

M R
Ahmed Mahdy



فيزياء	استاتيكا
دوائر كهربية	الكثرونيات
ميكانيكا الانشآت	هيدروليكا

مدرس خصوصي

حضورى

اونلاين

بحصل الطالب علي

مقاطع فيديو هات لشرح المقرر بشكل وافى

ملخص للمادة Pdf للمذكرة والمراجعة

محاضرات مباشرة علي برنامج زووم

مناقشة الأجزاء الغير مفهومة

تواصل مستمر مع معلم المادة



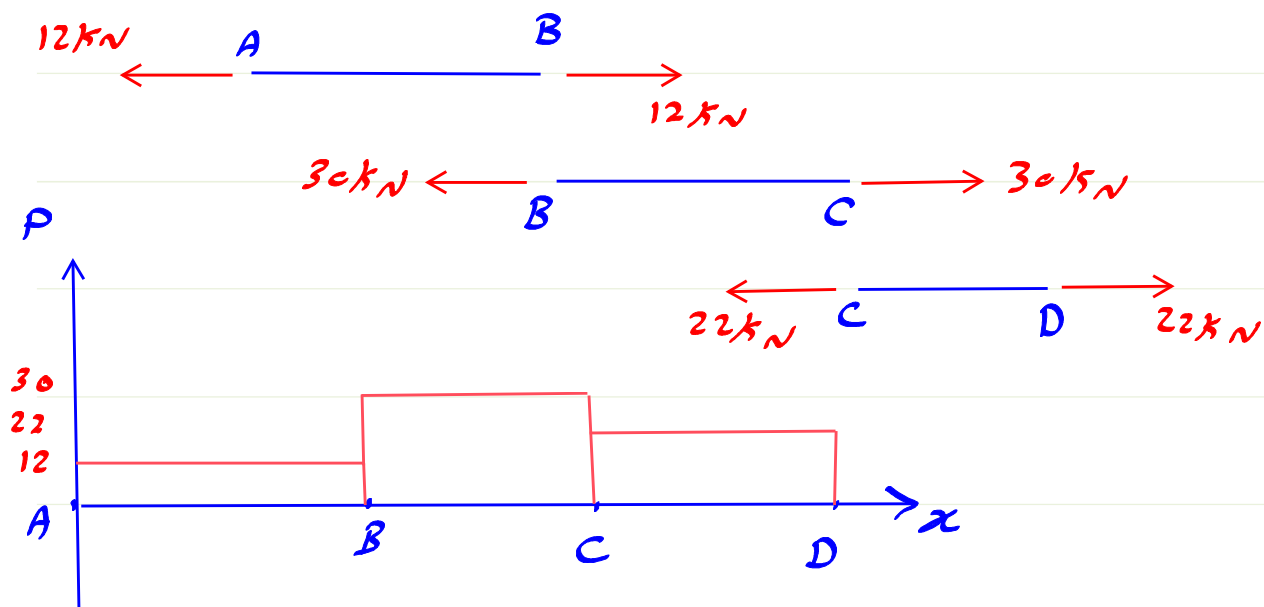
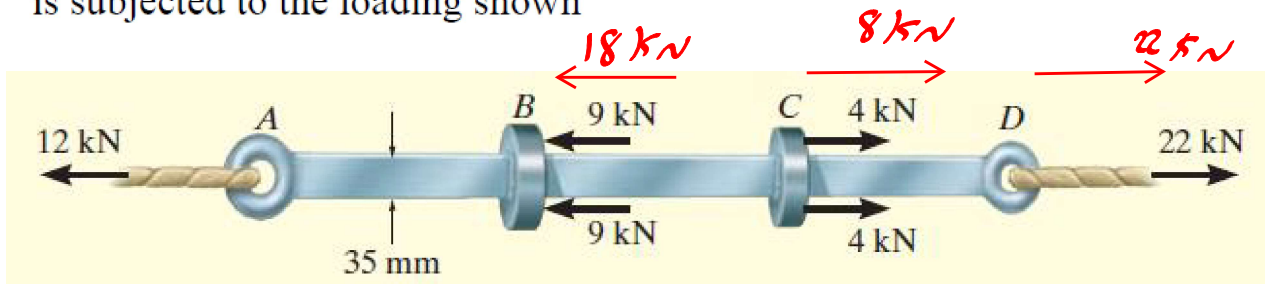
للتواصل

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Example 3

The bar in figure below has a constant width of 35 mm and a thickness of 10 mm. Determine the maximum average normal stress in the bar when it is subjected to the loading shown

