

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

Program: First Year Engineering

Curriculum Scheme: Rev2019

Examination: First Year Semester I

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

Time: 1 hour

Max. Marks: 50

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

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| Q1. | At triple point the Water system is _____ |
| Option A: | Nonvariant |
| Option B: | Monovariant |
| Option C: | Bivariant |
| Option D: | trivariant |
| Q2. | Which of the following is the purest form of water? |
| Option A: | Lake water |
| Option B: | Rain water |
| Option C: | Spring water |
| Option D: | River water |
| Q3. | Maximum capacity of any orbital is _____ electrons |
| Option A: | 2 |
| Option B: | $2n^2$ |
| Option C: | 8 |
| Option D: | 18 |
| Q4. | According to Huckel's rule the aromatic system must have _____ pi electrons. |
| Option A: | $4n+4$ |
| Option B: | $4n + 1$ |
| Option C: | $4n + 2$ |
| Option D: | $4n+ 3$ |
| Q5. | Magnetic character of O ₂ molecule is _____ |
| Option A: | Paramagnetic |
| Option B: | Diamagnetic |
| Option C: | Antimagnetic |
| Option D: | Nonmagnetic |
| Q6. | Which of the following salt is not getting removed by boiling and filtration? |
| Option A: | Calcium bicarbonate |
| Option B: | Magnesium chloride |
| Option C: | Magnesium bicarbonate |
| Option D: | Magnesium carbonate |
| Q7. | Gases deviate from the ideal gas behaviour because their molecules _____ |
| Option A: | Possess negligible volume |
| Option B: | Have forces of attraction between them |
| Option C: | Are polyatomic |

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| Option D: | Are not attracted to one another |
| | |
| Q8. | Injection moulding is used mainly for _____ |
| Option A: | Thermosetting plastics |
| Option B: | Thermosoftening plastics |
| Option C: | Both thermosetting and thermosoftening plastics |
| Option D: | Synthetic fibres |
| | |
| Q9. | Two electrons in the same atom can have upto _____ quantum numbers identical. |
| Option A: | Two |
| Option B: | Three |
| Option C: | Four |
| Option D: | One |
| | |
| Q10. | What is the hardness of water containing 162 mg of calcium bicarbonate per litre of water? (Given: Atomic weights of C=12, H=1, Ca=40, O=16) |
| Option A: | 162 ppm |
| Option B: | 100 ppm |
| Option C: | 81 ppm |
| Option D: | 50 ppm |
| | |
| Q11. | Thermosetting plastics are _____ |
| Option A: | Formed by addition polymerisation |
| Option B: | Soluble in all organic solvents |
| Option C: | Low molecular weight |
| Option D: | Cannot be reshaped and reused |
| | |
| Q12. | Which type of reactions are characteristic of aromatic compounds? |
| Option A: | Nucleophilic substitution reactions |
| Option B: | Electrophilic substitution reactions |
| Option C: | Addition reactions |
| Option D: | Elimination reactions |
| | |
| Q13. | Which of the following chemicals is used as oxidizing agent in determination of COD ? |
| Option A: | H ₂ SO ₄ |
| Option B: | HgSO ₄ |
| Option C: | Ag ₂ SO ₄ |
| Option D: | K ₂ Cr ₂ O ₇ |
| | |
| Q14. | Along the vapourisation curve which phases of the system are in equilibrium? |
| Option A: | Solid and liquid |
| Option B: | Liquid and gas |
| Option C: | Gas and solid |
| Option D: | All three are in equilibrium |
| | |
| Q15. | Which of the following has good optical properties? |
| Option A: | Urea formaldehyde |

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| Option B: | Phenol formaldehyde |
| Option C: | Polyurethane |
| Option D: | PMMA |
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| Q16. | During ion exchange process of softening _____ ions are removed from hard water. |
| Option A: | Hydrogen |
| Option B: | Calcium |
| Option C: | Hydroxyl |
| Option D: | permanganate |
| | |
| Q17. | Benzoyl peroxide is used as a _____ during compounding of plastics |
| Option A: | Filler |
| Option B: | Pigment |
| Option C: | Lubricant |
| Option D: | Catalyst |
| | |
| Q18. | Bonding molecular orbitals are _____ |
| Option A: | Higher in energy than atomic orbitals |
| Option B: | Lower in energy than atomic orbitals |
| Option C: | Same in energy as atomic orbitals |
| Option D: | In between in energy of atomic orbitals |
| | |
| Q19. | Polymethyl methacrylate is _____ |
| Option A: | Thermoplastic |
| Option B: | Thermosetting plastic |
| Option C: | Thermohardening plastic |
| Option D: | Condensation polymer |
| | |
| Q20. | What is the bond order of NO molecule? |
| Option A: | 2 |
| Option B: | 2.5 |
| Option C: | 3 |
| Option D: | 1.5 |
| | |
| Q21. | The polymer linkage in Kevlar is chemically known as _____ |
| Option A: | Ester linkage |
| Option B: | Amide linkage |
| Option C: | Methylene linkage |
| Option D: | Ether linkage |
| | |
| Q22. | Which of the following statement is not correct with reference to phase rule? |
| Option A: | It is applicable to only heterogeneous system |
| Option B: | It helps to study behaviour of some alloys with heat treatment |
| Option C: | It requires the system to be in equilibrium |
| Option D: | It is applicable to the system affected by magnetic field |
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| Q23. | Which of the following is the weakest bond |

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| Option A: | Ionic bond |
| Option B: | Metallic bond |
| Option C: | Covalent bond |
| Option D: | Van der Waals forces |
| | |
| Q24. | Aromatic compounds are extra stable due to _____ |
| Option A: | Inductive effect |
| Option B: | Unsaturation |
| Option C: | Cyclic structure |
| Option D: | Resonance effect |
| | |
| Q25. | BOD stands for _____ |
| Option A: | Biomedical oxygen demand |
| Option B: | Biological oxygen demand |
| Option C: | Biochemical oxygen demand |
| Option D: | Biophysical oxygen demand |