Birzeit University
**Faculty of Engineering**
Department of Civil and Environmental Engineering
ENCE 3331, Structural Analysis I
Second semester 2020-2021
Midterm Exam

Question 1: (20 Points)

Given the following Shear & Moment diagrams for a statically determinate beam with two supports and two spans:

- What are the beam's supports, what are their reactions (Value), justify your answer? (5 points)
- What are the applied loads the beam (with Values), justify your answer? (10 points)
- Sketch the deflected shape of the beam. (5 points)
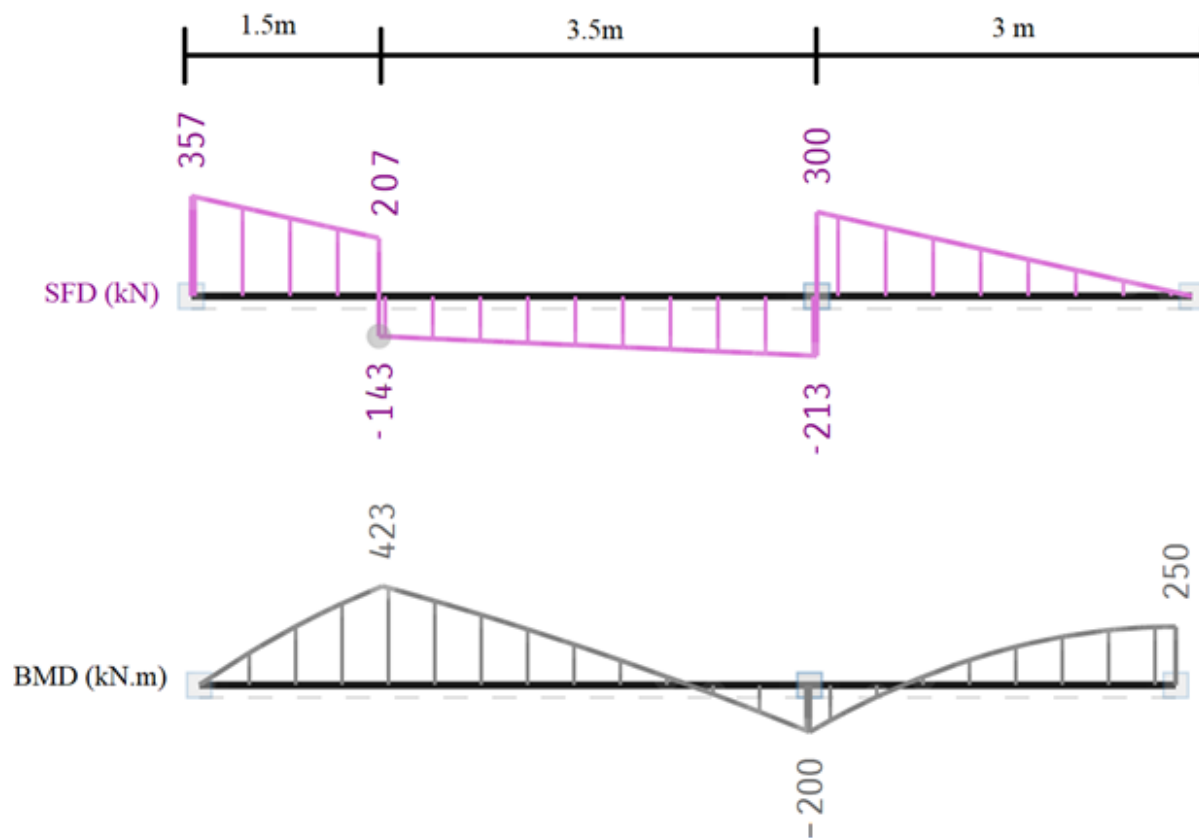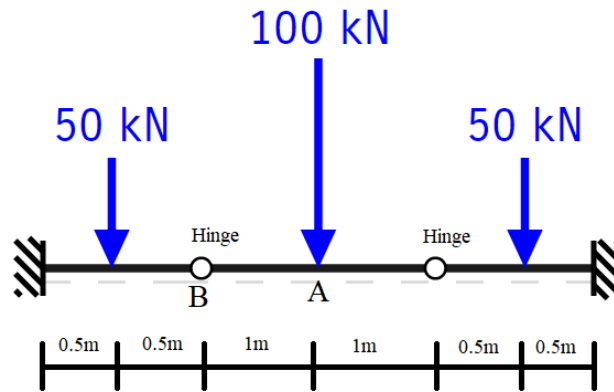
Question 2: (20 points)

given Frame:

- Draw Axial, shear and Moment diagrams (indicate key values). (15 points)
- Sketch the deflected shape of the frame. (5 points)
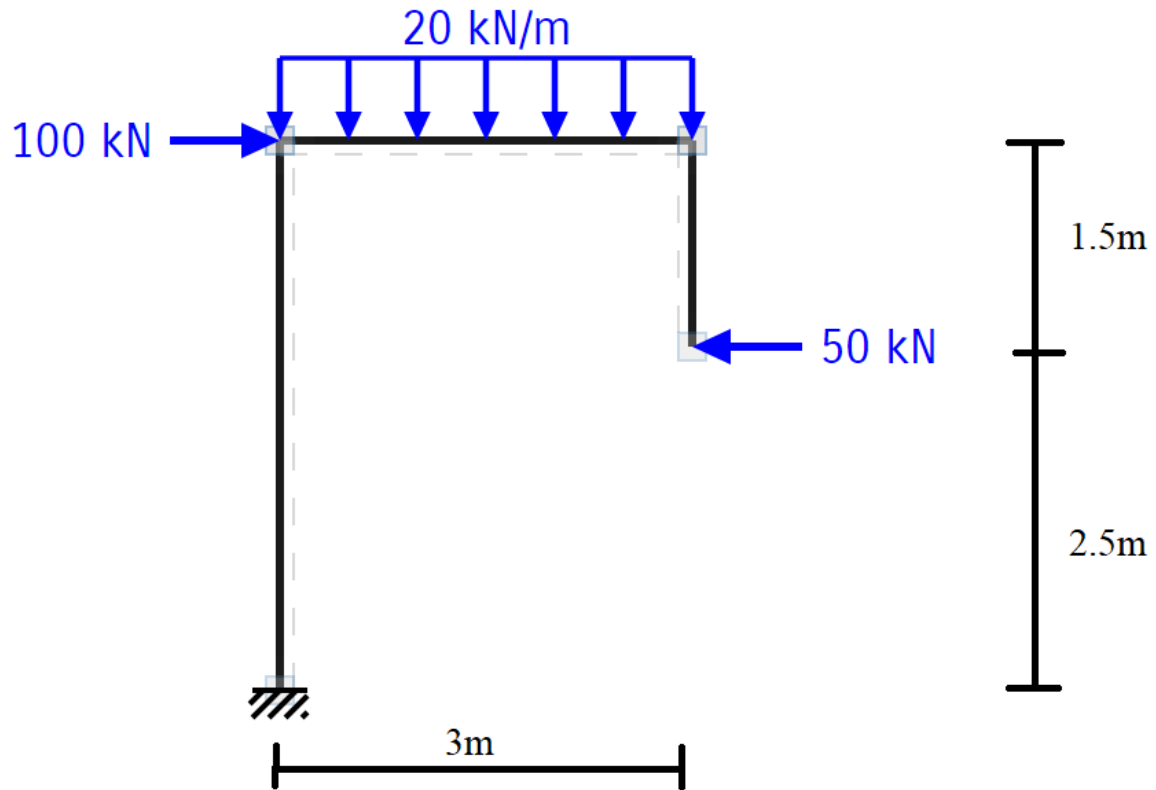
Question 3: (30 points)

for the given beam:

- Draw shear and Moment diagrams (indicate key values). (20 points)
- Sketch the deflected shape of the beam. (10 points)

Question 4: (30 points)

For the given beam and bending moment diagram (kN.m).

- Find the rotation left of point B using Moment area method. (5 points)
- Find the deflection of point A using conjugate beam method. (15 points)
- Based on the Deflected shape sketch, what is the location of the maximum deflection? (5 points)
- What is the required moment of inertia of the beam if the maximum allowable deflection is 9.5 mm? (5 points)

E= 25GPa

100 kN