



PHASE I INTRODUCTION

You're a Civil Engineering student who will be joining a project focused on structural calculations and have been given several questions about structures. The following questions were provided by the Project Manager:

1. Explain what a structure is,
2. Explain the benefits and objectives of studying structural science,
3. Explain the elements and classification of structures,
4. Explain what a load is,
5. Explain what a support is.



PHASE II

STRUCTURE OF A STATIC BEAM UNDER A FIXED LOAD

You have been accepted into the project and asked to calculate a structure for a project. Calculate the structure for one of the structures below with the final result being an internal force diagram.

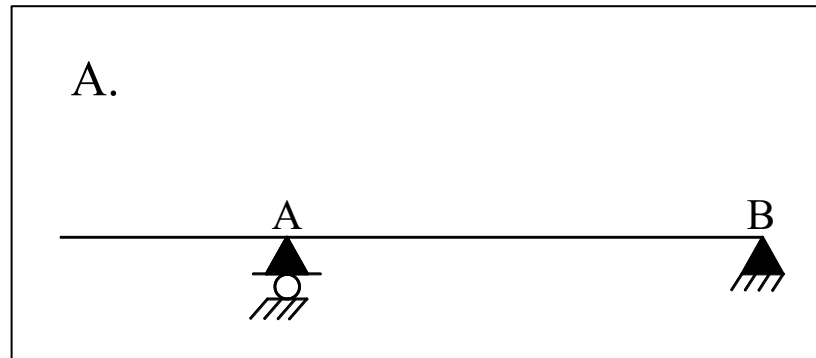


Figure 2.1 Structural Idealization A

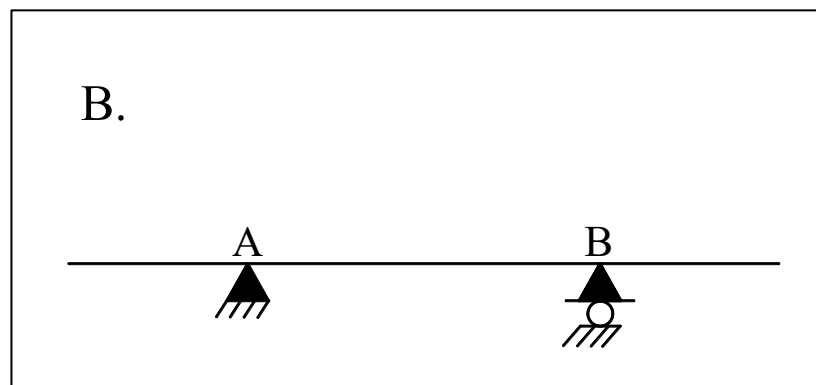
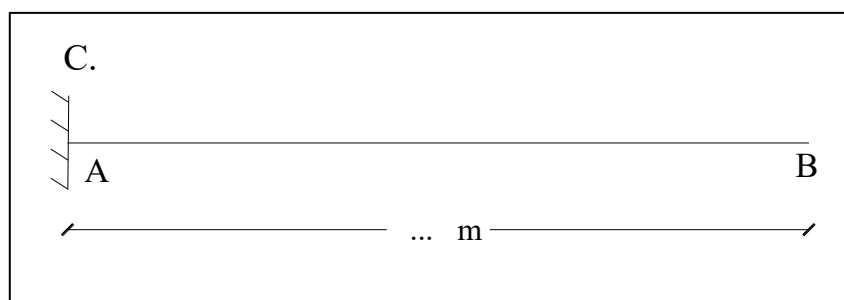


Figure 2.2 Structural Idealization B



Gambar 2.3 Structural Idealization C



PHASE III
STRUCTURE OF A SPECIFIC STATIC PORTAL UNDER
FIXED LOADS

You are asked to calculate the portal structure. Calculate one of the portal structures below with the final result being an internal force diagram.

