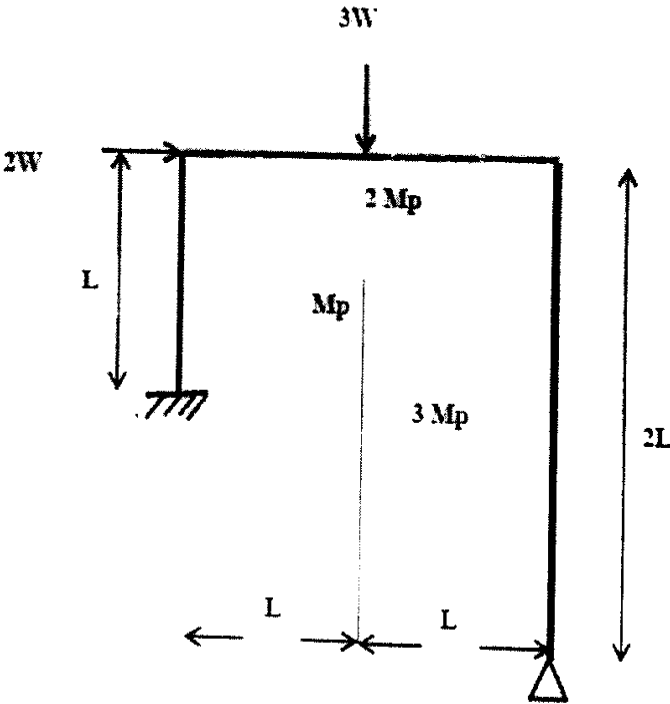# B.E. Civil Engineering (Part Time) - Third Year - Second Semester 2018
Theory of Structures-III

Time: Three Hours

Full Marks 100

[No code or handbook is allowed]

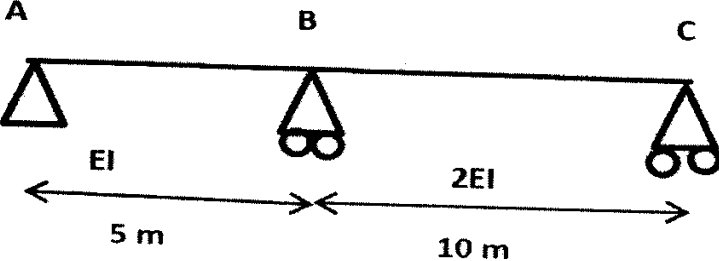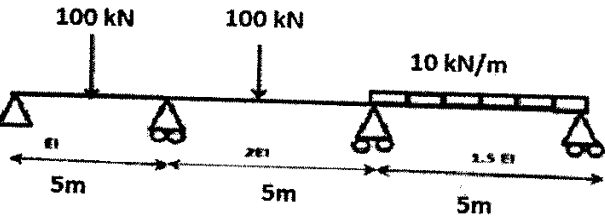| No. of questions	(Question No. 1, 2 and 3 compulsory. Answer any two of rest of the questions.)	Marks (5X20=50)
1 (a)	Derive the influence line diagram of horizontal force on pylon, tension in the suspender, Bending moment and shear force at any point on a three hinge stiffening girder of a suspension cable stayed bridge.	10
(b)	A suspension bridge is of 150 m span. The cable of the bridge has a dip of 15m. The cable is stiffened by a girder with hinges at either end and at centre. The dead load of the girder is 10 kN/m. A single concentrated load of 200 kN passes through it. i) What is the value of maximum horizontal pull? ii) What will be the maximum load intensity (w) of load transmitted to the cable? iii) What will be the maximum bending moment at 20 m from left end? iv) Find the greatest positive and negative bending moment of the girder when Also find the maximum tension in the cable.	10
2 (a)	Find the collapse load for the following portal frame.	12

B.E. Civil Engineering (Part Time) - Third Year - Second Semester-1
Theory of Structures-III

Time: Three Hours

Full Marks 1

[No code or handbook is allowed]

No. of questions	(Question No. 1, 2 and 3 compulsory. Answer any two of rest of the questions.)	Marks (5X20=5
(b)	State and explain upper bound theorem and lower bound theorem with an example	8
3 (a)	Find the maximum value of R_A, B.M. and S.F. at midpoint of AB of the beam ABC, if 50 kN concentrated load passes over ABC. The beam is made of M20 grade of concrete. I=0.0864 m^4.	20

A   **B**   **C**

EI

2EI

5 m

10 m

4(a) (b)	Determine the stiffness matrix of a beam member.	8
	Solve the beam by Flexibility method. The beam is made of M25 grade of concrete. I=0.0864 m^4.	12

100 kN   100 kN

10 kN/m

EI   2EI   1.5 EI

5m   5m   5m
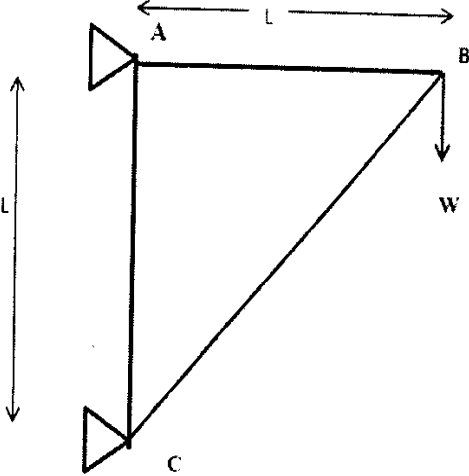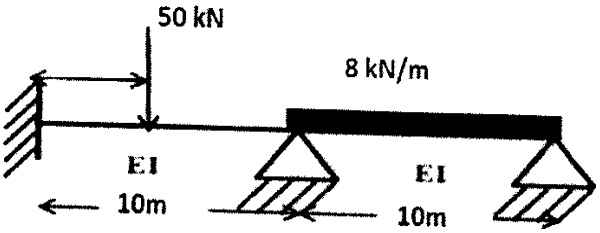
B.E. Civil Engineering (Part Time) - Third Year - Second Semester-18

Theory of Structures-III

Time: Three Hours

Full Marks 100

[No code or handbook is allowed]

No. of questions	(Question No. 1, 2 and 3 compulsory. Answer any two of rest of the questions.)	Marks (5X20=50)
5	Solve the truss by Stiffness method. A,E are constant for all the members.	20
6	Draw the B.M, and S.F. of the following beam by stiffness method.M25 grade of concrete. I=0.0864 m^4.	20