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320833(20)

B. E. (Eighth Semester) Examination, Nov.-Dec. 2021

(New Scheme)

(Civil Engg. Branch)

STRUCTURAL ANALYSIS-III

Time Allowed : Three hours

Maximum Marks : 80

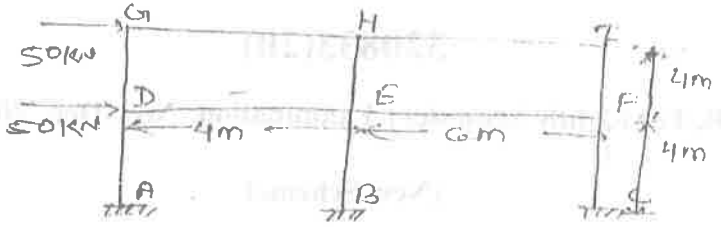
Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each question is compulsory worth 2 marks. Attempt any* ***one*** *question part from (b) and (c) of each question worth 14 marks. Assume suitable data and draw neat sketch wherever required.*

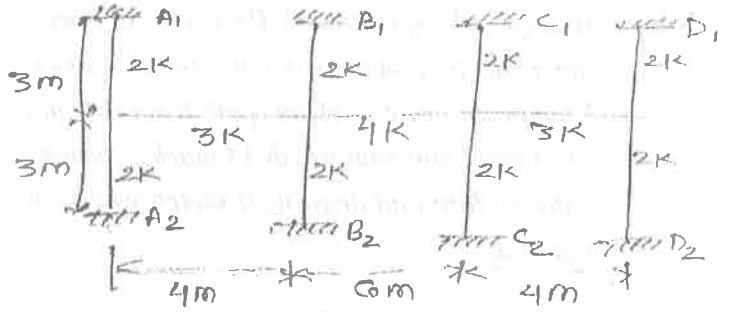
Unit-I

1. (a) Explain substitute frame. 2

(b) Analyze the frame given in the fig. below using portal method of approximate analysis. 14



(c) In a multi storey building. The frame shown in fig. are spaced at 3·5 m intervals dead load from the slab is 3 kN/m^2 and live load is 5 kN/m^2 analysis the beam BC for mid span bending moment self wt. of 4 m span many be taken as 4 kN/m and that of 6 m span beams may be taken as 5 kN/m. 14

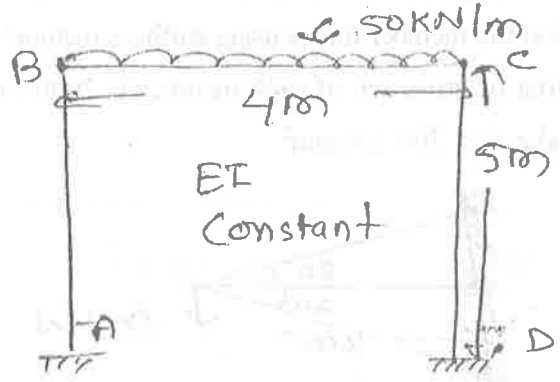


Unit-II

2. (a) Write relation equation between flexibility and stiffness matrix. 2

(b) Analysis the continuous beam shown in fig. using flexibility method. 14

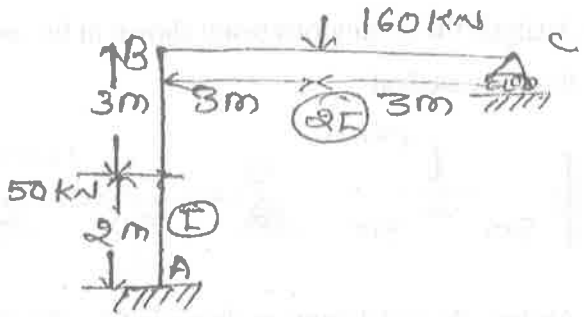
(c) Analysis the portal frame as shown in fig. using force method. 14



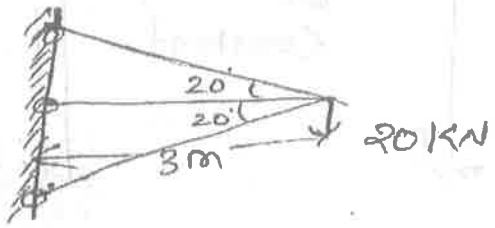
Unit-III

3. (a) Write any three properties of stiffness matrix. 2

(b) Analyze the bend shown in fig. using displacement method. 14



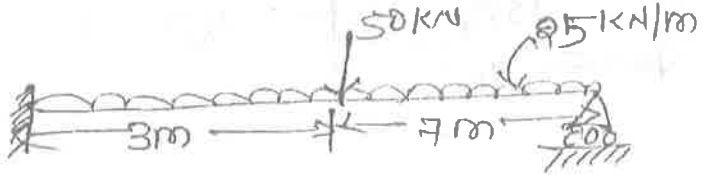
(c) Analysis pin jointed structure as shown in fig. hence find the member forces using stiffness method. The area of cross sec of each member is 2000 mm^2 take E = 200 kN/mm^2. 14



Unit-IV

4. (a) What is constant strain triangle (CST) or linear displacement triangle. 2

(b) Determine the constant nodel vector due to loads acting on the beam as shown in fig. 14



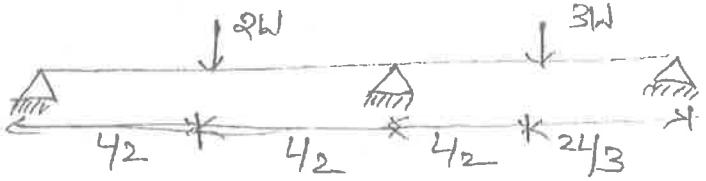
(c) (i) Write the steps involved in finite element method. 7

(ii) Draw Pascal triangle. 7

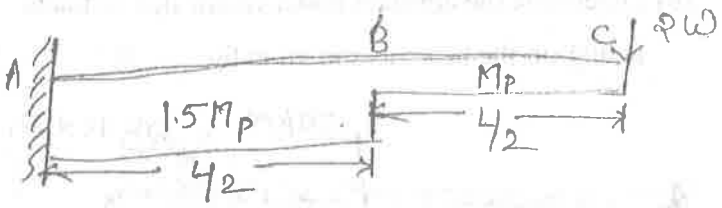
Unit-V

5. (a) Write upper bound theorem. 2

(b) Determine the collapse load for a continuous beam having a uniform cross sec. 14



(c) Find out the collapse load for the cantilever shown in fig. 14


A
B
C
2W
1.5Mp
Mp
L/2
L/2