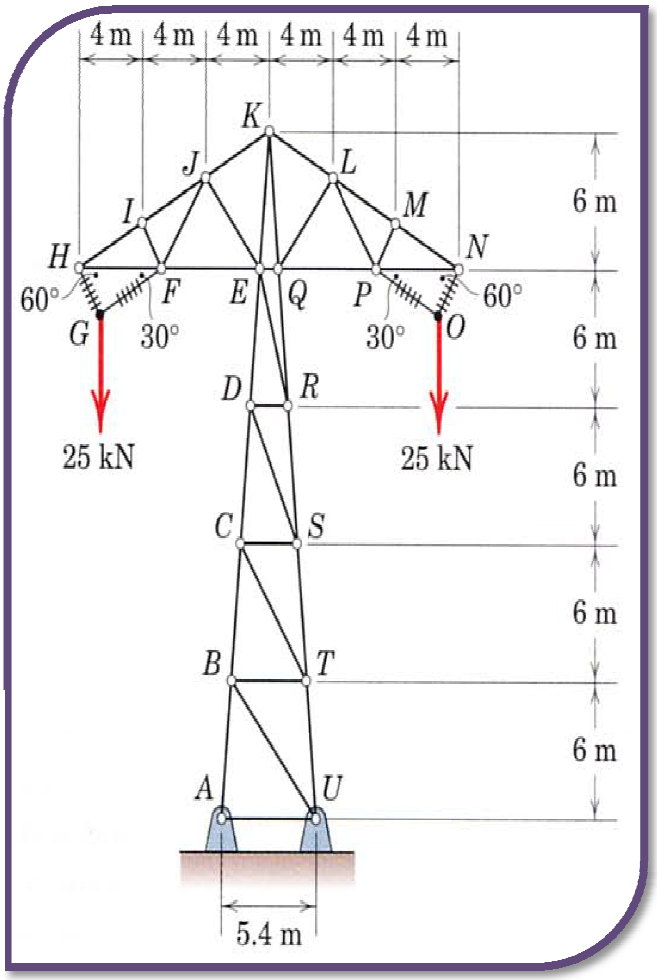
Tutorial no.: 4

Q.1

A design model for a transmission-line tower is shown in the figure. Members *GH*, *FG*, *OP*, and *NO* are insulated cables; all other members are steel bars. For the loading shown, compute the forces in members *FI*, *FJ*, *EJ*, *EK*, and *ER*. Use a combination of methods if desired.

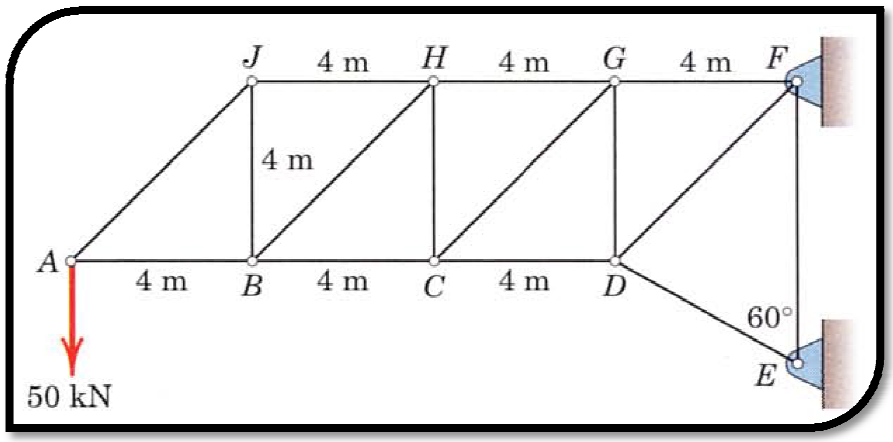
Ans. *FI* = *ER* = 0, *FJ* = 7.81 kN *T*
EJ = 3.61 kN *C*, *EK* = 22.4 kN *C*



Q.2

Determine the forces in members *GH* and *CG* for the truss loaded and supported as shown. Does the statical indeterminacy of the supports affect your calculation?

