

The osmotic pressure of blood was 775 kPa at 37 degrees Celsius. The concentration of glucose intravenous injection with the same osmotic pressure is :

- A) 0.47 mol • L (in power of -1)
- B) 0,030 mol • L (in power of -1)
- C) 0,047 mol • L (in power of -1)
- D) 0,301 mol • L (in power of -1)
- E) 3•10 (in power of -3)

**Solution:**

The osmotic pressure formula is

$$\pi = iCRT;$$

(where **i** is the van 't Hoff index, **C** is the molar concentration of solute, **R** is the ideal gas constant, and **T** is the temperature in kelvins.)

As the glucose is the non-electrolyte, so for our case **i** quotient is equal to one.

We can express concentration from the above equation as:

$$C = \frac{\pi}{RT} = \frac{775 \text{ kPa}}{8.31 \frac{\text{kPa} \cdot \text{L}}{\text{K} \cdot \text{mol}} \cdot (273 + 37) \text{ K}} = 0.301 \text{ mol/L}$$

**Answer:**

The right answer is D.