4 **(20 Marks)**

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – B

5 Analyze the continuous beam shown in Fig.Q5 by Kani's method and draw BMD.

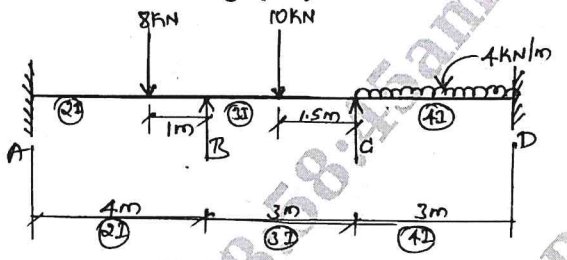

Fig.Q5 **(20 Marks)**

6 Analyze the frame shown in Fig.Q6 by flexibility matrix method.

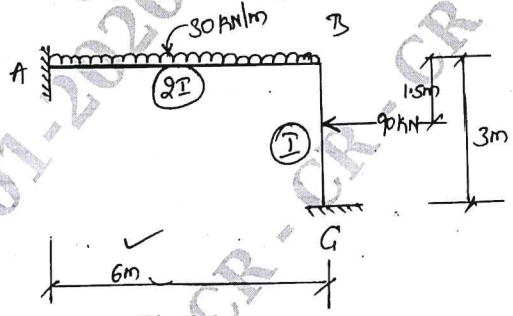

Fig.Q6 **(20 Marks)**

7 Analyze the rigid jointed plane frame shown in Fig.Q7 by stiffness method and draw BMD.

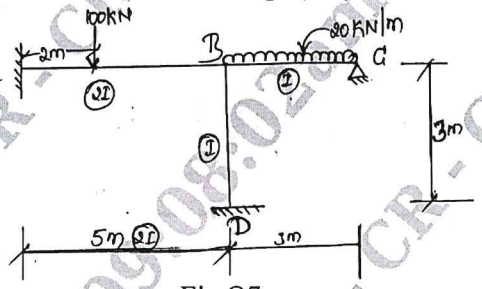

Fig.Q7 **(20 Marks)**

8 a. i) Explain the concept of vibration. **(04 Marks)**

ii) Explain types of vibration. **(03 Marks)**

iii) Explain different types of damping. **(03 Marks)**

b. Determine the equivalent stiffness of the system shown in Fig.Q8(b).
Take $E = 210 * 10^5$ N/m^2, $I = 3.8 * 10^2$ m^4.

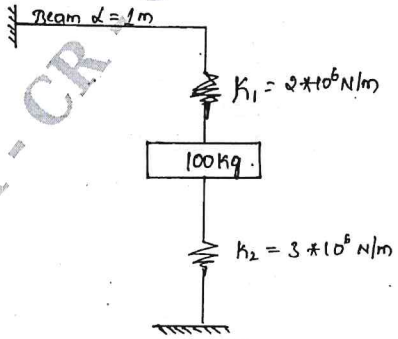

Fig.Q8(b) **(10 Marks)**

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