Reg. No.								

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
III	PART - III	CORE-3	U23CH303	GENERAL CHEMISTRY-III

Date & Session: 09.11.2024/AN **Time : 3 hours** **Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	**SECTION – A (10 X 1 = 10 Marks)** **Answer ALL Questions.**
CO1	K1	1.	PV= constant at constant temperature is known as _____. a) Charles law b) Boyle's law c) Graham's law d) Avogadro's law
CO1	K2	2.	The compressibility factor of Vander-waals gas at the critical point is. a) 0 b) 0.4 c) 0.5 d) 0.375
CO2	K1	3.	The high surface tension of water is due to _____. a) covalent bonding b) intramolecular H-bonding c)) intermolecular H-bonding d) ionic bonding
CO2	K2	4.	The number of Bravais lattices for orthorhombic crystal system is _____. a) 1 b) 2 c) 3 d) 4
CO3	K1	5.	Who was the Nobel prize winner for the discovery of neutron? a) James Chadwick b) Albert Einstein c) Henry Becquerel d) Marry Curie
CO3	K2	6.	Elements having different atomic number but same number of neutrons is called _____. a) isobars b) isotopes c) isotones d) isostere
CO4	K1	7.	When bromoethane is treated with sodium metal to form _____. a) cyclic butane b) cyclic ethane c) n-butane d) isopropane
CO4	K2	8.	Choose the correct order of priority of S_N2 mechanism is. a) methyl > primary > secondary > tertiary b) methyl< primary > secondary > tertiary c) methyl < primary < secondary < tertiary d) methyl < primary > secondary > tertiary
CO5	K1	9.	Which of the following is not a monohydric alcohol? a) ethanol b) phenol c) cresol d) catechol
CO5	K2	10.	Phenol reduced with zinc dust to yield _____. a) cresol b) benzene c) cyclohexane d) cyclohexanol

Course Outcome	Bloom's K-level	Q. No.	**SECTION – B (5 X 5 = 25 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	11a.	At 20°C, the coefficient of viscosity of CO_2 gas is 1.48 x 10^{-5} $Kgm^{-1}s^{-1}$. Calculate the collision diameter of CO_2 **(OR)**
CO1	K3	11b.	Discuss briefly about Clausius equation and virial equation.
CO2	K3	12a.	What is point defect? Explain any one of the stoichiometric defects. **(OR)**
CO2	K3	12b.	Derive Bragg's equation for X-ray diffraction of crystals.
CO3	K4	13a.	Illustrate the major Nuclear power projects in India. **(OR)**
CO3	K4	13b.	Discuss how Geiger-Nuttall rule is used to calculate half life period?
CO4	K4	14a.	How Swarts and Finkelstein reaction is used to prepare alkyl halide? **(OR)**
CO4	K4	14b.	Suggest the general methods of preparation of benzyl chloride and its uses.
CO5	K5	15a.	How would you prepare the following i) Anisole from phenol ii) Benzyl alcohol from benzaldehyde and iii) phenol from benzene **(OR)**
CO5	K5	15b.	Propose the mechanism of preparation of phenol from Cumene.

Course Outcome	Bloom's K-level	Q. No.	**SECTION – C (5 X 8 = 40 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	16a.	Classify the degrees of freedom of gaseous molecule. **(OR)**
CO1	K3	16b.	Discuss how the Vander-waals equation vary with pressure and temperature of different gases?
CO2	K4	17a.	Classify the seven crystal system with their Bravais lattices. **(OR)**
CO2	K4	17b.	Compare and contrast the structural features of Diamond and Graphite.
CO3	K4	18a.	i) How will you determine the age of a rock by radiocarbon dating? ii) A freshly cut piece of wood gives 16100 counts of beta ray of emission per minute per kg and an old wooden bowl gives 13200 counts per minute per kg. Calculate the age of wooden bowl. The half-life period of $^{14}C_6$ is 5568 years. **(OR)**
CO3	K4	18b.	Sketch the Uranium and thorium series of radioactivity.
CO4	K5	19a.	Compare S_N1 and S_N2 reactions in detail. **(OR)**
CO4	K5	19b.	Write down the following naming reaction. i) Sandmeyer reaction ii) Gattermann reaction iii) Balz-Schiemann reaction and iv) Hunsdiecker reaction
CO5	K5	20a.	Give the mechanism of Cannizaro reaction and Reimer-Tieman reaction. **(OR)**
CO5	K5	20b.	Predict the product of benzyl alcohol with the following. i) Na ii) H_2/Pd iii) PCl_5/HCl and iv) HI/P