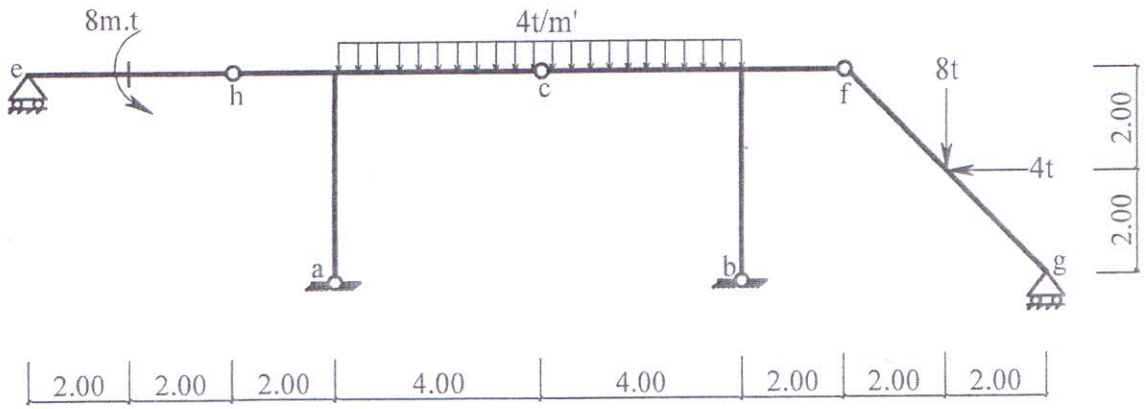
Assuit university Faculty of Engineering, First year Arch. Full Marks: 100	Theory of structures Final Year Exam May, 2015 Time Allowed: 3 hours

Important remarks	• **This exam measures ILOs no.: A1, A4, A13&B1, B2, B3, B17&C1, C2,C7&D1** • **No. of pages:9 - No. of questions:8**

Problem No.1 [10Marks]

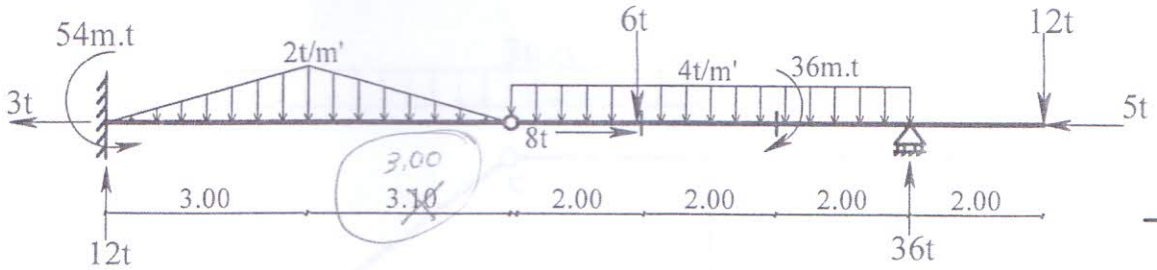
For the indicated frame shown in [Fig.1] ,find the reactions and internal forces in the link members, if any :-



(Fig.1)

Problem No.2 [20Marks]

Draw the N.F.D , S.F.D and B.M.Ds for the indicated Beam shown in [Fig.2] :-



(Fig.2)