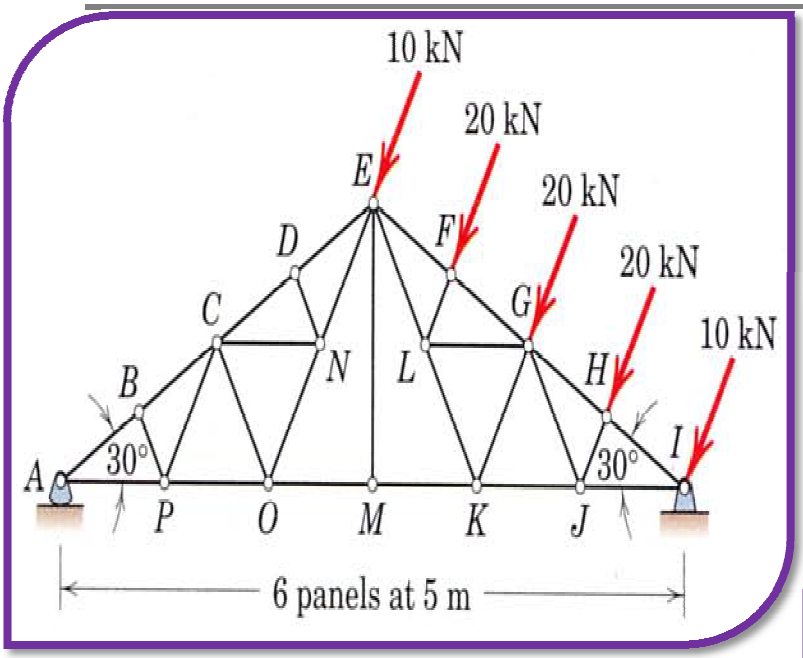
Ans. *CG* = 70.7 kN *T*, *GH* = 100 kN *T*, No



Q.3

Find the forces in members *EF*, *KL*, and *GL* for the Fink truss shown.

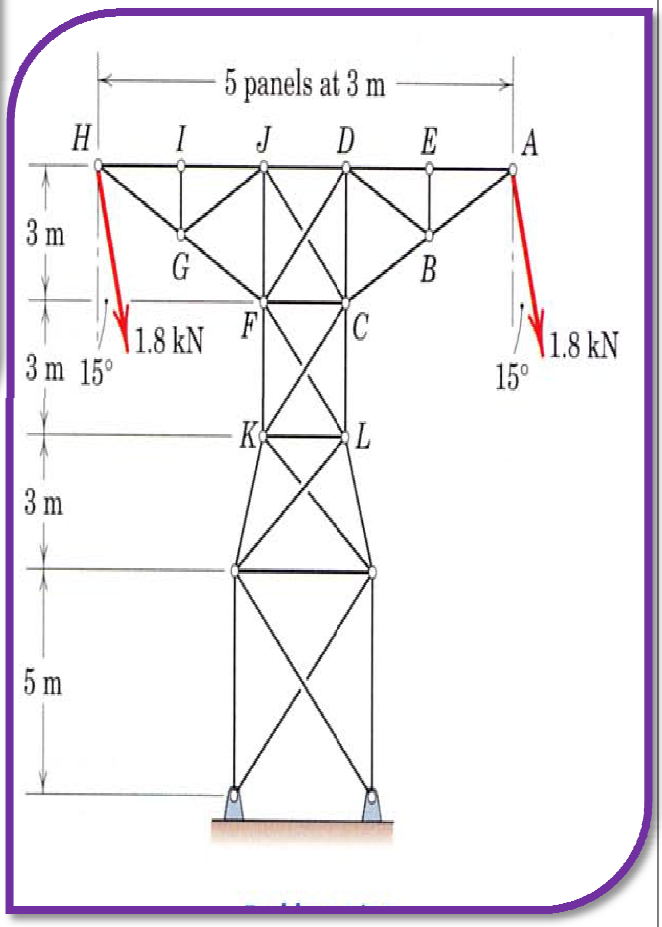
Ans. *EF* = 75.1 kN *C*, *KL* = 40 kN *T*
GL = 20 kN *T*



Q.4

The tower for a transmission line is modeled by the truss shown. The crossed members in the center sections of the truss may be assumed to be capable of supporting tension only. For the loads of 1.8 kN applied in the vertical plane, compute the forces induced in members *AB*, *DB*, and *CD*.

Ans. $AB = 3.89$ kN C, $DB = 0$, $CD = 0.932$ kN C



Q.5

Determine the forces in members *BI*, *CI*, and *HI* for the loaded truss. All angles are 30°, 60°, or 90°.