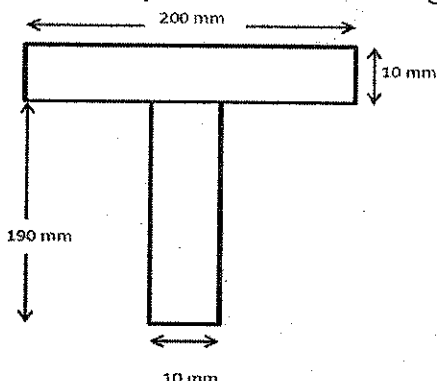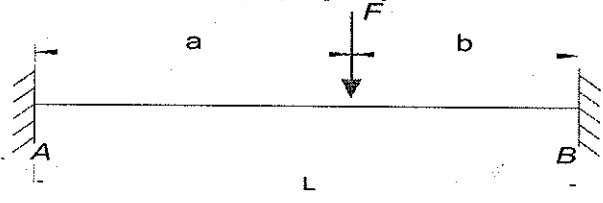# B.E. Civil Engineering (Part Time) - Third Year - Second Semester-19

Theory of Structures-III

Time: Three Hours

Full Marks 100

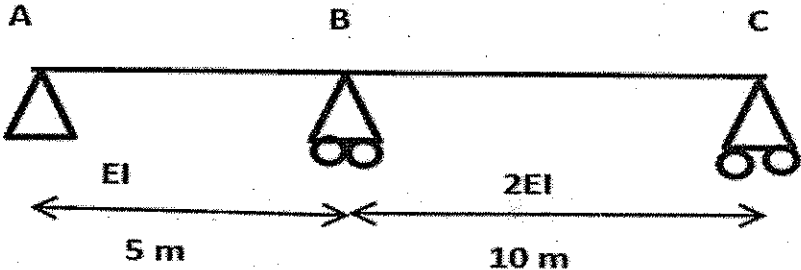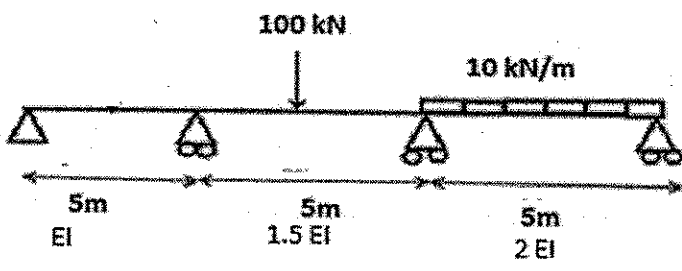### [No code or handbook is allowed]

No. of questions	Answer any five of the following question	Marks (5X20)
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 120 m span. The cable of the bridge has a dip of 10m. The cable is stiffened by a girder with hinges at either end and at centre. The dead load of the girder is 8 kN/m. A single concentrated load of 150 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 Shape factor of the following section. 	10
(b)	Find out the ultimate load F by upper bound theorem and lower bound theorem, if the plastic moment carrying capacity of the beam is Mp. 	10

B.E. Civil Engineering (Part Time) - Third Year - Second Semester-19
Theory of Structures-III

Time: Three Hours   Full Marks 100

[No code or handbook is allowed]

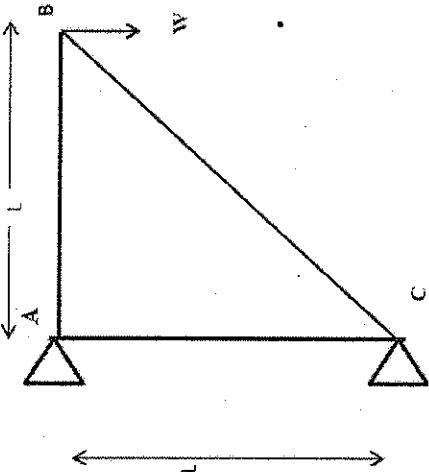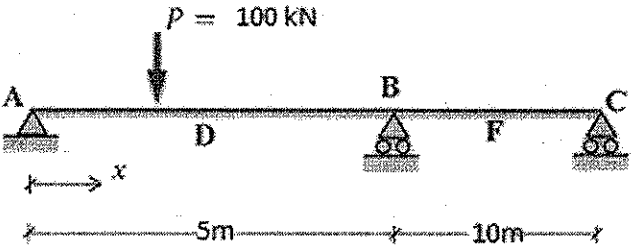| No. of questions	Answer any five of the following question	Marks (5X20=50)
3 (a)	Find the maximum value of SFD at midpoint of BC of the beam ABC, if 5 kN/m UDL of length 20m load passes over ABC. The beam is made of M30 grade of concrete. I=0.0864 m^4. 	20
4(a) (b)	Determine the stiffness matrix of a beam member. Solve the beam by Flexibility method. The beam is made of M25 grade of concrete. I=0.09 m^4. 	8 12

B.E. Civil Engineering (Part Time) - Third Year - Second Semester-19
Theory of Structures-III

Time: Three Hours

Full Marks 100

[No code or handbook is allowed]

No. of questions	Answer any five of the following question	Marks (5X20)
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.(x=2m) Two-span beam	20