

J.J COLLEGE OF ARTS AND SCIENCE (Autonomous)
Svapuram Post, Pudukkottai-622422
DEPARTMENT OF CHEMISTRY

SYLLABUS FOR BRIDGE COURSE (2022-2023)

Unit -I: Quantum Number and Periodic Properties

Quantum Numbers-Principal, Azimuthal, Magnetic and Spin Quantum numbers and their significance, Pauli's Exclusion principle, Hund's rule, Aufbau Principle.

Periodicity- Periodic law, Atomic and ionic radii, ionisation potential, electron affinity and electronegativity along periods and groups.

Unit -II: Chemical Bonding

Ionic Bond-Properties of ionic compounds-factors affecting formation of ionic compound, Lattice Energy – Born – Haber Cycle, Fajan's rule. **Covalent Bond**-Lewis Theory, Octet rule, Sidgwick-Powell theory, **VSEPR Theory**-Shapes of simple inorganic molecules (BeCl_2 , NH_3 , H_2O , PCl_3 , XeF_4 , SF_4 , BrF_5 , PCl_5 , IF_7) Hydrogen bonding.

UNIT III: Basic Concepts in Organic Chemistry

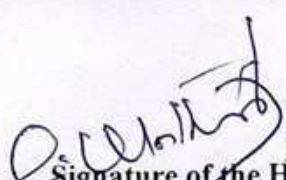
Classification of Organic Compounds - Functional group- Nomenclature- Tautomerism -Types of organic reaction-Electrophile and Nucleophile - Carbocation and Carbanion.

UNIT-IV: Alcohol, Ether and Biomolecules

Nomenclature, Classification, Preparation and Properties of alcohols. Ether and Carbonyl Compounds. Biomolecules: Carbohydrates- Protein, Amino acids and Nucleic acids.

Unit - V: Atomic Structure

Dualism of light-Wave nature of radiation classical theory of electromagnetic radiation. Particle nature of radiation-black body radiation and Planck's quantum theory, Photo electric effect and Compton effect of matter – de Broglie hypothesis Heisenberg's uncertainty principle, Concept of atomic orbitals, Schrodinger Equation.


Signature of the HOD
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DEPARTMENT OF CHEMISTRY
I B.Sc Chemistry (2022-2023)

LIST OF MARKS FOR PRE TEST AND POST TEST

S.No	Name	11.8.22	12.8.22	16.8.22	17.8.22	18.8.22	22.8.22	23.8.22	PRE TEST	POST TEST
1	Archana.I	P	P	P	P	P	P	P	38	47
2	Chellamani.P	P	P	P	P	A	P	P	34	45
3	Divyadharshini.P	P	P	P	P	P	P	P	36	44
4	Femina Jasmin.S	P	P	P	P	P	P	P	32	43
5	Joven Leena.Y	P	P	P	P	P	P	P	35	46
6	Pavithra.K	P	A	P	P	A	P	P	39	44
7	Preedeepalakshmi.G	P	P	P	P	P	P	P	40	48
8	Rajeshwari.R	P	P	P	P	P	P	P	37	42
9	Reena.R	P	P	P	P	P	P	P	36	43
10	Sangeetha.M	P	P	A	P	P	P	P	33	42
11	Swetha.P	P	P	P	P	P	P	P	38	48
12	Swetha.R	P	P	P	P	P	P	P	37	45
13	Yogeshwari.V	P	P	P	P	P	P	P	34	42
14	Abarna.M	A	P	P	P	P	P	P	39	41
15	Jayasri.S	P	P	P	P	P	P	P	34	45
16	Narmatha.S	P	P	P	P	P	P	P	32	43
17	Abirami.S	P	P	P	P	P	P	P	35	47
18	Arthi.K	P	P	P	P	P	P	P	34	46
19	Hariharan.U	P	P	P	A	P	P	P	33	42
20	Ilanthiraiyan.V	P	P	P	P	P	P	P	37	47
21	Kaleeshwaran.I	P	P	P	P	P	P	P	36	44
22	Naveen.D	P	P	P	P	P	P	P	34	49
23	Reegan Berkumanse.A	A	P	P	P	P	P	P	33	41
24	Sanjay.C	P	P	P	P	P	P	P	32	44



