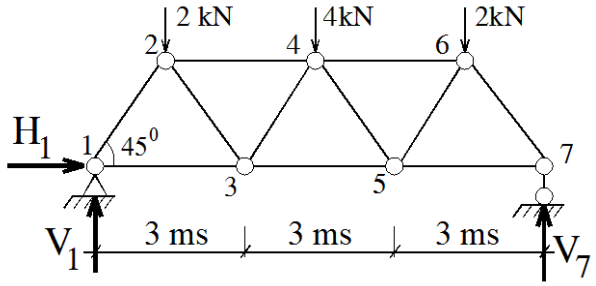
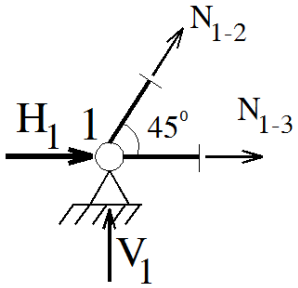
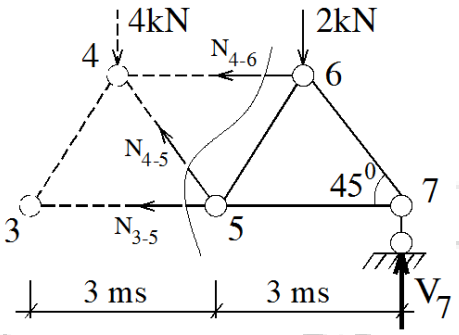
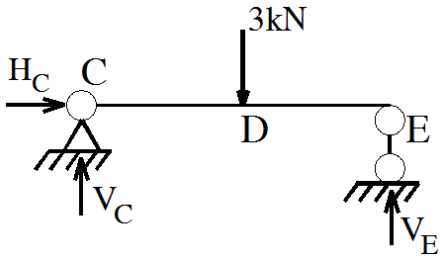
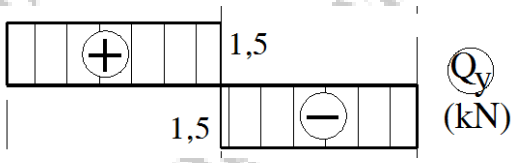
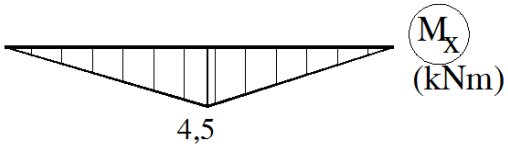
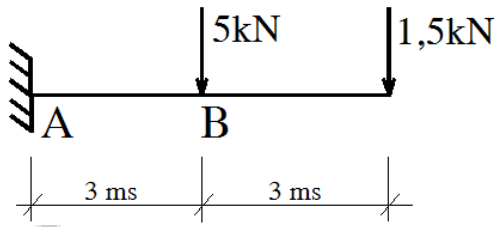
BỘ XÂY DỰNG **TRƯỜNG ĐHXD MIỀN TÂY**	**ĐÁP ÁN ĐỀ THI KẾT THÚC HỌC PHẦN** **BẬC ĐẠI HỌC** **(Dành riêng cho lớp XD19D01)** **Môn thi:** Cơ học kết cấu 1 **Thời gian**: 90 phút (Sinh viên được sử dụng bảng nhân biểu đồ Vereshchagin)

Solution:

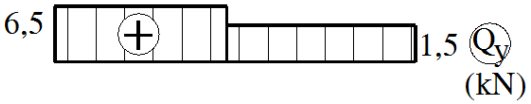
Problem 1	Part	Content	Marks
	a	**Determine the reaction forces**	**0,75**
		 Draw the free-body diagram of the truss	0,25
		$\sum X = 0 \Leftrightarrow H_1 = 0$	0,25
		Symmetric system: $V_1 = V_7 = 4(kN)$	0,25
		Members: 1-2, 1-3 by the method of joints?	**1,25**
		Draw the free-body diagram of the joint 1 	0,25
		Member: 1-2: $\sum Y = 0 \Leftrightarrow N_{1-2}\sin 45^0 + V_1 = 0$	0,25