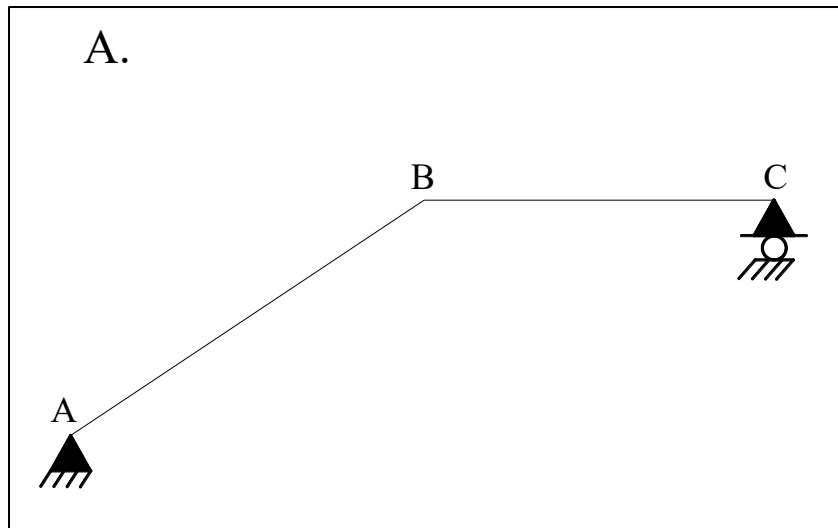


Figure 3.1 Structural Idealization A

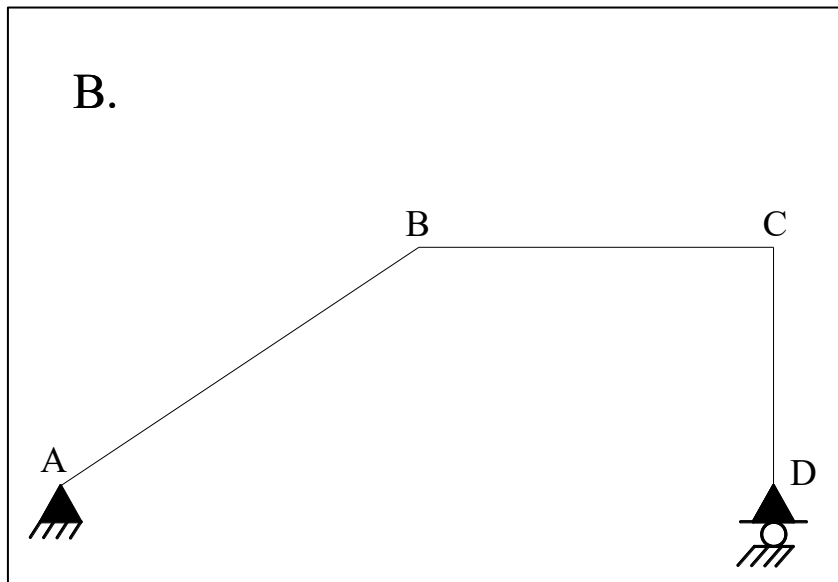
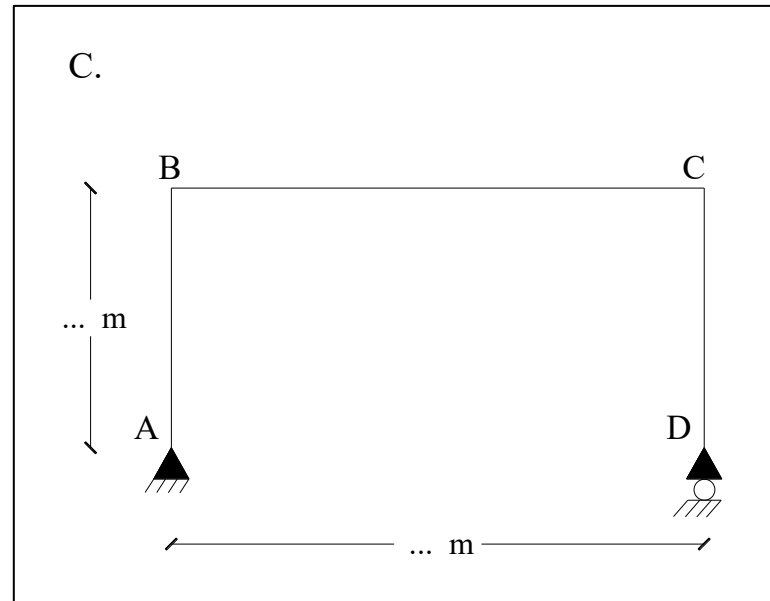


