



ANANDALAYA  
PERIODIC TEST – 1  
Class : XI

Subject: Chemistry  
Date : 15/07/2019

M.M: 40  
Time: 2 Hours

General Instructions:

1. All questions are compulsory.
2. Marks for each question are indicated against it.
3. Question numbers 1 to 10 are very short answer questions, carrying 1 mark each.
4. Question numbers 11 to 14 are short answer questions, carrying 2 marks each.
5. Question numbers 15 to 18 are short answer questions carrying 3 marks each.
6. Question numbers 19 & 20 are long answer questions carrying 5 marks each.

1. Round up the following up to three significant figures. (1)  
(i) 34.216 (ii) 2808
2. Calculate the total number of electrons present in one mole of methane. (1)
3. What is the lowest value of n that allows g orbitals to exist? (1)
4.  $1\text{L} = \text{_____ mL} = \text{_____ dm}^3$  (1)
5. What is molecular mass of heavy water ( $\text{D}_2\text{O}$ )? (1)
6. What do you mean by semimolar solution of NaOH? (1)
7. Define the term precision. (1)
8. In the reaction given below: (1)  
 $\text{X} + \text{Y}_2 \rightarrow \text{XY}_2$   
Identify the limiting reagent if any in the following mixtures:  
(a) 100 atoms of X + 100 molecules of Y (b) 5 mol X + 2.5 mol  $\text{Y}_2$
9. What is the minimum product of uncertainty in position and uncertainty in momentum of a moving electron? (1)
10. Give an isobar and an isotone of C- 14. (1)
11. State and explain the law of multiple proportions. (2)
12. Find energy of each of the photons which (2)  
(a) correspond to light of frequency  $3 \times 10^{15} \text{ Hz}$ .  
(b) have wavelength of  $0.50 \text{ \AA}$  (Planck's constant =  $6.626 \times 10^{-34} \text{ Js}$ , velocity of light =  $3 \times 10^8 \text{ m/s}$ )  
OR  
Calculate the number of photons emitted in 10 hours by a 60 W sodium lamp emitting radiations of wavelength  $6000 \text{ \AA}$ .
13. What volume of oxygen at STP can be produced by 8.25 g of potassium chlorate according to the (2)  
reaction  $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$  (At. Mass of K = 39)

14. What is the wavelength of light emitted when the electron in hydrogen atom undergoes transition from an energy level with  $n=4$  to an energy level with  $n=2$ ? (2)
15. (a) State Pauli's exclusion Principle. (3)  
(b) Using s, p, d, f notations, describe the orbital with following quantum numbers :  
i)  $n=2, l=1$       ii)  $n=5, l=3$   
(c) How many electrons in an atom may have the following quantum numbers:  $n=4, l=0$

16. What is the number of atoms in the following compounds? (3)  
(a) 52 moles of He  
(b) 52 u of He  
(c) 52 g of He

OR

A sample of drinking water was found to be highly contaminated with chloroform, which is carcinogenic. 15 ppm (by mass) was the level of contamination.

- (a) Express in terms of percent by mass.  
(b) Calculate the molality of chloroform in the given water sample.
17. (a) Write the electronic configurations of  $\text{Na}^+$  ion. (3)  
(b) What is the atomic numbers of elements whose outermost electrons are represented by  
(i)  $2p^3$  and (ii)  $3p^5$ ?  
(c) Which atoms are indicated by the following configurations?  
(i)  $[\text{He}] 2s^1$  (ii)  $[\text{Ar}] 4s^2 3d^1$ .

18. Find out the amount of  $\text{CO}_2$  that can be produced when (3)  
(a) 1 mole carbon is burnt in air.  
(b) 1 mole carbon is burnt in 16 g of  $\text{O}_2$ .  
(c) 2 moles carbon are burnt in 16 g  $\text{O}_2$ .

19. A photon of wavelength  $4 \times 10^{-7}$  m strikes on metal surface, the work function of the metal being 2.13 eV. Calculate: (5)  
(a) the energy of the photon (eV),  
(b) the kinetic energy of the emission, and  
(c) the velocity of the photoelectron ( $1 \text{ eV} = 1.6020 \times 10^{-19} \text{ J}$ )

OR

If the photon of the wavelength 150 pm strikes an atom and one of its inner bound electrons is ejected out with a velocity of  $1.5 \times 10^7 \text{ ms}^{-1}$ , calculate the energy with which it is bound to the nucleus.

20. (a) Gastric juice contains 3.0 g of HCl per litre. If a person produces about 2.5 litres of gastric juice per day, how many antacids tablets each containing 400 mg of  $\text{Al}(\text{OH})_3$  are needed to neutralized all the HCl produced in one day? (5)  
(b) A sample of NaOH weighing 38 g is dissolved in water and the solution is made to 50.0 mL in a volumetric flask. What is the molarity of resulting solution?  
(At. mass of Al = 27, Cl = 35.5, H = 1 Na = 23 and O = 16)