Ref. No. – EX/CE/T/313/2018(S)

B.E. Civil Engineering Third Year ,First Semester Supplementary Examination, 2018

SUBJECT – Theory of Structures - II

Full Marks 100

Time: Three hours (50 marks for each part)

Use a separate Answer-Script for each part

PART I

Answer any two questions

1 A fixed ended (at A and C) knee bow girder ABC having length of each arm (AB=BC) as 3 m carries a point load of 3t at B acting vertically downward. Solve the girder and draw the complete bending moment, shear force and torsion moment diagrams of the girder. Take EI / GJ = 2.0. 25

2 A two hinged parabolic arch has a span of 13 m , the height of crown is 4 m above left support and 3 m above the right support .The horizontal distance between the left support and the crown is 7 m . The arch is loaded with a point load of 10 t at the crown . Solve the arch and draw the complete bending moment, shear force and normal thrust diagrams taking at least 10 equidistant sections apart from the supports. 25

3 A fixed –fixed frame ABCD has the following details . 25
The left support A is 1 m below the right support D .The column AB = 4 m , beam BC = 3 m and the column CD = 3 m . The flexural rigidities are EI , EI and 1.5 EI for AB , BC and CD respectively . A horizontal force of 5 t acts at B in the direction BC .

Solve the frame by column analogy or elastic centre method and hence draw the complete bending moment and shear force diagrams .

B E CIVIL THIRD YEAR 1ST SEMESTER SUPPLEMENTARY EXAMINATION, 2018

THEORY OF STRUCTURE - II

Time 3 hours Full marks 100

(50 Marks for each part)

Use separate answer scripts for each part

Part- II

Answer any two questions. Each question carries 25 marks.

1. Solve the frame shown in Fig. Q 1 using slope deflection method. Indicate the joint displacements. Draw neat BM and SF diagrams.

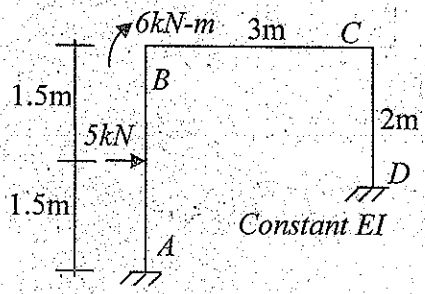

Fig Q1

2. Form the bending moment and the shear force diagram for the beam shown in Fig Q2 using moment distribution method.

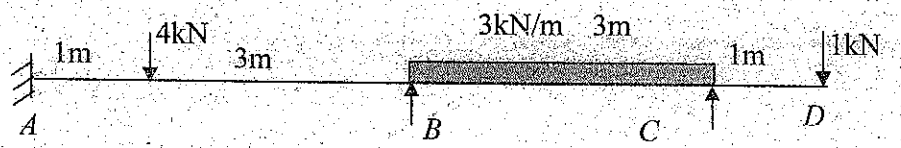

Fig Q2

3. Compute the axial forces, B.M. and S.F. for roof and third floor members of the frame shown in Fig Q3 using cantilever method. Assume the central columns have 1.5 times the area compared to the outer columns.