

Dwarka International School

Sample Paper

CLASS XII

This question paper consist of four sections

- Section A consist of MCQ question all of them carry 1 mark each
- Section B consist of 5 question all of them carry 2 mark each
- Section C consist of 10 question all of them carry 3 mark each
- Section D consist of 2 question all of them carry 5 mark each

*****ALL THE BEST*****

SECTION A

Q1 The value of Henry's constant K_H is _____. (1)

- (a) greater for gases with higher solubility.
- (b) greater for gases with lower solubility.
- (c) constant for all gases.
- (d) not related to the solubility of gases.

Q2 The p_{gas} dissolved a liquid is directly proportional to its (1)

- (a) mole fraction
- (b) molar mass
- (c) boiling point of liquid
- (d) molar mass of solvent

Q3 While charging the lead storage battery _____. (1)

- (a) PbSO_4 anode is reduced to Pb.
- (b) PbSO_4 cathode is reduced to Pb.
- (c) PbSO_4 cathode is oxidised to Pb.
- (d) PbSO_4 anode is oxidised to PbO_2 .

Q4 A first order reaction is 50% completed in 1.26×10^{14} s. How much time would it take for 100% completion? (1)

- (a) 1.26×10^{15} s
- (b) 2.52×10^{14} s
- (c) 2.52×10^{28} s
- (d) infinite

Q 5 The half life period of first order reaction is 1386 seconds. The specific rate constant of the reaction is

- (a) $0.5 \times 10^{-2} \text{ s}^{-1}$
- (b) $0.5 \times 10^{-3} \text{ s}^{-1}$
- (c) $5.0 \times 10^{-2} \text{ s}^{-1}$
- (d) $5.0 \times 10^{-3} \text{ s}^{-1}$

Q6 Consider the Arrhenius equation given below and mark the correct option.

$$K = A e^{-E_a/RT}$$

- a) Rate constant increases exponentially with increasing activation energy and decreasing temperature.
- b) Rate constant decreases exponentially with increasing activation energy and decreasing temperature.
- c) Rate constant increases exponentially with decreasing activation energy and decreasing temperature.
- d) Rate constant increases exponentially with decreasing activation energy and increasing temperature.

Q 7 Activation energy of a chemical reaction can be determined by _____

- a) Determining the rate constant at standard temperature.
- b) Determining the rate constant at two temperatures.
- c) Determining probability of collision.
- d) Using catalyst.

Q 8 Rate law constant cannot be determined from balanced chemical equation if _____

- a) Reverse reaction is involved.
- b) It is an elementary reaction.
- c) It is a sequence of elementary reactions.
- d) Any of the reactions is in excess.

Q 9 A conductivity cell containing electrodes made up of

- a) Gold
- b) silver
- c) Platinised Platinum
- d) Copper

Q 10 Which of the following statement is correct?

- a) E_a and change in Gibbs energy of cell reaction both are extensive properties.
- b) E_a and change in Gibbs energy of cell reaction both are intensive properties.
- c) E_a is an intensive property while change in Gibbs energy of cell reaction is an extensive property.
- d) E_a is an extensive property while change in Gibbs energy of cell reaction is an intensive property.

Q11 While charging the lead storage battery _____

- a) $PbSO_4$ anode is reduced to Pb.
- b) $PbSO_4$ cathode is reduced to Pb.
- c) $PbSO_4$ cathode is oxidised to Pb.
- d) $PbSO_4$ anode is oxidised to PbO .

Q12 which reaction is used for preparation of fluoroalkanes

- a) Finkel stein reaction
- b) Swartz reaction
- c) Gatterman reaction
- d) Wurtz reaction

Q13 Which of the following undergoes nucleophilic substitution exclusively by S₁ mechanism?

- a) Benzyl chloride
- b) Ethyl chloride
- c) Chlorobenzene
- d) Isopropyl chloride

Q14 The increasing order of nucleophilicity would be

- a) $\text{Cl} < \text{Br} < \text{I}$
Cl
- b) $\text{I} < \text{Cl} < \text{Br}$
- c) $\text{Br} < \text{Cl} < \text{F}$
- d) $\text{I} < \text{Br} < \text{Cl}$

Q 15. Indicate the complex ion which shows geometrical isomerism.

