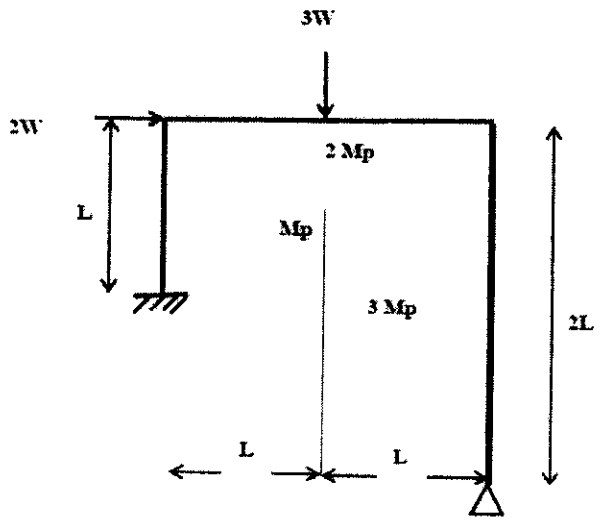
B.E. Civil Engineering (Part Time) - Fourth Year - First Semester (Old)

Theory of Structures-III
(Part I)

Time: Three Hours

Full Marks 100

[No code or handbook is allowed]

No. of questions	(Answer Any *two* of the following questions.)	Marks (2X25=50)
1 (a)	A suspension cable of 100 meters horizontal span and central dip 10 m has a stiffening girder hinged at both ends. The load transmitted to the cable including its own weight is 2800 kN. The girder carries live load 25 kN/m UDL over the left quarter of the span. Assuming the girder to be rigid, calculate the shear force, bending moment in the girder at 12.5 m from the left support. Also calculate the maximum tension in the cable.	10
(b)	A suspension bridge is of 155 m span. The cable of the bridge has a dip of 10 m. The cable is stiffened by a girder with hinges at either end and at centre. The dead load of the girder is 25 kN/m. A single concentrated load of 300 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 10 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.	15
2 (a)	Find the collapse load for the following portal frame. 	15

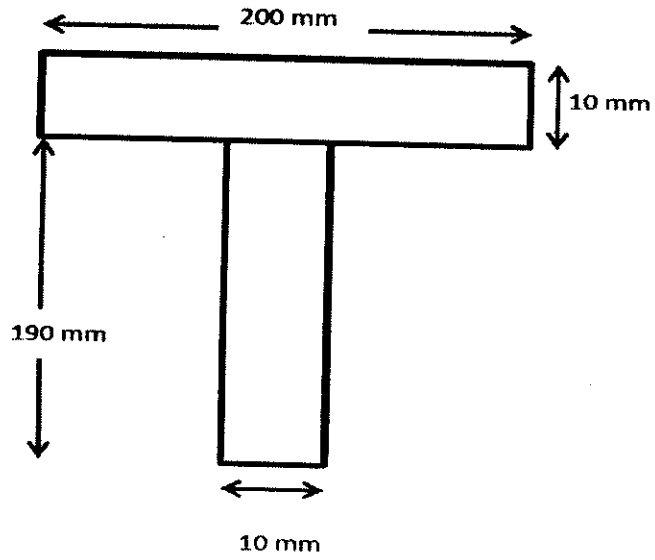
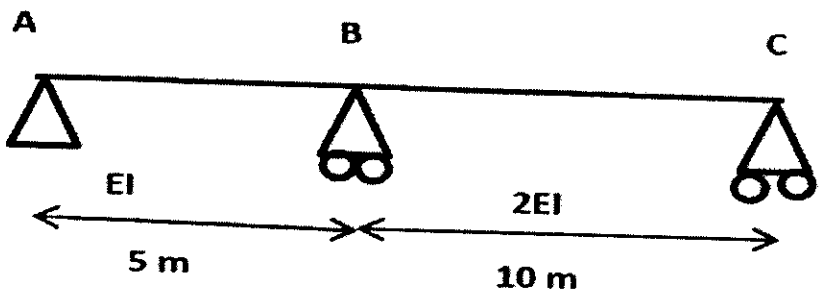
B.E. Civil Engineering (Part Time) - Fourth Year - First Semester (Old)

