

**University of Mumbai**  
**Examination 2020 under cluster - PCOE**

Program: Chemical Engineering

Curriculum Scheme: Rev2012

Examination: Second Year Semester III

Course Code: CHC302 and Course Name: Engineering Chemistry-I

Time: 1 hour

Max. Marks: 50

For the students:- All the Questions are compulsory and carry equal marks .

Q1.	Reimer Tiemann reaction proceeds via _____
Option A:	Carbocation intermediate
Option B:	Carbene formation
Option C:	Free radical
Option D:	Carbanion generation
Q2.	The structural component of hemoglobin is _____
Option A:	Zinc
Option B:	Iron
Option C:	Magnesium
Option D:	Copper
Q3.	Which $\text{Fe}(\text{CO})_x$ complex does not follow EAN rule?
Option A:	Those ones which would not attend noble gas configuration.
Option B:	Those ones which cannot attend 36 EAN always.
Option C:	No specific number requirement.
Option D:	Those ones where only available electrons are calculated
Q4.	According to MOT number of unpaired electrons in NO molecule is _____
Option A:	Two
Option B:	Three
Option C:	Zero
Option D:	One
Q5.	Nitrobenzene yields _____ as a major product on nitration.
Option A:	o-dinitrobenzene
Option B:	m-dinitrobenzene
Option C:	p-dinitrobenzene
Option D:	m-nitroaniline
Q6.	Isomers having same chemical formula but give dissimilar ions when electrolyzed are known as _____
Option A:	Hydrated isomers
Option B:	Ionization isomers
Option C:	Coordinate isomers
Option D:	Linkage isomers
Q7.	Chlorine stabilizes carbanion by _____
Option A:	-I effect

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Option B:	+ I effect
Option C:	Resonance effect
Option D:	Hyperconjugation
Q8.	Cytochrome _____ is involved in Detoxification process.
Option A:	Cytochrome a
Option B:	Cytochrome c
Option C:	Cytochrome P450
Option D:	Cytochrome e
Q9.	The EAN of $[\text{Fe}(\text{CN})_6]^{4-}$ is _____
Option A:	32
Option B:	34
Option C:	36
Option D:	33
Q10.	By which mechanism does the conversion of Ethyl bromide to Ethyl alcohol in presence of KOH take place?
Option A:	SN1 reaction
Option B:	SN2 reaction
Option C:	Redox reaction
Option D:	Rearrangement reaction
Q11.	Geometry of Carbocation is _____
Option A:	Pyramidal
Option B:	Trigonal planar
Option C:	Tetrahedral
Option D:	Linear
Q12.	The CFSE of $d^9$ for weak field octahedral complex is _____
Option A:	-1.8
Option B:	-0.6
Option C:	+0.6
Option D:	+1.8
Q13.	During aromatic electrophilic substitution reactions the electron withdrawing group on benzene ring _____ the aromatic ring.
Option A:	Deactivates
Option B:	Activates
Option C:	Neutralizes
Option D:	Breaks
Q14.	Which of the following is correct geometry of $\text{SF}_4$ molecule?
Option A:	Trigonal
Option B:	Trigonal bipyramidal
Option C:	T-shape
Option D:	Irregular tetrahedral

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Q15.	Cytochromes involve _____ ions.
Option A:	Cupric
Option B:	Ferric
Option C:	Zinc
Option D:	Cuprous
Q16.	How many lone pairs are there in $\text{PCl}_5$ molecule?
Option A:	One
Option B:	Two
Option C:	Three
Option D:	None
Q17.	In sulfonation of naphthalene, naphthalene-1-sulfonic acid is formed as rate controlled product because _____
Option A:	It is stable at high temperature
Option B:	It requires comparatively lower activation energy
Option C:	It is formed in more amount
Option D:	It does not get affected by temperature
Q18.	Which of the following is correct order of stability in case of carbon free radicals?
Option A:	Ethyl > t- butyl > isopropyl
Option B:	Isopropyl > ethyl > t- butyl
Option C:	Ethyl > isopropyl > t- butyl
Option D:	t- butyl > isopropyl > ethyl
Q19.	Which is the correct statement of the following?
Option A:	Intermediate is not a definite molecular species
Option B:	Intermediate has the highest free energy in the course of reaction
Option C:	Intermediate is less stable than transition state
Option D:	Intermediate can be isolated and studied
Q20.	What is the bond order for nitrogen?
Option A:	2
Option B:	3
Option C:	1
Option D:	3.5
Q21.	Geometrical isomerism is not exhibited by the molecule of the type _____
Option A:	$\text{Mabcd}$
Option B:	$\text{Ma}_2\text{b}_2$
Option C:	$\text{Ma}_3\text{b}$
Option D:	$\text{M}(\text{ab})_2$
Q22.	Michael reaction is _____ catalysed reaction
Option A:	Acid
Option B:	Base
Option C:	Alcohol
Option D:	Platinum

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Q23.	Dehydrohalogenation reaction is an example of?
Option A:	Addition type of reaction
Option B:	Elimination type of reaction
Option C:	Substitution type of reaction
Option D:	Rearrangement reaction
Q24.	Iron carbonyl _____ has Trigonal bipyramidal shape.
Option A:	Fe (CO) <sub>5</sub>
Option B:	Fe <sub>2</sub> (CO) <sub>9</sub>
Option C:	Fe <sub>3</sub> (CO) <sub>12</sub>
Option D:	Diene Fe (CO) <sub>3</sub>
Q25.	In energy profile diagram, which of the following has highest energy?
Option A:	Reactant
Option B:	Product
Option C:	Transition state
Option D:	Intermediate