

## CLASS XI

Marks :25

Time : 1 Hour

**General Instructions:**

- All questions are compulsory.
- Mark for each question is indicated against it.

- Define  
Wavelength      ii. Frequency 1
- State Avogadro law 1
- Explain law of multiple proportion with suitable example 2
- Distinguish between Molarity and molality? 2
- Calculate the mass of 2  
a. One molecule of  $\text{NH}_3$       b. 44.8 L of  $\text{CO}_2$   
(RAM of O = 16u, C= 12 u , H=1 u , N=14 u )
- a. Distinguish between quantum and photon 2  
b. Define Threshold energy.
- 4.8g of  $\text{O}_2$  was used to burn 0.15moles of Fe to  $\text{Fe}_2\text{O}_3$ . 3  
a. Which is the limiting reagent?  
b. What mass of  $\text{Fe}_2\text{O}_3$  was formed?  
c. Calculate the mass of excess reagent left? (RAM of Fe= 56u )
- A compound contains 4.07 % hydrogen, 24.27 % carbon and 71.65 % chlorine. Its molar mass is 98.96 g. Deduce its empirical and molecular formula. 3  
(RAM of H= 1 u ,O=16 u, Cl =35.5 u )
- a. Explain the dual nature of electromagnetic radiation. 3  
b. Electromagnetic radiation of wavelength 242 nm is just sufficient to ionise the sodium atom. Calculate the energy of electromagnetic radiation in kJ/ mol.  
( $h = 6.63 \times 10^{-34} \text{Js}$ )
- a. Define Photoelectric effect. 3  
b. Electrons are emitted with zero velocity from a metal surface when it is exposed to radiation of wavelength  $6800\text{\AA}$ . Calculate the threshold frequency and work function of the metal.
- Commercially available  $\text{H}_2\text{SO}_4$  contains 98% acid by mass. Find the molarity if density of the sample is 1.84g/cc. What volume of this acid is required to make 2 L of 0.1 M solution? 3

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