



ANGEL'S PUBLIC SCHOOL

SAMPLE PAPER

HALF YEARLY EXAMS SESSION 2025 – 26

CLASS – XII

TIME : 3 HRS.

SUBJECT – CHEMISTRY

M.M:70

General Instructions.

- (a) SECTION –A (Q NO. 1 TO 15)CARRIES 1 MARKS EACH
- (b) SECTION –B (Q NO. 16 TO 23)CARRIES 2 MARKS EACH
- (c) SECTION –C(Q NO. 24 TO 31) CARRIES 3 MARKS EACH
- (d) SECTION –D (Q NO. 32 TO 34)CARRIES 5 MARKS EACH
- (e) ATTEMPT ALL QUESTIONS
- (f) USE OF CALCULATOR IS NOT ALLOWED

SECTION – A

1. The vapour pressure of water depends upon:
(a) Volume of container (b) Temperature (c) Amount of liquid (d) All the above
2. Osmotic pressure is measured by:
(a) Ostwald's method (b) Berkeley and Hartley method (c) Pfeffer's method (d) Beckmann's method
3. Blood cells retain their shape in solution which are:
(a) Isotonic to blood (b) Hypotonic to blood (c) Hypertonic to blood (d) equimolar to blood
4. When injected in blood which colligative properties of glucose should resembles with blood:
(a) molarity (b) molality (c) osmotic pressure (d) concentration
5. The normality of 1M H_3PO_4 is:
(a) 1N (b) 3N (c) 0.33N (d) 0.5N
6. The freezing point of 1% solution of sodium carbonate in water will be:
(a) 0°C (b) Below 0°C (c) 1°C (d) 3°C
7. The coulombs of electricity required for reduction of 1mol of MnO_4^- to Mn^{2+} are:
(a) 96500C (b) $1.93 \times 10^5\text{C}$ (c) $4.83 \times 10^5\text{C}$ (d) $9.65 \times 10^6\text{C}$
8. How long 2.5A of current is passed to supply 54000C of charge?
(a) 1 hr (b) 2.5hr (c) 6 (d) 9hr
9. The charge required for the reduction of 1 mole of $\text{Cr}_2\text{O}_7^{2-}$ to Cr^{3+} is:
(a) 96500C (b) $1.93 \times 10^5\text{C}$ (c) $5.79 \times 10^5\text{C}$ (d) $2.895 \times 10^5\text{C}$
10. In the electrolysis of acidulated water. It is desired to obtain 1.12cc of hydrogen per second under S.T.P conditions. The current to be passed is:
(a) 9.65A (b) 19.3A (c) 0.965A (d) 1.93A
11. 75% of a first order reaction was completed in 32 minutes. 50% of the reaction was complete in :
(a) 4 min (b) 8 min (c) 16min (d) 24 min
12. The emf of the cell $\text{Cr}/\text{Cr}^{3+} (1\text{M}) \parallel \text{Cd}^{2+} (0.1\text{M})/\text{Cd}$ is
(E° for Cr and Cd electrode are -0.47V and -0.40V)
(a) 0.34V (b) 1.14V (c) -1.14V (d) 0.66V
13. The sum of mole fraction of A, B, and C in a solution containing 0.2 mol of each of A, B and C is:
(a) 0.1 (b) 1.00 (c) 0.3 (d) 0.6
14. The normality of 98% H_2SO_4 ($d = 1.8\text{g/ml}$) is:
(a) 18N (b) 36N (c) 9N (d) 6N
15. The mole fraction of solute in one molal aqueous solution is:
(a) 0.009 (b) 0.018 (c) 0.027 (d) 10.036

SECTION-B

16. Explain Lanthanoid contraction.
17. When temperature changes from 300K to 301K the rate constant of the reaction increases by 7%. Calculate activation energy.
18. Which oxide of sulphur acts as both an oxidising and a reducing agent? Why?

19. Define ebullioscopic constant and electrophoresis.
20. What is chelation and ambident ligand ?
21. How many coulombs are required to deposit 100 g of aluminium ?
22. Explain cryoscopic constant.
23. Calculate the maximum possible work done and E_{cell} for the cell $\text{Al} / \text{Al}^{3+} (0.01\text{M}) // \text{Fe}^{2+} (0.02\text{M}) / \text{Fe}$. Given that E^0 for aluminium = -1.66V and E^0 for iron = -0.44V

SECTION-C

24. In the following reaction at 300 K, $2\text{A} + \text{B} \rightarrow \text{C} + \text{D}$

Exp no.	[A] mol/l	[B] mol/l	Rate of formation of D (mol/l)
1	0.10	0.10	1.3×10^{-6}
2	0.20	0.10	5.2×10^{-6}
3	0.20	0.30	1.56×10^{-5}

Calculate [1] The order [2] The rate law [3] The rate constant

25. The rate constant of first order reaction is 60 s^{-1} . How much time will it take to reduce the concentration of the reactant to $1/10^{\text{th}}$ of its initial value?
26. A first order rate of a reaction triples when the temperature changes from 50°C to 100°C . Calculate the activation energy.
27. Give some examples of lanthanoid which shows +4 and +2 stable electronic configuration? Q28—The rate constant of first order reaction for the decomposition of ethyl iodide by the reaction $\text{C}_2\text{H}_5\text{I}(\text{g}) \rightarrow \text{C}_2\text{H}_4(\text{g}) + \text{HI}(\text{g})$ at 600K is $1.60 \times 10^{-5} \text{ s}^{-1}$. Its energy of activation is 209 kJ/mol. Calculate the rate constant of the reaction at 700K.
29. A first order reaction is 15% completed in 20 minutes. How long will it take to complete 40 %?
30. Graphically explain an Ideal solution ?
31. When the temperature changes from 300 K to 301 K the rate constant of the reaction increases by 7%. Calculate the activation energy.

SECTION-D

31. Give reason why:
- Transition elements form coordination complex.
 - Transition elements are mostly paramagnetic in nature.
 - Calculate the moment of Sc^{3+} , Fe^{3+} , Zn^{2+} , Ni^{2+} , Cu^{2+} and predict which of them form coloured compounds
 - Explain the preparation of potassium dichromate from chromite ore.
32. An aqueous solution containing 1.248g of barium chloride ($m_{\text{m}}=208.34$) in 100 g of water boils at 100.0832°C . Calculate the degree of dissociation of barium chloride. $K_b = 0.52 \text{ K/m}$
33. A solution of sucrose (mass 342) has been prepared by dissolving 68.4 g of sucrose in 1 kg of water. Calculate the following:
- Vapour pressure of the solution at 298 K
 - Osmotic pressure of the solution at 298 K
 - Freezing point of the solution. (V.P of water = 0.024 atm, K_f for water = 1.86 K Kg/mol)