25	Santhosh.K	P	P	P	P	P	P	P	31	42
26	Suresh.N	A	P	P	P	A	P	P	34	45
27	Vinoth.K	P	P	P	P	P	P	P	37	47
28	Amithkiran.K	P	A	P	P	P	A	P	35	43

[Signature] 27/4/23
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POST TEST (2022-2023)

Date: 23.8.22

Time: 1 Hour

Max.Marks : 50

Answer all questions (25*2=50)

1. Which of the following quantum numbers can distinguish between two electrons present in the same orbital?
(a) Azimuthal (b) Principal (c) Magnetic (d) Spin quantum number
2. Which of the following quantum numbers governs the spatial orientation of an atomic orbital?
(a) Magnetic (b) Spin quantum number (c) Azimuthal (d) Principal quantum number
3. What is the maximum number of electrons in a shell?
a) n b) $2n$ c) n^2 d) $2n^2$
4. Which of the following quantum number gives the shape of atomic orbital of sub-shell?
a) n b) l c) m d) s
5. The vertical columns in the periodic table are termed as ----
(a) periods (b) groups (c) series (d) none of these
6. The ionic radius of cation is always----
(a) Less than atomic radius (b) more than atomic radius (c) Equal to atomic radius (d) Cannot be predicted
7. Which of the following elements has the maximum negative electron gain enthalpy?
(a) Oxygen (b) Chlorine (c) Fluorine (d) Nitrogen
8. The most electronegative element in the periodic table is ----
(a) Nitrogen (b) Oxygen (c) Chlorine (d) Fluorine
9. Which one of them is the weakest?
(a) Ionic bond (b) Covalent bond (c) Metallic Bond (d) van der Waals force
10. Which of the following molecules have trigonal planar geometry?
(a) BF_3 (b) NH_3 (c) PCl_3 (d) IF_3
11. A chemical bond formation that involves the complete transfer of electrons between atoms is...
a) ionic bond b) covalent bond c) metallic bond d) partial covalent bond
12. What is the energy that is released upon the formation of an ionic compound known as?
a) Ionization energy b) Lattice energy c) Electron gain enthalpy d) Electropositivity
13. Ionic bond formation depends on the arrangement of
a) molecule b) atom c) lattice d) kernel
14. Ionic compounds don't conduct electricity in
a) solution b) fused state c) solid state d) none of the above



15. The bond between two atoms of the same element is
a) polar covalent bond b) ionic bond c) non-polar covalent bond d) none of the above
16. Which among the following is not an example of Acyclic compound?
a) Acetaldehyde b) Ethane c) Cyclopropane d) Isobutane
17. Which of the following is not an electrophile
a) H_2O b) Cl_2 c) HBr d) Br_2
18. The shape of carbocation is
a) Pyramidal b) Bent c) Linear d) Trigonal Planar
19. Which is the most abundant biomolecule on earth?
a) Mineral salts b) Proteins c) Lipids d) Carbohydrates
20. IUPAC name of CH_3CHO
a) Acetaldehyde b) Methyl aldehyde c) Ethanal d) Ethano
21. IUPAC name of $\text{CH}_3 - \text{O} - \text{C}_2\text{H}_5$ is
a) Ethoxymethane b) Methoxyethane c) Methylethyl ether d) Ethylmethyl ether
22. The IUPAC name of $\text{CH}_3\text{COOC}_2\text{H}_5$ will be
a) Ethyl acetate b) Ethyl ethanoate c) Methyl propanoate d) None of these
23. IUPAC name of $(\text{CH}_3)_2\text{CH} - \text{CH}=\text{CH} - \text{CH}_3$ is
a) 2-methyl-3-pentene b) 4-methyl-2-pentene c) 1, 2-isopropyl-1-propene d) 3-isopropyl-2-propene
24. Neutron was discovered by —
(a) J.J Thomson (b) Chadwick (c) Rutherford (d) Priestley
25. The nucleus of the atom consists of —
(a) Protons and neutrons (b) Protons and electrons (c) Neutrons and electrons (d) Protons, neutrons and electrons