		$\Rightarrow N_{1-2} = -\frac{V_1}{\sin 45^0} = -\frac{4}{\sin 45^0} = -4\sqrt{2}(kN)$ Member 1-2 is in compression	0,25
		Member: 1-3: $\sum X = 0 \Leftrightarrow N_{1-3} + N_{1-2}\cos 45^0 + H_1 = 0$	0,25
		$\Rightarrow N_{1-3} = -N_{1-2}\cos 45^0 = 4(kN)$ Member 1-3 is in tension	0,25
		Members: 4-5, 4-6 by the method of sections?	**2,00**
		Draw a section:  Draw the free-body diagram of a part of the section truss	0,5
	b	Member: 4-5: $\sum Y = 0 \Leftrightarrow N_{4-5}\sin 45^0 + V_7 - 2 = 0$	0,25
		$\Rightarrow N_{4-5} = -\frac{2}{\sin 45^0} = -2\sqrt{2}(kN)$ Member 4-5 is in compression	0,5
		Member: 4-6: $\sum M_5 = 0 \Leftrightarrow \frac{3}{2}N_{4-6} - 2\times\frac{3}{2} + 3V_7 = 0$	0,25
		$\Rightarrow N_{4-6} = -6(kN)$ Member 4-6 is in compression	0,5
Marks obtained for problem 1			**4 points**

Problem 2	Part	Content	Marks
	a	**Subsystem CE**	**1,50**
		Draw a figure which shows the direction of the reaction forces 	0,25
		$\sum X = 0 \Leftrightarrow H_C = 0$ Symmetric system: $V_C = V_E = 1{,}5(kN)$	0,25
		Draw the shear diagram:  (0,25 mark for each segment)	0,5
		Draw the moment diagram:  (0,25 mark for each segment)	0,5
	b	**Main system AC:**	**1,50**
		Draw a figure which shows the direction of the forces	0,25



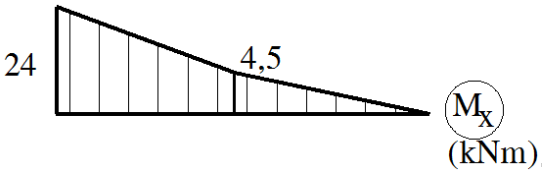
Draw the shear diagram:



(0,25 mark for each segment)

0,5

Draw the moment diagram:

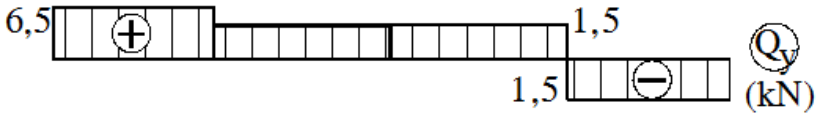


(0,25 mark for each segment)

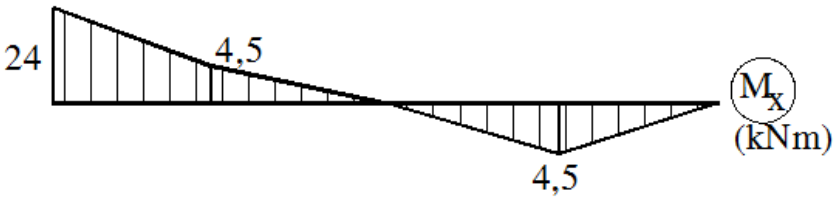
0,5

Draw the shear diagram and the moment diagram of beams:

Draw the shear diagram:

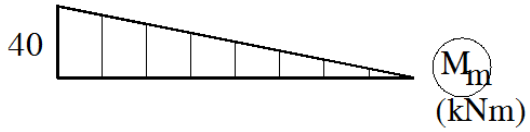
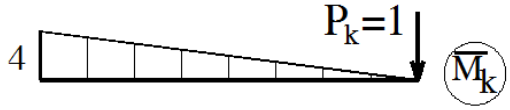


Draw the moment diagram:



0,25

Marks obtained for problem 2	**3 points**

Problem 3	Part	Content	Marks
		Draw a diagram: M_m 	1,00
		Draw a diagram: $\overline{M_k}$ 	1,00
		Vertical displacement at point B: $y_B = \Delta_{km} = \frac{1}{EI}\left(\frac{4\times 40\times 4}{3}\right) = \frac{640}{3EI}(ms)$	0,75
		Displacement in the same direction: P_k	0,25
Marks obtained for problem 3			**3 points**