Figure 3.2 Structural Idealization B



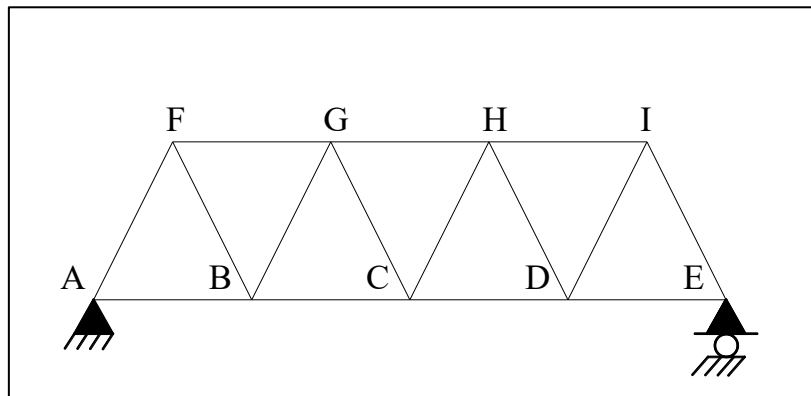
Gambar 3.3 Structural Idealization C



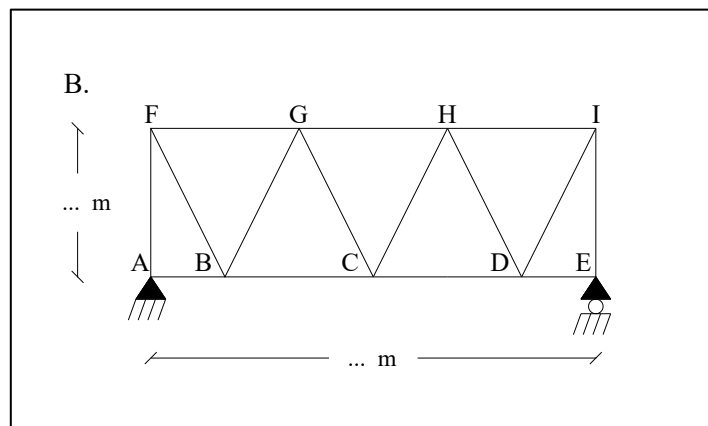
PHASE IV

STRUCTURE OF A STATIC FRAME UNDER A FIXED LOAD

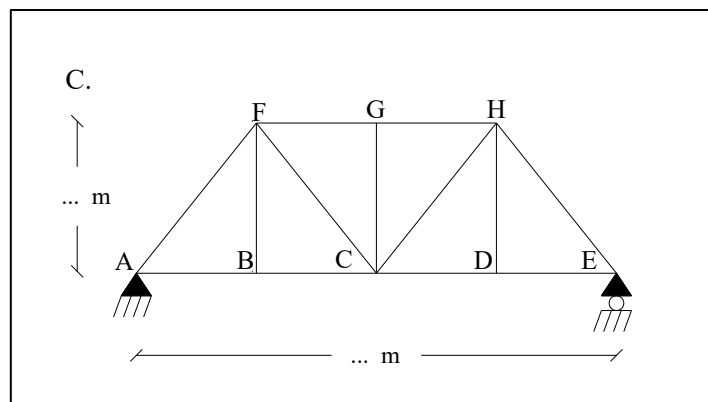
The proposed bridge connecting Lambung Bukit and Pauh will feature a truss structure supported by pin and rollers. Please perform structural calculations for the bridge, ultimately resulting in an internal force diagram.



Gambar 4.1 Structural Idealization A



Gambar 4.2 Structural Idealization B



Gambar 4.3 Structural Idealization C



PHASE V

STRUCTURE OF A STATIC BEAM UNDER A MOVING LOAD

The proposed bridge connecting Lambung Bukit and Pauh will feature a truss structure supported by pin and rollers. Please perform structural calculations for the bridge, ultimately resulting in an internal force diagram.