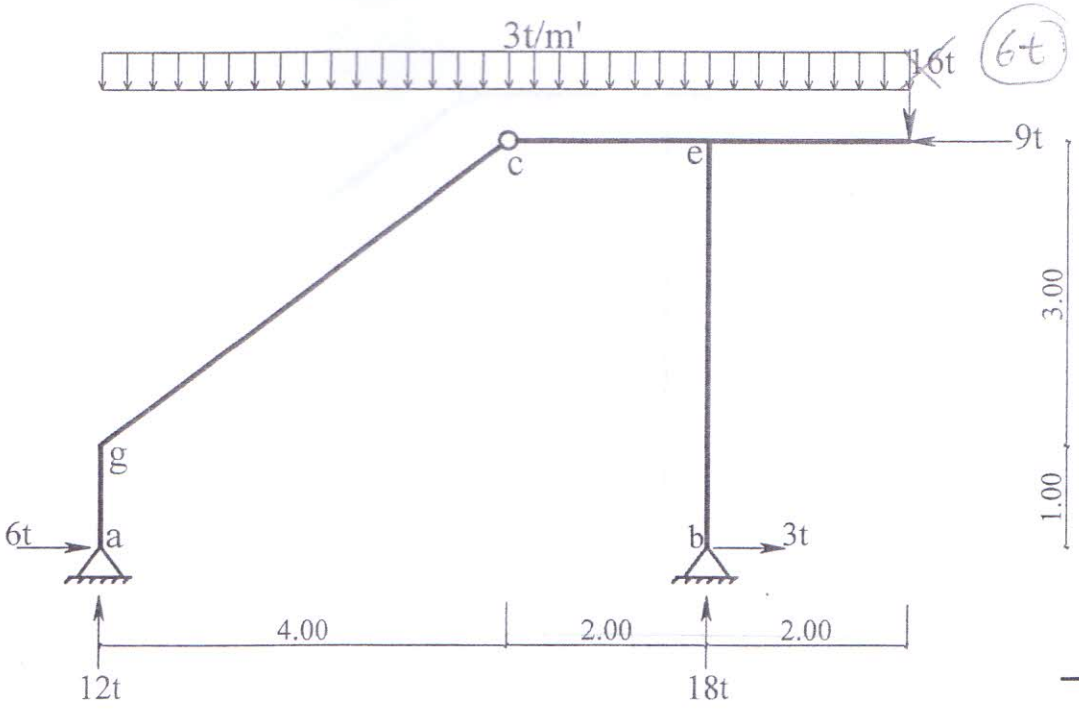
N.F.D

S.F.D

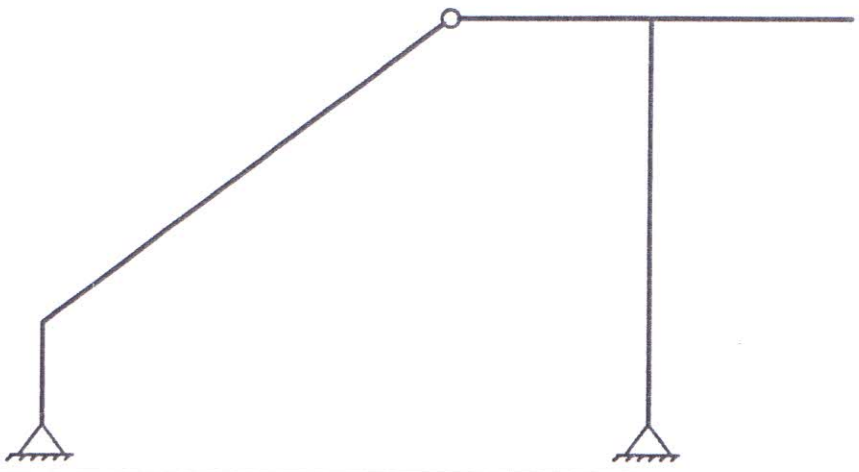
B.M.D

Problem No.3 [15Marks]

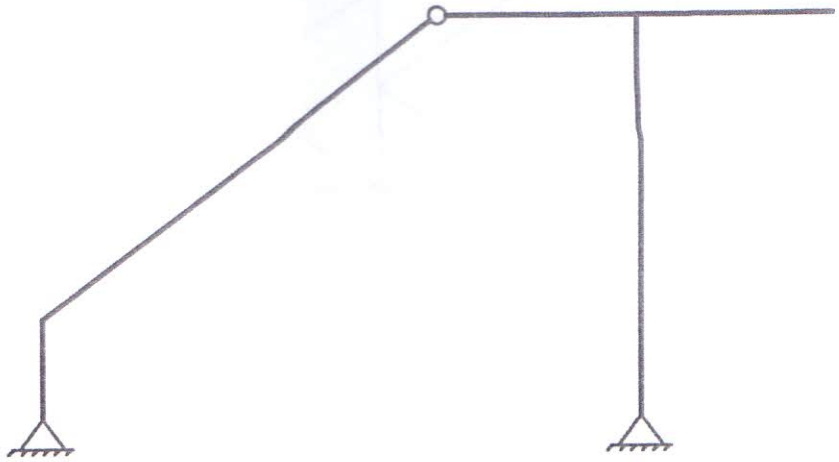
Draw the N.F.D , S.F.D and B.M.Ds for the indicated frame shown in [Fig.3] :-



