# University of Mumbai

## Examination 2020 under cluster ___ (Lead College Short name)

Program: Bachelor of Engineering

Curriculum Scheme: **Rev2019 'C' Scheme**

Examination: First Year Semester I

Course Code: FEC103 and Course Name: Engineering Chemistry-I

Time: 1 hour Max. Marks: 50

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

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| Q1. | Electrons first occupy the lowest energy orbital available to them and enter into higher energy orbitals only after the lower energy orbitals are filled.<br>The above statement is of - |
| Option A: | Pauli's Exclusion Principle |
| Option B: | Aufbau Principle |
| Option C: | Hund's multiplicity rule |
| Option D: | Newton's Law |
| | |
| Q2. | Atomic orbital is- |
| Option A: | Polycentric |
| Option B: | Monocentric |
| Option C: | Both A & B |
| Option D: | None of these |
| | |
| Q3. | Molecules which are slightly repelled or push out of the magnetic field, are called- |
| Option A: | Paramagnetic |
| Option B: | Ferromagnetic |
| Option C: | Diamagnetic |
| Option D: | Ferrimagnetic |
| | |
| Q4. | NO molecule is_____ in nature |
| Option A: | Paramagnetic |
| Option B: | Diamagnetic |
| Option C: | Ferrimagnetic |
| Option D: | All of these |
| | |
| Q5. | Which of the following compound/s is/are aromatic? |
| Option A: | Benzene |
| Option B: | Pyrrole |
| Option C: | Pyridine |
| Option D: | All of the above |
| | |
| Q6. | According to Huckel's rule, the cyclic unsaturated compounds containing ___ delocalized pi-electrons exhibit aromatic structure. |
| Option A: | 4n+6 |
| Option B: | 4n+2 |
| Option C: | 4n+4 |
| Option D: | 4n+8 |
| | |

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| Q7. | According to Kekule's structure of Benzene, C-C (single bond) length is __ $A^0$. |
| Option A: | 1.54 |
| Option B: | 1.34 |
| Option C: | 1.00 |
| Option D: | 2.50 |
| | |
| Q8. | Attractive force which arises due to interaction between positive end of polar molecule and negative end of another polar molecule is- |
| Option A: | Ion-dipole interaction |
| Option B: | Dipole-dipole interaction |
| Option C: | Dipole-induced dipole interaction |
| Option D: | Hydrogen bonding |
| | |
| Q9. | The type of hydrogen bonding in ammonia ($NH_3$) molecule is |
| Option A: | Intramolecular |
| Option B: | Intermolecular |
| Option C: | Both A & B |
| Option D: | None of the above |
| | |
| Q10. | The temperature above which a gas cannot be liquefied, no matter how much pressure is exerted on the gas, is called- |
| Option A: | Critical temperature |
| Option B: | Melting temperature |
| Option C: | Transition temperature |
| Option D: | Room temperature |
| | |
| Q11. | The P-V curve of a gas at constant temperature is said to be |
| Option A: | Isobaric |
| Option B: | Isothermal |
| Option C: | Adiabatic |
| Option D: | Isochoric |
| | |
| Q12. | Complete the following reaction:<br>$Mg(HCO_3)_2 \rightarrow$ _____ + $2CO_2$ |
| Option A: | Mg |
| Option B: | $Mg(OH)_2$ |
| Option C: | $MgCO_3$ |
| Option D: | $H_2O$ |
| | |
| Q13. | [M-EDTA] complex is _____ |
| Option A: | Blue in colour |
| Option B: | Wine-red in colour |
| Option C: | Colourless |
| Option D: | Green |
| | |
| Q14. | Permanent hardness in water is caused by presence of |
| Option A: | Magnesium chloride |
| Option B: | Calcium carbonate |

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| Option C: | Sodium bicarbonate |
| Option D: | None of these |
| | |
| Q15. | Brackish water mostly contains dissolved |
| Option A: | Ca salts |
| Option B: | Mg salts |
| Option C: | NaCl |
| Option D: | Suspended impurities |
| | |
| Q16. | Ideal disinfectant is |
| Option A: | Bleaching water |
| Option B: | Ozone |
| Option C: | Chlorine |
| Option D: | Lime |
| | |
| Q17. | Thermoplastics becomes _____ on heating |
| Option A: | Rigid |
| Option B: | Moulded |
| Option C: | Soft |
| Option D: | Brittle |
| | |
| Q18. | When rubber is heated with sulphur, its tensile strength, elasticity and resistance to swelling are increased tremendously. This process is known as - |
| Option A: | Purification |
| Option B: | Vulcanization |
| Option C: | Annealing |
| Option D: | Sulphonation |
| | |
| Q19. | Plasticizers _____ flexibility of the plastics |
| Option A: | Decreases |
| Option B: | Increases |
| Option C: | Do not affect |
| Option D: | None of these |
| | |
| Q20. | Fabrication of plastics can be done by__ |
| Option A: | Compression moulding |
| Option B: | Transfer moulding |
| Option C: | Extrusion moulding |
| Option D: | All of these |
| | |
| Q21. | Glass transition temperature is denoted as |
| Option A: | Tg |
| Option B: | Tm |
| Option C: | Gt |
| Option D: | Mt |
| | |
| Q22. | What is Gibbs phase rule for general system? |
| Option A: | P = C – 1 – F |

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| Option B: | P = C + 1 – F |
| Option C: | P + F = C – 2 |
| Option D: | P + F = C + 2 |
| | |
| Q23. | The degree of freedom at a triple point in the phase-diagram for water is _____ |
| Option A: | 2 |
| Option B: | 3 |
| Option C: | 0 |
| Option D: | 1 |
| | |
| Q24. | Mixture of $O_2$ and $N_2$, number of phases would be- |
| Option A: | 1 |
| Option B: | 0 |
| Option C: | 2 |
| Option D: | 3 |
| | |
| Q25. | Homogeneous, physically distinct and mechanically separable potion of a system, which is separated from other parts of a system is called- |
| Option A: | Component |
| Option B: | Phase |
| Option C: | Degree of freedom |
| Option D: | Mole |