Theory of Structures-III
(Part I)

Time: Three Hours

Full Marks 1

[No code or handbook is allowed]

No. of questions	(Answer Any four of the following questions.)	Marks (2X25=50)
(b)	Find the Shape factor of the following section.  	10
3 (a)	Find the maximum value of R_A, R_B, R_C, M_B, B.M. and S.F. at midpoint of AB of the beam ABC if 150 kN load passes over ABC. The beam is made of M25 grade of concrete. I=0.09 m^4.  	25

Form A: Paper –Setting Blank

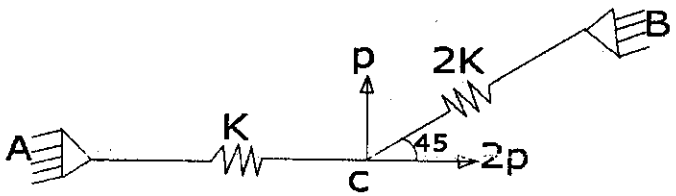
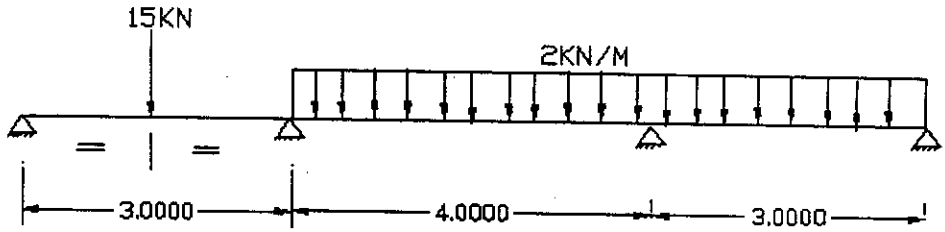
Ref No. –Ex/CE/5T/402/2018

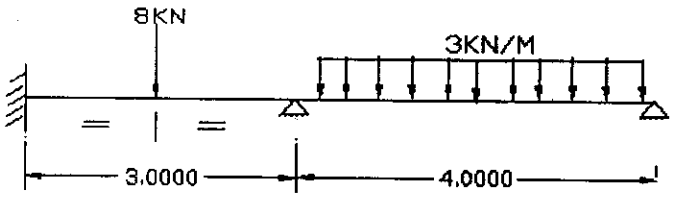
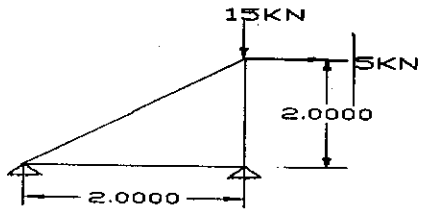
B.CIVIL ENGG (EVENING) 4TH YEAR 1ST SEM EXAM 2018 (OLD)

SUBJECT: THEORY OF STRUCTURE III

Time: Three hours

Full Marks 50
(partII)

No. of Question		Marks
1	**Answer any two questions.** a) . Find support reaction of truss member and joint displacement a C. Where K is stiffness of member.  b) A cantilever beam AB having length L is subjected to force P1 (vertical force) & p2 (moment) at free end. The corresponding displacement is denoted by D1 & D2. Proof that the multiplication of flexibility matrix' & stiffness matrix is unit matrix. c) Find out joint load matrix and stiffness matrix in structure oriented system for continuous beam. EI is constant for the whole span.(Fig-1)  Fig–1	9+8+8=25

No. of Question		
2	Compute the support reaction and member end force using 'Stiffness method' for the continuous beam shown fig-2. EI is constant for the whole span.  FIG-2	25
3	Compute the reaction forces and member force of the truss (fig-3) using 'flexibility method'. EA is constant for all members.  FIG-3	25