B.E. Civil Engineering Third Year ,First Semester 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

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1   A circular bow girder of radius 6m and semi-central angle of 90^0 is fixed at both ends and carries a udl of 3t/m throughout . Solve the girder and draw the complete bending moment, shear force and torsion moment diagrams of the girder taking sections 15^0 apart. 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 .
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 .   25

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

B.E. CIVIL ENGINEERING 3RD YEAR 1ST SEMESTER EXAMINATION, 2018

THEORY OF STRUCTURE - II

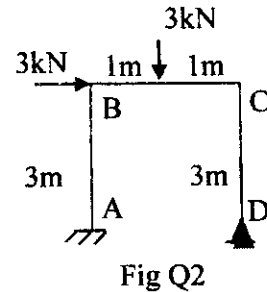Time 3 hours   Full marks 100
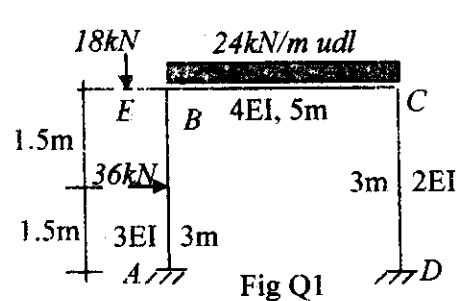
(50 Marks for each part)
Use separate answer scripts for each part

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 diagram, along with the deflected shape. Length of BE is 1m.

Fig Q1

Fig Q2

2. Draw the bending moment diagram and the shear force diagram for the frame shown in Fig Q2 by applying *moment distribution method*. Assume EI to be constant although. Support at D is hinged.

3. Stating *assumptions*, 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 that the outer columns have cross sectional area = A, and the central columns have cross sectional areas = 1.25A.
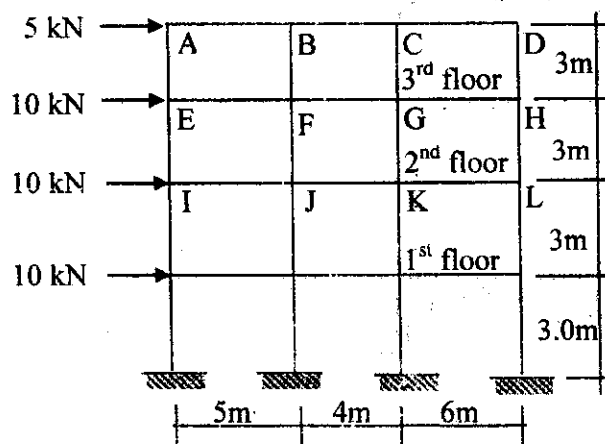

Fig. Q3