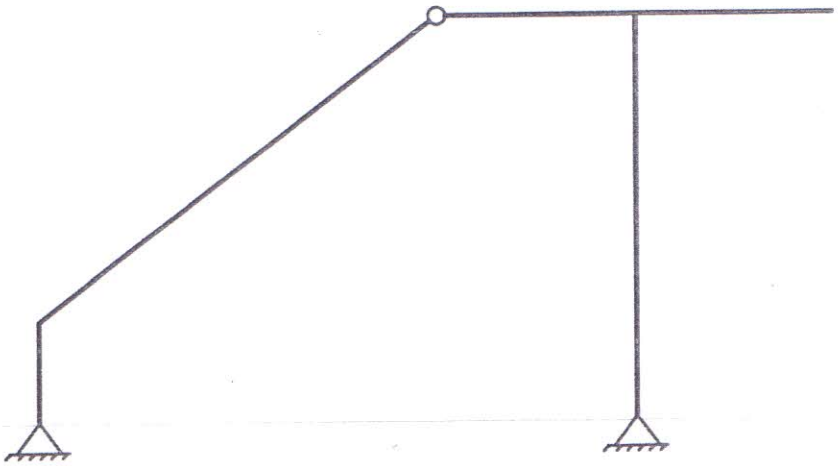
(Fig.3)



N.F.D



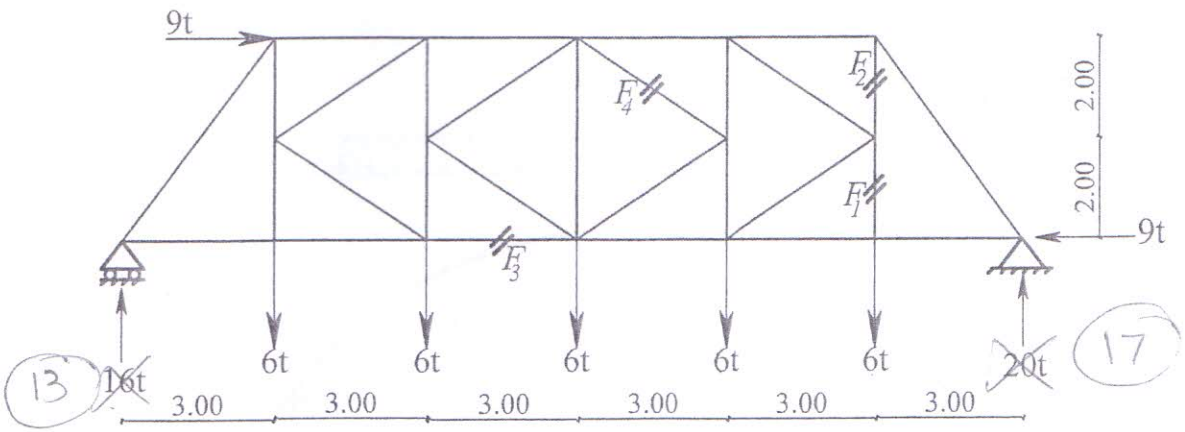
S.F.D



B.M.D

roblem No.4 [20Marks]

Find the internal forces in the marked link members for the truss shown in [Fig.4] :-

