Form A: Paper –Setting Blank

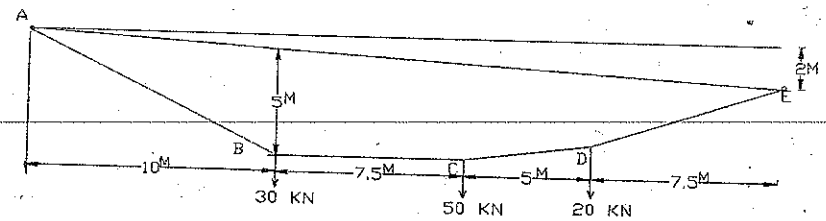
Ref No. –Ex/CE/5/T/402/56/2013 (S)

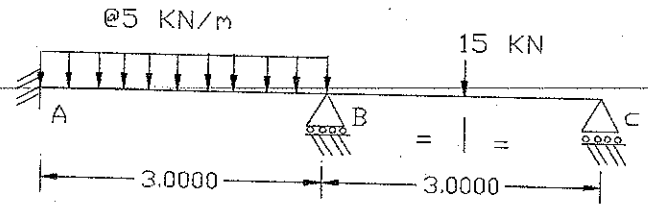
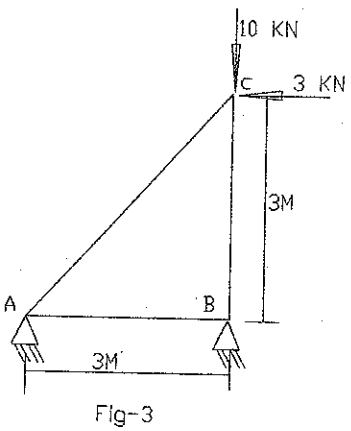
B. CIVIL ENGG.(EVENING) 4ND YEAR 1ST SEM. EXAM. 2018(old)
(1st Semester ~~/Repeat/Supplementary/Annual/Bianual~~)

SUBJECT: THEORY OF STRUCTURE III
(Name in full)

Time: ~~Two hours~~/Three hours/~~Four hours/ Six hours~~

Full Marks 100
(full part)

No. of Question		Marks
1	**Answer any four questions.** i) Explain 'Flexibility Matrix' & 'Stiffness Matrix'. ii) 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. iii) Determine the component of reactions at A & E and shape for the cable shown in Fig-1 for which dip at B is known. 	5+10+1 =25
2	a) State the Muller Breslau's principal & explain its use for obtaining the I.L. for statically indeterminate structure. b) A propped cantilever beam AB of span 'L'. i) Determine the equation for I.L. for reactions at B (propped support) and A. ii) Draw the I.L for B.M. at Section C at a distance 'a' from support B. iii) Find out maximum reaction at B and A due to wheels load 5t and 10t spaced 1m apart, passage from A to B.	7+6+5+ 7=25.

No. of Question		
3	a) A Three hinged girder of suspension bridge of span 'L' and central dip 'h'. Find out- i) I.L.D for horizontal reaction for the cable. ii) I.L.D for load intensity transmitted to the cable. b) The cables of a suspension bridge have a span of 60m and central dip of 7.5m. Each cable is stiffened by hinged at the end and also at the middle so as retain a parabolic shape for the cable. The girder is subjected to a dead load of 10 KN/m & a live load of 20 KN/m , 15m long. Find the maximum tension in the cable when the leading edge of the live load is just at the centre of the girder. Draw S.F. & B.M. diagram for the girder.	10+15= 25
4	Compute the reaction forces and moment using 'Stiffness method' for the continuous beam. (fig-2) Also find the member end forces for span AB. EI is constant for the whole span.  Fig-2	25
5	Compute the support reaction and member force using 'flexibility method' of the truss shown fig-3. EA is constant for all members.  Fig-3	25