

SEMESTER-TWO

CHEMISTRY

Class XI

Sample Paper—1

Max. Marks: 50

Time Allowed: 90 minutes

General Instructions:

- (i) This question paper consists of 40 questions in 4 sections.
- (ii) Section A consists of 10 Objective type questions carrying 1 mark each.
- (iii) Section B consists of 10 Fill in the blanks type questions carrying 1 mark each.
- (iv) Section C consists of 10 True or False statement type questions carrying 1 mark each.
- (v) Section D consists of 10 Short answer and Numerical type questions carrying 2 marks each.

Section A

Select and write one most appropriate option out of the four options given for each of the questions 1–10.

1. Which of the following is the strongest oxidising agent?
(a) Cl^- (b) Mn^{2+}
(c) MnO_4^- (d) Cr^{3+}
2. What is true about the cell constant of a conductivity cell?
(a) It changes with change of electrolyte.
(b) It changes with change of concentration of electrolyte.
(c) It changes with temperature of electrolyte.
(d) It remains constant for given cell.
3. The volume of gas is decreased to half. The specific heat of the gas will
(a) remain same (b) be reduce to half
(c) increase four times (d) be doubled.

4. The enthalpies of elements in their standard states are arbitrarily taken as zero. The enthalpy of formation of compound
- (a) is never negative (b) can be positive or negative
(c) is always negative (d) is never positive.
5. β -decay means emission of electron from
- (a) innermost electron orbit. (b) a stable nucleus.
(c) outermost electron orbit. (d) radioactive nucleus.
6. Nuclear fusion is not found in
- (a) thermonuclear reactor (b) hydrogen bomb
(c) energy production in sun (d) atom bomb
7. In a chemical reaction, equilibrium is established when:
- (a) opposing reaction ceases
(b) concentrations of reactants and products are equal
(c) velocity of the opposing reaction is same as that of forward reaction
(d) forward reaction ceases.
8. According to Le Chatelier's principle, adding heat to a solid and liquid in equilibrium will cause the
- (a) amount of solid to decrease (b) amount of liquid to decrease
(c) temperature to rise (d) temperature to fall.
9. The rate of a chemical reaction can be expressed in
- (a) grams per mole
(b) energy consumed per mole
(c) volume of gas per unit time
(d) moles formed per liter of solution
10. Which of the following factors affects the rate of heterogeneous reaction only?
- (a) Nature of reactants (b) Temperature of system
(c) Surface area of reactants (d) Concentration of reactants

Section B

Fill in the blanks with a suitable word for each of the questions 11–20.

11. The standard enthalpy of formation of elementary substances is taken to be _____ .
12. The sign of ΔH and ΔU for combustion process is _____ .
13. An equilibrium can be achieved only in _____ reactions.
14. The temperature at which solid \rightleftharpoons liquid equilibrium exist is known as _____ of the substance.

15. In dry cell the rod acts as cathode.
16. When lead storage battery is recharged it acts as
17. In electrolytic cell the energy is converted into energy.
18. Corrosion of metal is process.
19. Hydrolysis of ethyl acetate in an acidic solution is an example of order.
20. The units of rate of gaseous reaction are

Section C

State whether the following statements are true or false for each of the questions 21–30.

21. The term oxidation was originally used to describe the addition of oxygen to an element of a compound.
22. Daniel cell is a type of electrochemical cell invented in 1836.
23. In electrolytic cell, electrical energy is consumed.
24. Lead-storage Battery consists of six voltaic cells connected in series.
25. Discovery of radioactivity in uranium by French physicist Henri Becquerel in 1896.
26. Chemical reaction are almost irreversible, while nuclear reactions are almost reversible.
27. The enthalpy of fusion of ice is +ve.
28. Latent heat of fusion of ice cannot be measured by calorimetry.
29. ΔH neutralisation of a strong acid by a strong base depends upon the basicity of the acid.
30. $\Delta_{\text{vap}} H$ of a substance is always negative.

Section D

Answer each of the questions 31–40.

31. State and explain Faraday's first law of electrolysis.
32. What is the basic difference between enthalpy of formation and enthalpy of reaction? Illustrate with example.
33. Write one equation representing nuclear fusion reaction.
34. What is the effect of catalyst on equilibrium state?
35. Write a chemical reaction in which the units of rate and rate constant are same.
36. How many grams of chlorine can be produced by the electrolysis of molten NaCl by a current of 1.00 amp for 15 minutes?

37. A system gives out 20 J of heat and also does 40 Joules of work. What is the internal energy change?
38. A radioactive isotope has a half life of T year. How long will it take the activity to reduce to 3.125%.
39. For reaction $\text{N}_2(g) + 3\text{H}_2(g) \rightleftharpoons 2\text{NH}_3(g)$ the value of K_p is 3.6×10^{-3} at 500 K. Calculate the value of K_c for the reaction at the same temperature.
40. A first order reaction has rate constant of 10^{-2} sec^{-1} . Calculate the half life period for this reaction.