

POTENTIAL EXAM PROBLEM

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In the Class assignment, we discussed the optimisation(stiff truss) of truss structure from the ground truss such that areas of each truss is a design variable...Did you ever think what if the nodal positions themselves are variables. To simplify the problem let us take a triangular truss which is fixed at two of its base nodes and position of third node can be variable. So formulate the problem in such a way so as to find the optimum position of the third node so that the resulting structure is stiff. Assume load acting on the third variable node is P and acting at an angle θ to the horizontal. Also assume that third node always is on the straight line at a height h from the horizontal. Details are as follows:

- Distance between the two node points is l_3
- Distance from the basal line to the vertex is h
- Length of one bar cannot exceed 1.5 times l_3

May be also you can try out the direction of the load to act to find the optimum truss configuration