Figure 5.1 Structural Idealization A

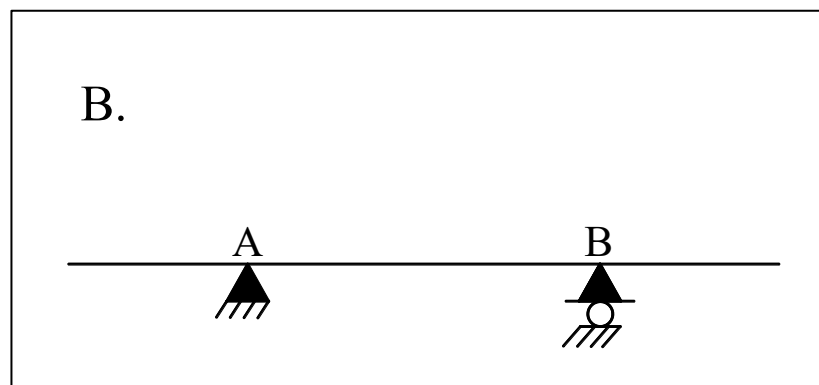


Figure 5.2 Structural Idealization B



PHASE VI

STRUCTURE OF A STATIC FRAME UNDER A MOVING LOADS

In the bridge planning with truss structure modeling with hinged and roller supports, a simulation was conducted with one bus traveling from Lambung Bukit to Pauh. Please perform structural calculations for the bridge, ultimately resulting in an internal force diagram.

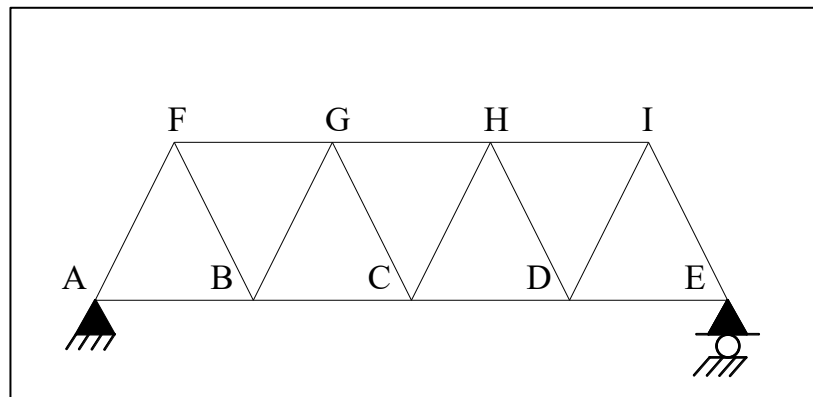
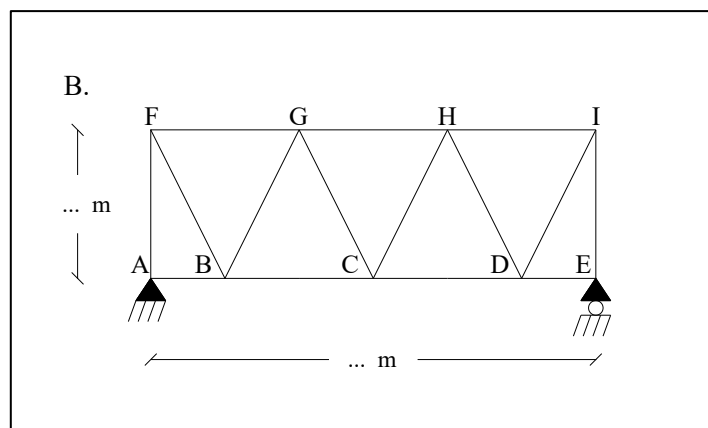
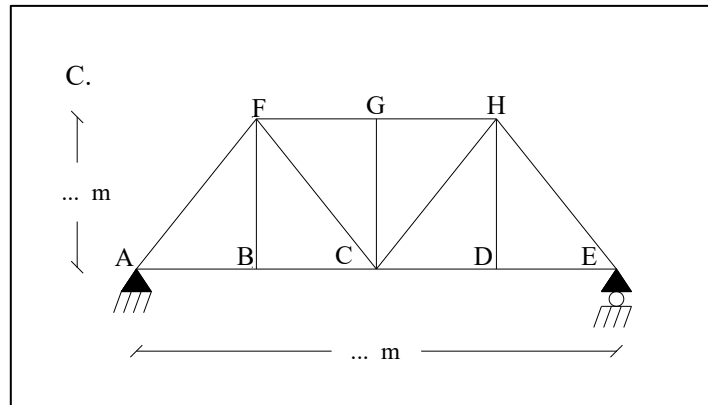


Figure 6.1 Structural Idealization A



Gambar 6.2 Structural Idealization B



Gambar 6.3 Structural Idealization C