Answer on Question # 68674, Chemistry, Physical Chemistry

The molarity of urea in a solution prepared by dissolving 16 g of urea (MW = 60.0 g/mol) in 39 g of H2O is _____ M. The density of the solution is 1.3 g/mL.

A. 3.7
B. 0.11
C. 6.3
D. 6.8
Solution

$$C_V = \frac{\nu_{urea}}{V_{solution}}$$

$$\nu_{urea} = \frac{m}{M_W} = \frac{16\ g}{60\ g/mol} = 0.267\ mol$$

$$V_{Solution} = \frac{m_{urea} + m_{water}}{\rho_{solution}} = \frac{16g + 39g}{1.3\ g/mL} = 42.3\ mL$$

$$C_V = \frac{0.27\ mol}{0.0423\ L} = 6.31\ M$$

Answer: C. 6.3.