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Hop
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PRE TEST (2022-2023)

Date: 11.08.2022

Time: 1 Hour

Max.Marks : 50

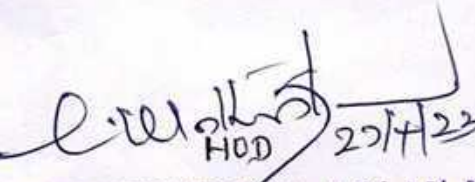
Answer all questions (25*2=50)

- The chemical name of bleaching powder is
(a) Calcium oxide (b) Sodium hydrogen carbonate (c) Sodium bicarbonate (d) Calcium oxychloride
- Which of the following is the lightest metal ?
(a) Mercury (b) Silver (c) Lithium (d) Lead
- Sulphuric acid is also known as
(a) Oil of Vitriol (b) Blue Vitriol (c) Water Vitriol (d) Acid Vitriol
- Which gas is used in atomic research and radiotherapy?
(a) Neon (b) Radon (c) Propane (d) Xenon
- The most important ore of Aluminium is
(a) Bauxite (b) Calamine (c) Calcite (d) Galena
- The element present in the largest amount in rocks and minerals is —
(a) Carbon (b) Silicon (c) Hydrogen (d) Aluminium
- An alloy used in making heating elements for electric heating devices is —
(a) Solder (b) Alloysteel (c) Nichrome (d) German Silver
- Which of the following is NOT a chemical change?
(a) Conversion of carbohydrate to energy (b) Converting water into steam (c) Making curd from milk (d) Heating coal
- German Silver is an alloy of
(a) Copper, Silver, Nickel (b) Silver, Copper, Aluminium (c) Zinc, Copper, Nickel (d) Silver, Zinc, Nickel
- The substance that loses electrons is called:
(a) oxidizing agent (b) reducing agent (c) catalyst (d) None of these
- Which of the following is the best conductor of Electricity ?
(a) Ordinary water (b) Sea water (c) Boiled water (d) Distilled water
- Ionisation energy is the energy required to remove an ___ from the outermost shell of an isolated gaseous atom
(a) Both electron and Proton (b) Neutron (c) Proton (d) Electron
- The element common to all acids is
(a) hydrogen (b) carbon (c) sulphur (d) oxygen
- Balloons are filled with
(a) Helium (b) Oxygen (c) Nitrogen (d) Argon



15. What is gypsum?
 (a) Lime (b) Bleaching powder (c) Blue vitriol (d) Ammonium chloride powder
16. What is the name of the transition from a liquid state directly to a gas of an element or compound?
 (a) Ionisation (b) Condensation (c) Deionisation (d) Vaporisation
17. pH of lemon juice is 4, that means it is
 (a) Basic (b) Acidic (c) Neutral (d) None of these
18. The gas used to extinguish fire is
 (a) Neon (b) Nitrogen (c) Carbon dioxide (d) Carbon Monoxide
19. Drying oils contains large proportion of
 (a) Cholesterol (b) Unsaturated fatty acids (c) Fats (d) Protein
20. What is the chemical symbol for Manganese?
 (a) Mo (b) Mg (c) Me (d) Mn
21. Gobar gas contains mainly
 (a) Methane (b) Carbon dioxide (c) Butane (d) Carbon Monoxide
22. The most malleable metal is
 (a) Silver (b) Gold (c) Aluminium (d) Sodium
23. Lignite is a type of
 (a) Limestone (b) Coal (c) Copper (d) Iron ore
24. Tetraethyl lead is used as
 (a) Mosquito repellent (b) Pain Killer (c) Fire extinguisher (d) Petrol additive
25. The chemical name of laughing gas is
 (a) Dinitrogen tetroxide (b) Methane (c) Nitrous oxide (d) Ammonium Nitrate

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