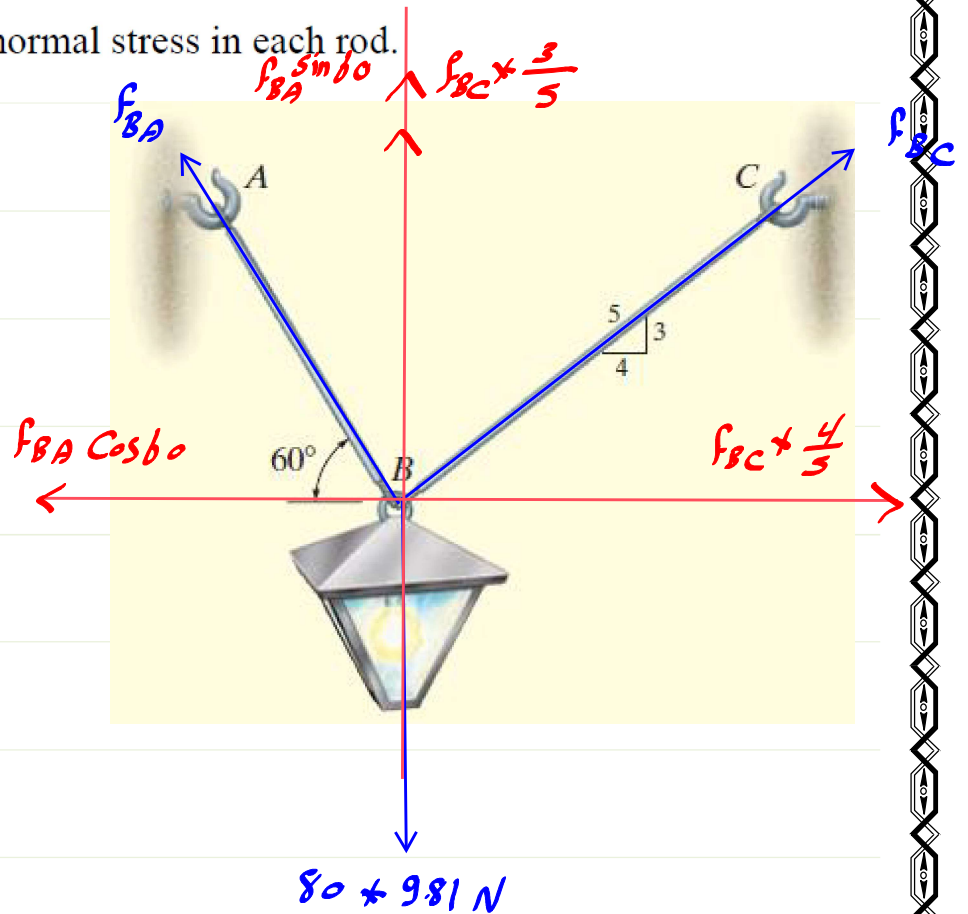


$$\sigma_{max} = \frac{P_{max}}{A} = \frac{30 \times 10^3 \text{ N}}{35 \times 10 \text{ mm}^2} = 58.7 \text{ MPa}$$

Example 4

The 80-kg lamp is supported by two rods AB and BC as shown in figure below. If AB has a diameter of 10 mm and BC has a diameter of 8 mm, determine the average normal stress in each rod.

$$\sigma = \frac{P}{A}$$



$$\sum f_x = 0$$

$$\sum f_y = 0$$

$$\sum f_x = \frac{4}{5} f_{BC} - (\cos 60) f_{BA} = 0 \rightarrow \textcircled{1}$$

$$\frac{3}{5} f_{BC} + (\sin 60) f_{BA} = 80 \times 9.81 \rightarrow \textcircled{2}$$

$$f_{BC} = 395.24 \text{ N} , f_{BA} = 632.38 \text{ N}$$

$$\sigma_{BA} = \frac{f_{BA}}{A_{BA}} = \frac{632.38 \text{ N}}{\frac{\pi}{4} \times 10^2 \text{ mm}^2} = 8.05 \text{ MPa}$$

$$\sigma_{BC} = \frac{f_{BC}}{A_{BC}} = \frac{395.24 \text{ N}}{\frac{\pi}{4} (8^2 \text{ mm}^2)} = 7.86 \text{ MPa}$$

Example 5

The casting shown in figure below is made of concrete having a specific weight (density) $\gamma_c = 24 \text{ kN/m}^3$. Determine the average compressive stress acting at points A and B.

$$\gamma_c = 24 \text{ kN/m}^3$$

$$P = \gamma_c \cdot V = \gamma_c \cdot \frac{\pi}{4} d^2 \times h$$

$$P = 24 \times 10^3 \times \frac{\pi}{4} (0.15)^2 \times 0.3$$

$$P = 127.23 \text{ N}$$

$$\sigma = \frac{P}{A} = \frac{127.23}{\frac{\pi}{4} (0.15)^2} = 7200 \text{ N/m}^2 (\text{Pa})$$

$$= 0.0072 \text{ N/mm}^2$$

