

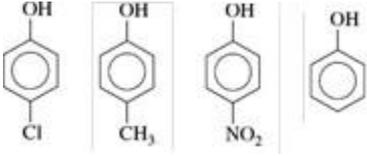
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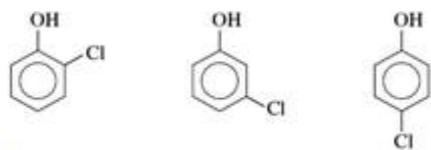
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**FIRST SEMESTER FYUGP EXAMINATION NOVEMBER 2025****(Regular/Improvement/Supplementary)****MINOR****CHE1MN108: BASIC ORGANIC AND BIO-INORGANIC CHEMISTRY****Time: 2 Hrs.****Maximum Marks: 70**

M – Mark      BL - Bloom's Taxonomy Level (1 to 6)      CO - Course Outcome

<b>Section A: Answer all questions. Each carries 3 marks. Ceiling: 24 Marks</b>				
<b>No.</b>	<b>Question</b>	<b>M</b>	<b>BL</b>	<b>CO</b>
1.	Point out the conditions favouring the formation of covalent bond.	3	1	CO2
2.	How does ionization enthalpy vary along a period? Explain how the magnitude of screening effect of inner electrons affects ionization enthalpy.	3	2	CO3
3.	Among the atoms represented by the following electronic configurations, which would have the lowest ionization enthalpy: $1s^2 2s^2 2p^6$ ; $1s^2 2s^2 2p^5$ ; $1s^2 2s^2 2p^6 3s^1$ ? Explain.	3	5	CO3
4.	What are the metal ions participating in enzymatic process?	3	2	CO4
5.	Why sodium-potassium pump is an example of active transport?	3	4	CO4
6.	Give products in the reactions of propyne with the following reagents: (i) Na in liquid ammonia; (ii) Hydrogenation using Lindlars catalyst.	3	4	CO6
7.	Arrange the following compounds in the increasing order of acidity or decreasing order of pKa values.  	3	5	CO6
8.	Explain the reaction of propanal and acetone with HCN.	3	3	CO6
9.	How benzene diazonium chloride prepared?	3	2	CO6
10.	Giving a suitable reagent of reduction and write the product of reduction reaction of carboxylic acid.	3	4	CO6
<b>Section B: Answer all questions. Each carries 6 marks. Ceiling: 36 Marks</b>				
<b>No.</b>	<b>Question</b>	<b>M</b>	<b>BL</b>	<b>CO</b>
11.	Give a diagrammatic representation of the s-orbital and the five d-orbitals.	6	6	CO1
12.	Derive the de Broglie relation. The kinetic energy of an electron (mass = $9.1 \times 10^{-31}$ kg) is $4.55 \times 10^{-25}$ J. Calculate the wavelength. ( $h = 6.6 \times 10^{-34}$ J s)?	6	5	CO1
13.	Discuss the merits of the long form of periodic table.	6	2	CO3
14.	Explain the stability of methyl, $1^\circ$ , $2^\circ$ and $3^\circ$ carbocation in terms of inductive effect and hyper conjugation.	6	3	CO5
<b>(PTO)</b>				

15.	Write a short note on the toxicity of metal ions.	6	4	CO5
16.	Write the names and functions of three zinc containing enzymes.	6	3	CO4
17.	Arrange the following isomeric chlorophenols in the increasing order of acidity or decreasing order of pKa values. Explain.	6	5	CO6



18.	What is meant by diazotization reaction? Give an example.	6	2	CO6
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**Section C: Answer any one question. Each carries 10 marks. (1 x 10 = 10 Marks)**

No.	Question	M	BL	CO
19.	(a) What are the salient features of hybridization? (b) Explain the hybridization of PCl <sub>5</sub> molecule and SF <sub>6</sub> molecule.	10	2	CO2
20.	Illustrate the following reactions with suitable examples.  (a) Clemmenson reduction reaction. (b) Wolf-Kishner reduction reaction. (c) Metal hydride reduction of ketones. (d) Grignard reagent addition to aldehydes. (e) HCN addition to aldehydes.	10	3	CO6