B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

Class : XI
Date : 01/8/2025
Admission No.:

Pre-MidTerm-Test 2025-26

CHEMISTRY (043)

Duration: 1 Hr
Max. Marks: 25
Roll No.:

Marking scheme

SECTION-A

1. (b) Molality 1

2. (d) 4 1

3. (b) visible 1

4. (c) $1s^2 2s^2 2p^4$

5. a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion 1

SECTION – B

6. **It states that it is impossible to determine simultaneously, the exact position and exact momentum (or velocity) of an electron.**
   Mathematically, it can be given as

   $$\Delta X \times \Delta P = h/4\Pi$$ 2

7. E= mc2 and E = h v combining together we get lamda = h/mv 2

8. **Step 1. Conversion of mass per cent to grams**
   Step 2. Convert into number moles of each element
   Step 3. Divide each of the mole values obtained above by the smallest number amongst them 2

9. 4.8×10^{-3} (ii) 8.008×10^{3}

SECTION C

10. $N_2 + 3\ H_2 \rightarrow 2\ NH_3$

    amount of NH_3 formed will be 56 kg

    limiting reagent will be hydrogen gas 3

    (Atomic masses of H-1 gm N- 14 gm)

11. (i) n/v (ii) no. of mole of solute / kg of solvents (iii) x_A =nA/nA+nB 3

12. (i) The electrons are ejected from the metal surface as soon as the beam of light strikes the surface, i.e., there is no time

lag between the striking of light beam and the ejection of electrons from the metal surface.
(ii) The number of electrons ejected is proportional to the intensity or brightness of light.
(iii) For each metal, there is a characteristic minimum frequency, ν0 (also known as **threshold frequency**) below which
photoelectric effect is not observed. At a frequency ν >ν0, the ejected electrons come out with certain kinetic energy.
The kinetic energies of these electrons increase with the increase of frequency of the light used.
An ideal body, which emits and absorbs radiations of all frequencies uniformly, is called a black body and the
radiation emitted by such a body is called black body radiation. 3

13. A microscope using suitable photons is employed to locate an electron in an atom within a distance of
ΔX = 0.1 Å. = 10^{-9} m m= 9.1 x10^{-31}kg 3

$$\Delta X \times \Delta P = h/4\Pi$$

$$\Delta V = h/4\Pi x \Delta X \times m$$

$$= 6.63x10\text{-}34 / 4x3.14x\ 9.1\ x10^{-31} \times 10^{-9}\ m$$

----------ALL THE BEST----------