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G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.



UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., CHEMISTRY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
I	PART - III	CORE -1	U23CH101	GENERAL CHEMISTRY-I

Date &amp; Session: 09.11.2024 / FN

Time : 3hours

Maximum: 75 Marks

Course Outcome	Bloom's K-level	Q. No.	SECTION - A (10 X 1 = 10 Marks) Answer <u>ALL</u> Questions.
CO1	K1	1.	Spectrum produced due to transition of an electron from M to L shell is. a) absorption      b) emission      c) X-Rays      d) Continuous
CO1	K2	2.	An ion has 18 electron in the outermost shell, it is. a) Cu <sup>+</sup> b) Th <sup>4+</sup> c) Cs <sup>+</sup> d) K <sup>+</sup>
CO2	K1	3.	The IUPAC symbol for the element with atomic number 119 would be. a) uue      b) une      c) uun      d) unh
CO2	K2	4.	Which has the highest second ionization potential. a) Nitrogen      b) Carbon      c) Oxygen      d) fluorine
CO3	K1	5.	Ionic reaction are. a) very fast      b) Slow      c) moderate      d) intermediate speed
CO3	K2	6.	The polarity in a covalent bond can conveniently be measured in terms of a physical quantity called. a) Dipole moment      b) Flux      c) Electric field      d) polarization
CO4	K1	7.	The bond order in C <sub>2</sub> molecule is. a)1      b)4      c)3      d)2
CO4	K2	8.	Which one of the following compounds has sp <sup>2</sup> hybridization. a) CO <sub>2</sub> b) SO <sub>2</sub> c)N <sub>2</sub> O      d) CO
CO5	K1	9.	Phenoxide ion is more stable than phenol is due to. a) Resonance      b) polarity      c) Both a & b      d) None of these
CO5	K2	10.	Chlorination of methane is an example of _____ mechanism. a) free radicals      b) S <sub>N</sub> <sup>1</sup> c) S <sub>N</sub> <sup>2</sup> d) ArS <sub>N</sub> <sup>1</sup>
Course Outcome	Bloom's K-level	Q. No.	SECTION - B (5 X 5 = 25 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b)
CO1	K3	11a.	[i] Calculate the wavelength of a body of mass 1 mg moving with a velocity of 3 ms <sup>-1</sup> . (Plank constant =6.626 x 10 <sup>-34</sup> kgm <sup>2</sup> s <sup>-1</sup> ) [3] [ii] Write the importance of Moseley's experiments [2] <b>(OR)</b>
CO1	K3	11b.	Write a note on photoelectric effect.

CO2	K3	12a.	Arrange the following atoms/ions in the increasing order their size. (i) F <sup>-</sup> , Al, Na <sup>+</sup> , Mg <sup>2+</sup> (ii) Ca <sup>2+</sup> Ar, K <sup>+</sup> , Cl <sup>-</sup> , S <sup>2-</sup> <b>(OR)</b>
CO2	K3	12b.	Examine the physical significance of $\Psi$ and $\Psi^2$ .
CO3	K4	13a.	Difference between $\sigma$ bond and $\Pi$ bonds with example. <b>(OR)</b>
CO3	K4	13b.	What do you understand by polarization? State and Explain Fajan's rules.
CO4	K4	14a.	Draw the resonance structure of carbonate and nitrate ion. <b>(OR)</b>
CO4	K4	14b.	Analyze the characteristics properties of metal in terms of electron sea model.
CO5	K5	15a.	Discuss the preparation, structure and properties of carbocation. <b>(OR)</b>
CO5	K5	15b.	Interpret the following (i) Methylamine more basic than isopropyl amine (ii) N-methyl Aniline more basic than aniline

Course Outcome	Bloom's K-level	Q. No.	<b>SECTION – C (5 X 8 = 40 Marks)</b> <b>Answer ALL Questions choosing either (a) or (b)</b>
CO1	K3	16a.	Illustrate Bohr's model of the atom. How does it account for the hydrogen Spectra? What are its limitations? <b>(OR)</b>
CO1	K3	16b.	Write the electronic configurations (with electron spins) of the following atoms or ions K, Cu <sup>+</sup> , Ca <sup>2+</sup> , Al <sup>3+</sup> , Cl, Ar, Si and Ni
CO2	K4	17a.	[i] Differentiate orbit and orbital [ii] Compare ionic and covalent radii. <b>(OR)</b>
CO2	K4	17b.	Analyze in detail about the applications of Electronegativity.
CO3	K4	18a.	Sketch and explain s, p and d orbital's. <b>(OR)</b>
CO3	K4	18b.	Identify the shape and hybridization of the following molecules using VSEPR theory: Methane, water, ammonia and SF <sub>6</sub> .
CO4	K5	19a.	Justify the formation of O <sub>2</sub> <sup>+</sup> and N <sub>2</sub> Molecule using MO theory. <b>(OR)</b>
CO4	K5	19b.	Discuss the types, conditions, causes and properties of Hydrogen bonding.
CO5	K5	20a.	Discuss the different types of organic reactions. <b>(OR)</b>
CO5	K5	20b.	Justify the following. (i) Formic acid more acidic than acetic acid (ii) Fluoro acetic acid more acidic than chloro acetic acid (iii) Nitro phenol more acidic than phenol (iv) Phenol more acidic than cresol