Part 1

(8) Young's Modulus (E) = $\frac{\text{Stress}}{\text{Strain}}$

$E = \frac{F}{A} \times \frac{L}{\Delta L}$

แทนค่า; $2\,GPa = \frac{50\,pN}{\pi \times (1\,nm)^2} \times \frac{10\,nm}{\Delta L}$

$\Delta L = 4\,\text{Å}$

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(9) $MW_{MgSO_4} = 120.37\,g/mol$

$1\,mol_{MgSO_4}$ จะ 1 Osmole ดังนั้น osmole ต่อ 1 L คือ 1 osmole/L

$\therefore 1\,osmole/L = 19.3\,mmHg$

ในรูปของความดัน คือ $\frac{1\,osmole}{L} \times \frac{19.3\,mmHg}{osmole} = 19.3\,mmHg/L$

Part 2

(3) $U = \frac{(0.9 \times 6 \times 12)^2}{2 \times 14 \times 1010} = 196.5\,J$

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(4) Urine protein (mg/24hr) = $2.7\,mg/dL \times 2.4\,L \times 10$

$= 64.8\,mg/24hr$

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(8) length A = $\frac{4 \times 10^8}{660 \times 2.6} = 224\,\mu m$