

Brief

Scenario 1



Beam ABC has a 3m cantilever span AB and a 10m simply supported span BC

The beam has design loadings as follows:

Load case 1: 28 kN/m UDL along span BC

Load case 2: 36 kN point load at the end of the cantilever at A

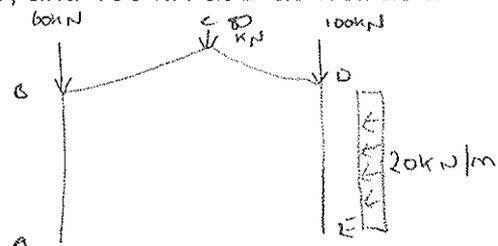
Task 1

- For each of the load cases, determine the magnitude of the support reactions
- For each of the load cases, construct a shear force diagram and a bending moment diagram (including any calculations and tabulations)
- Use the results obtained above to construct a shear force diagram and bending moment diagram for load cases 1 & 2 combined.
- Use the shear force diagram for the combined loading to determine
 - the location of the points of maximum bending moment
 - the magnitude of the maximum bending moment
 - the location of the point of contraflexure

Scenario 2

The 3-pin frame ABCDE is supported at A and ~~B~~^E (see diagram)

It supports vertical point loads of 60 kN at B, 80 kN at C, and 100 kN at D as well as a horizontal UDL of 20kN/m along DE.



Task 2

- Calculate the reaction forces
- Determine bending moments and shear forces at points A, B, C, D & E
- Draw bending moment and shear force diagrams for the complete loading