

Youva Academy

Maharashtra state Board sample paper 2019

2019

CHEMISTRY

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CHEMISTRY (55) - SET-I

Time : 3 hrs

Std.: XII

Max.Marks : 70

- Note:** (i) All the question are compulsory.
(ii) Draw neat labelled diagrams and write balanced chemical equations wherever necessary.
(iii) Question paper consists of 29 questions divided into **FOUR** sections, namely A, B, C and D.
(iv) **Section A** : Select and write the most appropriate answer from the given alternatives for Q. No. 1 to 4 of multiple choice type questions carrying one mark each. Q. No. 5 to 8 are very short answer type questions carrying one mark each.
(v) **Section B** contains Q. No. 9 to 15 of short answer I type questions carrying two marks each. Internal choice is provided to only one question.
(vi) **Section C** contains Q. No. 16 to 26 of short answer II type questions carrying three marks each. Internal choice is provided to only one question.
(vii) **Section D** contains Q. No. 27 to 29 of long answer type questions carrying five marks each. Internal choice is provided to each question.
(viii) For each MCQ, correct answer must be written along with its alphabet,
e.g. (a) / (b) / (c) / (d)
(ix) In case of MCQ (i.e. Q.1 to Q.4), evaluation would be done for the first attempt only.
(x) Start each section on new page.
(xi) Figures to the right indicate full marks.
(xii) Use log table if necessary. Use of calculator is **not** allowed.

Given : $R = 8.314 \text{ J.K.mol}^{-1}$, Atomic weights: H=1, C=12, N=14, O=16, Cl=35.

SECTION - A

- Q.1 The ratio $r^+ : r^-$ is 0.42. The co-ordination number of cation is (1)
a) 6 b) 5
c) 4 d) 2
- Q.2 The number of moles present in 24.5 g of H_2SO_4 is (1)
a) 0.25 b) 2.05
c) 2.5 d) 25
- Q.3 IUPAC name of $\text{CH}_3\text{CHBr-CH}_2\text{OH}$ is (1)
a) 3-Hydroxyisopropyl bromide
b) 2-Bromopropan-1-ol
c) 2-Bromopropan-3-ol
d) 2-bromoisopropyl alcohol

- Q.4. In Balz-Schiemann reaction, $N_2^+X^-$ group is replaced by (1)
a) -H b) -F
c) -Cl d) -I
- Q.5. Write the mathematical expression for the relation between heat of reaction at constant pressure and at constant volume. (1)
- Q.6. Write the chemical reaction involved in extraction of copper from copper pyrites using limited supply of air in reverberatory furnace. (1)
- Q.7. Draw the structure of Nucleoside. (1)
- Q.8. Name the catalyst used in the preparation of high density Polyethene. (1)

SECTION - B

- Q.9. State and explain Henry's law. (2)
- Q.10. What is the action of (2)
a) fused NaOH on Arsenic
b) nitrogen on Lithium ?
- Q.11. Distinguish between isothermal process and adiabatic process. (2)
- Q.12. Define chemical twins .Write general electronic configuration of actinoids. (2)
- Q.13. How are following conversions carried out (2)
a) phenol into picric acid
b) But-2-en-1-al into But-2-en-1-ol ?

OR

Define ether .What is the action of hot hydroiodic acid on isopropyl methyl ether?

- Q.14. Write a note on vulcanization of rubber. (2)
- Q.15. Calculate the standard cell potential of the following galvanic cell. (2)
 $Zn_{(s)} | Zn^{2+}_{(IM)} || Pb^{2+}_{(IM)} | Pb_{(s)}$
($E^\circ_{Pb} = -0.126V$ and $E^\circ_{Zn} = -0.763V$)

SECTION - C

- Q.16. Define covalent solid. An ionic compound A_xB_y occurs in fcc type of crystal structure. The ion B is at centre of each face and the ion A occupies corners of the cube. Calculate the value of x and y. Write the formula of the ionic compound. (3)
- Q.17. Define flux. Write a note on froth flotation process. (3)

OR

Define calcination. Write a note on Bayer's process involved in leaching of alumina from Bauxite ore.

Q.18. What is the action of following on ozone- (3)

- a) PbS
- b) Nitric oxide ?

Write uses of sulphuric acid.

Q.19. Write electronic configuration of Gadolinium (Z=64), Scandium (Z=21) (3)

What are interstitial compounds ?

Q.20. Define the following terms (3)

- a) Antihistamine
- b) Antifertility drugs.

Draw structure of sodium n- dodecyl benzene sulphonate.

Q.21. Calculate the current strength and number of moles of electron required to produce 2.369×10^{-3} kg of Cu from CuSO_4 solution in one hour. (3)

(Molar mass of Cu is 63.5 g / mol)

Q.22. Define the term ligand. Write the formulae of the following (3)

- a) Diammine silver (I) chloride.
- b) Trioxalato cobaltate (III) ion.

Q.23. Write mechanism of aldol addition reaction of ethanal. (3)

Q.24. What is the action of sodium nitrite and hydrochloric acid on ethanamine, N-ethylethanamine and N,N-diethylethanamine ? (3)

Q.25. Define Peptide linkage. What is the action of the following on glucose (3)

- a) dilute nitric acid
- b) hydroxylamine?

Q.26. Calculate the enthalpy of formation of ethanoic acid from the following data. (3)

- a) Enthalpy of formation of carbondioxide is $-393.5 \text{ kJ mol}^{-1}$
- b) Enthalpy of formation of water is $- 285.8 \text{ kJ mol}^{-1}$
- c) Enthalpy of combustion of ethanoic acid is $- 875 \text{ kJ mol}^{-1}$

SECTION - D

Q.27. Derive the mathematical expression for the relation between molar mass of solute and relative lowering of vapour pressure of dilute solution. (5)

The rate constant of a first order reaction is $6.8 \times 10^{-4} \text{ s}^{-1}$. If the initial concentration of the reactant is 0.04 M, what is its molarity after 20 minutes ?

OR

Derive van't Hoff general solution equation.

Calculate the energy of activation for the reaction having the rate constant $3.7 \times 10^{-5} \text{ s}^{-1}$, at 25°C and $7.4 \times 10^{-5} \text{ s}^{-1}$ at 30°C .

Q.28 How is ammonia manufactured industrially ? Write uses of Helium. (5)
Convert cumene into phenol.

OR

Explain anomalous nature of nitrogen.

What is the action of the following reagents on ethanol

- a) Diazomethane
- b) Lucas reagent ?

Q.29. Write the mechanism of the reaction, when methyl bromide is treated with aqueous solution of caustic potash with energy profile diagram. (5)

How benzoic acid is prepared from the following

- a) dry ice
- b) ethyl benzoate ?

OR

Convert chlorobenzene into the following

- a) Diphenyl
- b) phenol
- c) aniline.

Explain HVZ reaction.

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