- (i) $[\text{Cr}(\text{H}_2\text{O})_4\text{Cl}_2]^+$
(ii) $[\text{Pt}(\text{NH}_3)_3\text{Cl}]$
(iii) $[\text{Co}(\text{NH}_3)_6]^{3+}$
(iv) $[\text{Co}(\text{CN})_5(\text{NC})]^{3-}$
(v) no isomerism

Q 16. A chelating agent has two or more than two donor atoms to bind to a single metal ion. Which of the following is not a chelating agent?

- (i) thiosulphato
(ii) oxalato
(iii) glycinato
(iv) ethane-1,2-diamine

Q17. Which of the following species is not expected to be a ligand?

- (i) NO
(ii) NH_4^+
(iii) $\text{NH}_2\text{CH}_2\text{CH}_2\text{NH}_2$
(iv) CO

Q18. What kind of isomerism exists between $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (violet) and $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2 \cdot \text{H}_2\text{O}$ (greyish-green)?

- (i) linkage isomerism
(ii) solvate isomerism
(iii) ionisation isomerism
(iv) coordination isomerism

Q 19. IUPAC name of $[\text{Pt}(\text{NH}_3)_2\text{Cl}(\text{NO}_2)]$ is :

- (i) Platinum diaminechloronitrite
(ii) Chloronitrito-N-ammineplatinum (II)
(iii) Diamminechloridonitrito-N-platinum (II)
(iv) Diamminechloronitrito-N-platinate (II)

SECTION B

Q21 What role does adsorption play in heterogeneous catalysis? (2)

Q22 Action of soap is due to emulsification and micelle formation. Comment. (2)

Q23 What are promoters? Give an example. (2)

Q 24 Why are aquatic species more comfortable in cold water in comparison to warm water? (2)

Q 25 Explain wurtz rxn. (2)

SECTION C

Q26 Out of $C_6H_5CH_2Cl$ and $C_6H_5CHClC_6H_5$, which is more easily hydrolysed by aqueous KOH? (3)

Q27 What happens when (3)

(i) n-butyl chloride is treated with alcoholic KOH?

(ii) ethyl chloride is treated with aqueous KOH?

Q28 Account for the following: (3)

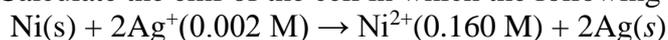
(i) The boiling points of alcohols decrease with increase in branching of the alkyl chain.

(ii) Phenol does not give protonation reaction readily.

(iii) Phenylmethyl ether reacts with HI to give Phenol and Methyl iodide and not Iodobenzene and Methyl alcohol.

Q 29 Calculate the mass of a non-volatile solute (molar mass 40 g/mol) which should be dissolved in 114g octane to reduce its vapour pressure to 80%. (3)

Q30 Calculate the emf of the cell in which the following reaction takes place: (3)



Given that $E^{\circ}_{cell} = 1.05 V$

Q31 In a reaction between A and B, the initial rate of reaction (r_0) was measured for different initial concentrations of A and B as given

below: What is the order of reaction with respect to A and B? (3)

A/mol L ⁻¹	0.20	0.20	0.40
B/mol L ⁻¹	0.30	0.10	0.05
r_0 /mol L ⁻¹ s ⁻¹	5.07×10^{-5}	5.07×10^{-5}	1.43×10^{-4}

Q32 (a) What is rate of reaction? Write two factors that affect the rate of reaction.

(b) The rate constant of a first order reaction increases from 4×10^{-2} to 8×10^{-2} when temperature changes from 27°C to 37°C.

Calculate the energy of activation (E_a). $\log 2 = 0.3010$ $\log 3 = 0.4771$ $\log 4 = 0.6021$ (3)

Q 33. A first order reaction has rate constant $1.15 \times 10^{-3} s^{-1}$. How long will it take to reduce reactant from 5 g to 3 g ?

Q34.explain aldol condensation for ethanol?

Q 35. Why is formation of delta take place at point where river and sea water meet?

Section D

Q36. What were limitation of VBT and why CFT was introduced?

Q 37. Explain working of leachlanche and lead storage cell?