

University of Mumbai
Examination 2020 under cluster ___ (Lead College Short name)

Program: Chemical Engineering

Curriculum Scheme: Rev2016

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. | According to Werner's theory of coordination compounds |
| Option A: | Primary valency is ionisable |
| Option B: | Secondary valency is ionisable |
| Option C: | Primary and secondary valency are ionisable |
| Option D: | Neither primary nor secondary valency ionisable |
| Q2. | Iron carbonyl, $\text{Fe}(\text{CO})_5$ is |
| Option A: | Tetranuclear |
| Option B: | Mononuclear |
| Option C: | Binuclear |
| Option D: | Trinuclear |
| Q3. | What is the oxidation number of the central metal atom in the coordination compound $[\text{Pt}(\text{NH}_3)_3\text{Cl}]\text{Cl}$? |
| Option A: | -1 |
| Option B: | 0 |
| Option C: | +1 |
| Option D: | +2 |
| Q4. | The bond order of CO molecule on the basis of molecular orbital theory is |
| Option A: | 0 |
| Option B: | 2 |
| Option C: | 3 |
| Option D: | 1 |
| Q5. | The structure of SF_4 is---- |
| Option A: | Trigonal bipyramidal |
| Option B: | Linear |
| Option C: | Tetrahedral |
| Option D: | Angular |
| Q6. | Geometric isomers are not possible for ---- complexes. |
| Option A: | SquarePlanar |
| Option B: | Octrahedral |
| Option C: | Triangular |
| Option D: | Tetrahedral |
| Q7. | Optical Isomers are related as ---- images. |
| Option A: | Non superimposable mirror |
| Option B: | Superimposable |

University of Mumbai
Examination 2020 under cluster ___ (Lead College Short name)

| | |
|-----------|--|
| Option C: | Identical |
| Option D: | Nonidentical |
| | |
| Q8. | Pinacol rearrangement involves ---- shift to form carbonyl compound. |
| Option A: | 1,3 alkyl |
| Option B: | 1,2 alkyl |
| Option C: | Alkyl |
| Option D: | Acyl |
| | |
| Q9. | Carbene involves ----hybridised. |
| Option A: | sp |
| Option B: | sp ³ |
| Option C: | sp ² |
| Option D: | sp ³ d |
| | |
| Q10. | Michael reaction involves ---- |
| Option A: | Conjugate addition |
| Option B: | Carbene formation |
| Option C: | Electrophile addition |
| Option D: | Free radical mechanism |
| | |
| Q11. | One Hemoglobin molecule requires – oxygen molecules |
| Option A: | 3 |
| Option B: | 2 |
| Option C: | 1 |
| Option D: | 4 |
| | |
| Q12. | According to ---- theory, XeF ₄ is square planar. |
| Option A: | VBT |
| Option B: | MOT |
| Option C: | VSEPR |
| Option D: | Werner's field theory |
| | |
| Q13. | In coordination chemistry, the donor atom of a ligand is |
| Option A: | Lewis acid. |
| Option B: | counter ion |
| Option C: | central metal atom. |
| Option D: | the atom in the ligand that shares an electron pair with the metal. |
| | |
| Q14. | (Crystal Field Theory) Strong field ligands such as CN ⁻ : |
| Option A: | usually produce high spin complexes and small crystal field splitting. |
| Option B: | cannot form low spin complexes. |
| Option C: | usually produce low spin complexes and high crystal field splitting. |
| Option D: | usually produce high spin complexes and high crystal field splitting. |
| | |
| Q15. | Which regions of the light radiations of the visible ultraviolet lying between – wavelength are chiefly concerned in bringing about photochemical reactions? |
| Option A: | 1000 Å and 2000 Å |

University of Mumbai

Examination 2020 under cluster ___ (Lead College Short name)

| | |
|-----------|---|
| Option B: | 1500 Å and 1000 Å |
| Option C: | 8000 Å and 2000 Å |
| Option D: | 9000 Å and 5,000 Å |
| | |
| Q16. | In Fe ₂ (CO) ₉ , there are ---- bridge Fe- carbonyl bonds. |
| Option A: | 3 |
| Option B: | 4 |
| Option C: | 5 |
| Option D: | 2 |
| | |
| Q17. | ---- deficiency leads to loss of smell n taste. |
| Option A: | Iron |
| Option B: | Zinc |
| Option C: | Copper |
| Option D: | Magnesium |
| | |
| Q18. | The---- of a photochemical reaction is defined as ratio of molecules decomposed in a given time to the number of quanta absorbed in the same time |
| Option A: | quantum yield |
| Option B: | quantum number |
| Option C: | Light energy |
| Option D: | Quantum energy |
| | |
| Q19. | -----behave as nucleophiles and are basic in nature |
| Option A: | Carbon free radicals |
| Option B: | Carbanions |
| Option C: | Carbene |
| Option D: | Carbon atoms |
| | |
| Q20. | Phenol to salicyldehyde is----- |
| Option A: | Michael reaction |
| Option B: | Reimer- Tiemann reaction |
| Option C: | Friedal craft/s reaction |
| Option D: | Wohl bromination reaction |
| | |
| Q21. | Reactive intermediate is--- molecule. |
| OptionA: | Short lived & highly energetic |
| OptionB: | Long lived & medium energy |
| OptionC: | Same as transition state |
| OptionD: | Short lived & low enrgy molecule |
| | |
| Q22. | A complex ion has metal ion at the centre & ---/--- surrounding it. |
| Option A | Ions / molecules |
| OptionB: | Ions / atoms |
| OptionC: | Atoms/ molecules |
| OptionD: | Ions/ free radicals |
| | |
| Q23. | The photochemical reaction is ----- light |

University of Mumbai
Examination 2020 under cluster ___ (Lead College Short name)

| | |
|-----------|--|
| Option A: | Used to convert heat into |
| Option B: | Catalysed by |
| Option C: | Initiated by |
| Option D: | Accompanied by emission |
| | |
| Q24. | The----- of an atom in a given molecule refers to the total number of atoms, ion, or molecules bonded to the central atom. |
| Option A: | Coordination number |
| Option B: | Prime number |
| Option C: | Number of protons |
| Option D: | Number of neutrons |
| | |
| Q25. | ----is the force that holds atoms together in a substance. |
| Option A: | Covalent bond |
| Option B: | Metallic bond |
| Option C: | Ionic bond |
| Option D: | Pi bond |