

O.P.JINDAL SCHOOL,SAVITRINAGAR
PERIODIC TEST -I (2023-24)

CLASS-XII
SUBJECT-CHEMISTRY

MAX.MARKS-20
MAX.TIME-1HOUR

General Instruction:-

- (i) All questions are compulsory .There are 12 questions in this question paper with internal choice.
- (ii) **SECTION –A:** Question numbers 1 to 6 are MCQs , carrying 1 mark each.
- (iii) **SECTION –B:** Question numbers 7 to10 are short answer questions carrying 2 marks each.
- (iv) **SECTION –C:** Question numbers 11 and 12 are long questions carrying 3marks each.
- (v) Use of calculator is not permitted. However, you may use log tables, if necessary.

SECTION-A

Q-1.The number of moles of NaCl in 3 litres of 3M solution is:

- (a)1 (b)3
 (c)9 (d)27

Q-2.Isotonic solutions are the solutions having the same

- (a)Osmotic pressure (b)Vapour pressure
 (c)Osmotic pressure (d)viscosity

Q-3.If the elevation in boiling point of a solution of 10g solute(molar mass=100) in 100g water is ΔT_b , then the ebullioscopic constant of water is

- (a)10T_b (b)100T_b
 (c) ΔT_b (d) $\Delta T_b/100$

Q-4. 6.02×10^{20} molecules of urea are present in 100 mL of its solution. The concentration of urea solution is :

- (a)0.02M (b)0.01M
 (c)0.001M (d)0.1M

Q-5.The half life period for a first order reaction is 69.3 s.Its rate constant is:

- (a) 10^{-2} s^{-1} (b) 10^{-4} s^{-1}
 (c) 10 s^{-1} (d) 10^2 s^{-1}

Q-6.The time required for 100% completion of a zero order reaction is :

- (a) ak (b) $\frac{a}{2k}$
 (c) $\frac{a}{k}$ (d) $\frac{2k}{a}$

Q-7. Density of a 2.05M solution of acetic acid in water is 1.20g/mL. Calculate the strength of the solution in terms of molality.

OR

What is the mole fraction of the solute in 2.5 m aqueous solution?

Q-8. For a first order reaction, calculate the ratio between time taken to complete three-fourth of the reaction and the time taken to complete half of the reaction.

Q-9. The rate law for reaction of A, B and C has been found to be : $\text{rate} = k [A][B][C]^2$. How would the rate of reaction change when :

(i) concentration of C is doubled

(ii) concentration of each of A, B and C are tripled.

Q-10. (i) Which out of molarity or molality will change with the change in temperature and why?

(ii) At same temperature, hydrogen is more soluble than helium. Which of them will have a higher value of K_H and why?

Q-11. The half life period for radio active decay of ^{14}C is 5730 years. An archaeological artifact contained wood had only 80% of ^{14}C found in a living tree. Estimate the age of the sample.

($\log 1.25 = 0.0969$)

OR

The rate constant for a first order reaction becomes six times when the temperature is raised from 350 to 400 K. Calculate the activation energy for the reaction.

($R = 8.314 \text{ JK}^{-1}\text{mol}^{-1}$, $\log 6 = 0.7782$)

Q-12. 45g of ethylene glycol ($\text{C}_2\text{H}_6\text{O}_2$) is mixed with 600 g of water. Calculate

(i) the freezing point depression

(ii) the freezing point of the solution (K_f for water = $1.86 \text{ K kg mol}^{-1}$)

OR

36 g of glucose dissolved per litre of the solution has an osmotic pressure of 4.98 bar at 300 K. If the osmotic pressure of the solution is 1.76 bar at the same temperature, then what would be its concentration ?