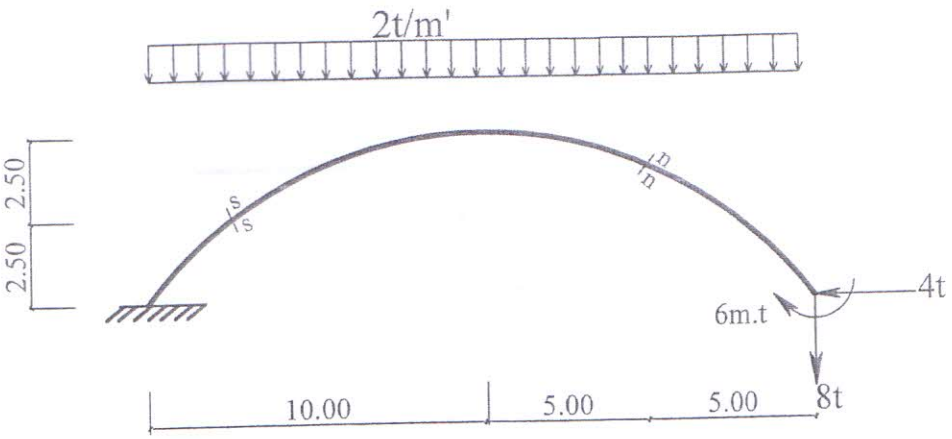


(Fig.4)

Problem No.5 [10Marks]

For the indicated Arche shown in [Fig.5] ,find the internal forces at sections s-s , n-n.

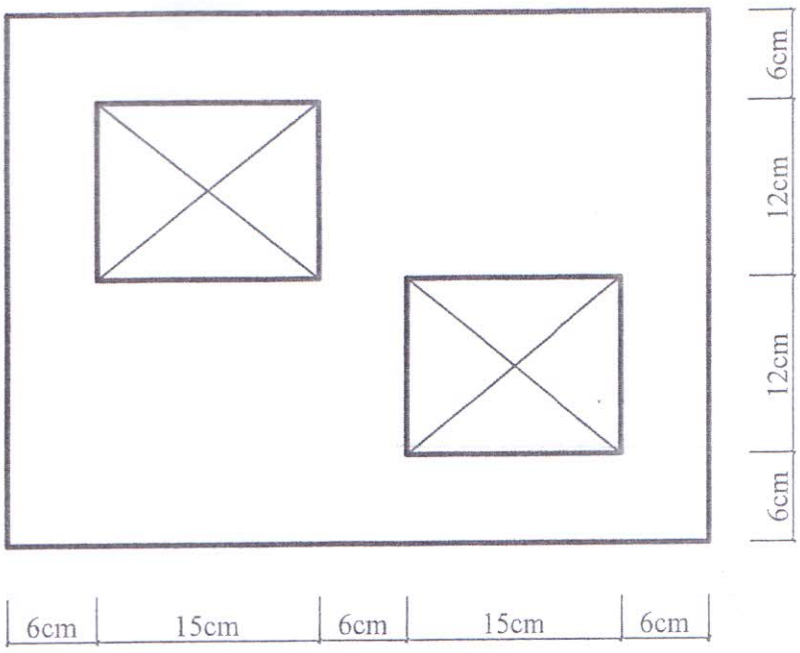
If the equation for the parabolic arch $Y = X - \frac{X^2}{20}$



(Fig.5)

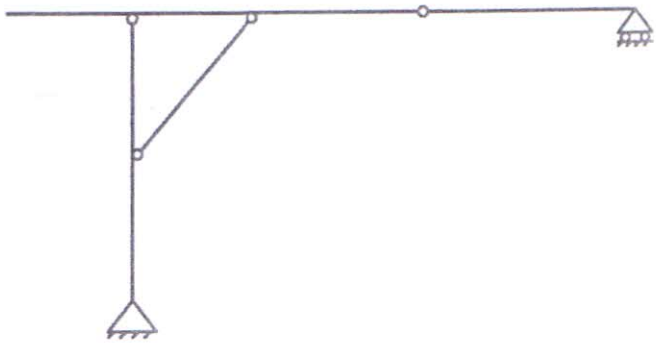
roblem No.6 [9Marks]

