Module 2: Analysis of Statically Determinate Structures

Lecture 10: Tutorial Problems

Objectives
In this course you will learn the following

- Some tutorial problems related to this module.

TUTORIAL PROBLEMS

Find the forces in $EC$, $EF$ and $HF$ in the following Figure T2.1.

![Figure T2.1](image)

Find the forces in all members in the following Figure T2.2.

![Figure T2.2](image)

Find the internal force at moment $A$ in Figure T2.3.

![Figure T2.3](image)
T2.4 Find Bending Moment Diagram (BMD) and Shear Force Diagram (SFD) of the beams in Figure T2.4.

T2.5 Find the shape \((y \text{ as a function of } x)\) of the parabolic three hinges arch for which bending moment will be zero at every section.

T2.6 Find the bending moment under the load for the circular three hinged arch.
Recap
In this course you have learnt the following

- You have learned some tutorial problems related to this module.

Answers of tutorial problems

**T2.1**

\[ F_{BC} = -6.75 \text{ kN} \]
\[ F_{BP} = 6.75 \text{ kN} \]
\[ F_{EF} = 6 \text{ kN} \]

**T2.2**

\[ F_{AC} = F_{BD} = F_{CG} = F_{FD} = F_{DG} = F_{BG} = F_{GF} = F_{EF} = P/\sqrt{2} \]

**T2.3**

\[ P_x = -2 \text{ kN}, \ V_y = -3 \text{ kN}, \ V_z = 0 \]
\[ T_x = 9 \text{ kNm}, \ M_y = -6 \text{ kNm}, \ M_z = -7 \text{ kNm} \]

Answers of tutorial problems

T2.4
\[ y = 4h \left( \frac{x}{L} - \frac{x^2}{L^2} \right) \]

2 kNm