Answer on the question #65817, Chemistry / Physical Chemistry

Question :

Question 15 : The molar heat capacity of Al is 24.4 J/mol/oCoC. How much heat energy is required to heat 100 g of Al from 20 oCoC to 80 oCoC? (Al = 27)
5422 J
813000 J
146000 J
30000 J

Question 16 : A process taking place at constant pressure is termed –
Adiabatic
Isothermal
Isobaric
Isochoric

Answer :

Q.15. The number of the moles in 100g of Al :

$$n(Al) = \frac{m(Al)}{M(Al)} = \frac{100(g)}{26.981539(\ g\ mol^{-1})} = 3.706\ mol$$

Then, energy required is :

$Q = n(Al) \cdot c(Al) \cdot \Delta T = 3.706(mol) \cdot 24.4(Jmol^{-1}\ ^\circ C) \cdot (80 - 20)(^\circ C) = 5426\ J$ (choose 5422J, as the closest)

Q.16 A process taking place at constant pressure is termed isobaric.