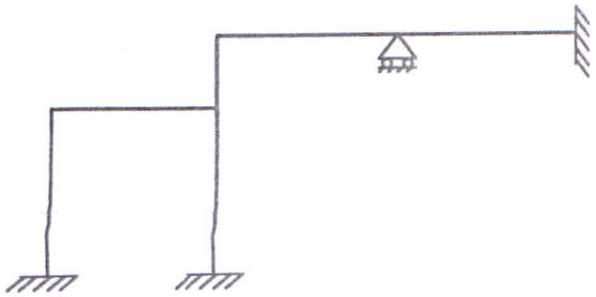
alculate the properties of the cross section shown in [Fig.6] :- area, centroid, moment d product moment of inertia about horizontal and vertical axis. Then find the principle oments of inertia and their directions.

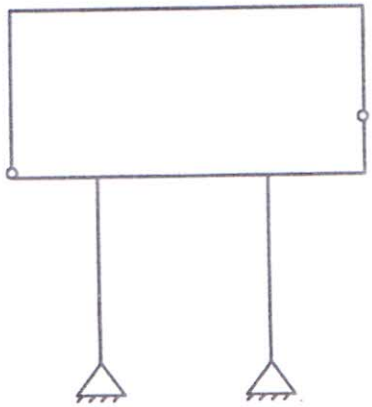


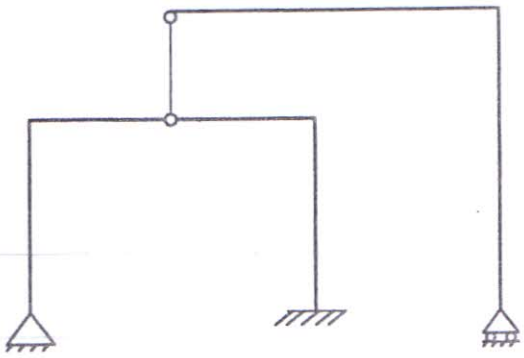
roblem No.7 [8 Marks]

Discuss the stability and determinacy and classify the following structures :-



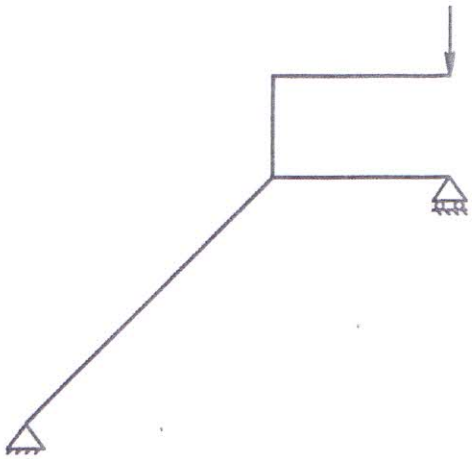


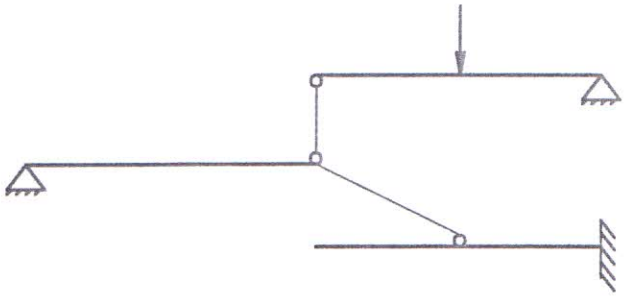


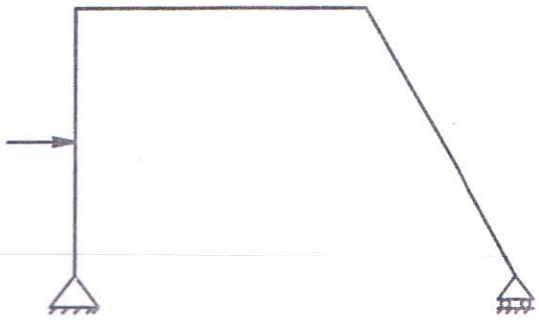


Problem No.8 [8 Marks]

- Sketch the B.M.D for the following structures.







Best Wishes,
Ass.Prof. Hamdy.H.A.Abd-el Rahim