# Amity University Dubai

## Amity Placement Test

## CHEMISTRY

**Marks: 30** **Time: 90 min**

**Name: ……**

**Date of Exam: …… ……..** **Signature of Invigilator:……**

**Marks Obtained: …….** **Signature of Evaluator:……**

General Instructions for students

1. Attempt all questions. Each question carry 1 mark.
2. Fill all the details with ink /ball point pen only.
3. Do not keep electronic Diary / mobile phone in examination room.
4. Strict disciplinary action will be initiated against any student found using unfair means.
5. When the allotted time gets over, student should stop further writing and handover the answer books to the invigilator.

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1. The basic unit of length in the SI system is the:

   a) Meter

   b) Inch

   c) Foot

   d) Kilometer

2. The first atomic theory was proposed by:

   a) John Dalton

   b) Niels Bohr

   c) Erwin Schrödinger

   d) Dmitri Mendeleev

3. A standard reduction electrode potentials of four metals are given as A = -0.250 V, B = -0.140 V, C = -0.126 V, D = -0.402 V. Name the metal that displaces A from its aqueous solution is

   a) A

   b) B

c) C

d) D

4. Elements in the same group of the periodic table share similar:

   a) Chemical properties

   b) Physical properties

   c) Atomic masses

   d) None of the above

5. As pressure on a gas increases, its volume will:

   a) Increase

   b) Decrease

   c) Remain the same

   d) Become unpredictable

6. Concentration of a solution refers to the amount of solute dissolved in a given amount of...?

   a) Solvent

   b) Solution

   c) Water

   d) Mixture

7. The carbon atom has the ability to form four covalent bonds due to its ……

   a) Electron configuration

   b) Atomic mass

   c) Nuclear structure

   d) Position in the periodic table

8. Substitution reactions involve replacing one atom or group of atoms in a molecule with another. What is an example?

   a) Combustion

   b) Esterification

   c) Polymerization

   d) Neutralization

9. A solution with a pH of 7 is considered as ……..

   a) Acidic

b) Basic

c) Neutral

d) Saturated

10. Which of the following is an example of an aromatic hydrocarbon?

a) Ethane

b) Propane

c) Benzene

d) Heptane

11. What is the name given to a molecule with the same molecular formula but a different arrangement of atoms?

a) Isomer

b) Homologous series

c) Functional group

d) Polymer

12. Which of the following molecules is most likely nonpolar?

a) $NH_3$ (ammonia)

b) $CO_2$ (carbon dioxide)

c) $H_2O$ (water)

d) $CH_4$ (methane)

13. According to the Brønsted-Lowry theory, an acid is a:

a) Proton donor

b) Proton acceptor

c) Electron donor

d) Electron acceptor

14. The pH scale is used to measure the concentration of:

a) Hydroxide ions ($OH^-$)

b) Hydrogen ions ($H^+$)

c) Salts

d) Water molecules

15. Neutralization is the reaction between an acid and a base to produce:

a) Another acid

b) Another base

c) Salt and water

d) A gas

16. Factors affecting reaction rate include:

a) Concentration of reactants

b) Temperature

c) Presence of a catalyst

d) All of the above

17. A pure substance that cannot be separated into simpler substances by physical means is ……..

a) Mixture

b) Compound

c) Solution

d) All of the above

18. Elements are arranged in the periodic table based on their……

a) Atomic mass

b) Increasing atomic number

c) Chemical properties

d) Physical properties

19. When excited atoms return to their ground state, they emit energy in the form of electromagnetic radiation. This can be observed as…….

a) Atomic spectra

b) Chemical reactions

c) Isotopes

d) Radioactive decay

20. Electrons fill orbitals based on the Aufbau principle. Which orbital is filled after the 3s orbital?

a) 2p

b) 3s

c) 3d

d) 1p

21. Percent yield refers to the amount of product actually obtained compared to the theoretical amount predicted by the balanced chemical equation. Which equation calculates the percent yield?
    a) (Actual yield / Theoretical yield) x 100
    b) (Theoretical yield / Actual yield) x 100
    c) (Actual yield - Theoretical yield) x 100
    d) (Theoretical yield + Actual yield) x 100
22. The ability of carbon atoms to bond with each other to form chains and rings is known as…….
    a) Catenation
    b) Isomerism
    c) Functionalization
    d) Aromaticity
23. Alkanes are a class of organic compounds with only single carbon-carbon bonds and hydrogen atoms. They are generally:
    a) Saturated
    b) Unsaturated and polar
    c) Highly reactive
    d) Used as oxidizing agents
24. Functional groups are specific arrangements of atoms within a molecule that are responsible for its characteristic chemical properties. Which of the following is NOT a functional group?
    a) Hydroxyl group (-OH)
    b) Carbonyl group (C=O)
    c) Methyl group ($-CH_3$)
    d) Amino group ($-NH_2$)
25. Aromatic compounds exhibit unique stability due to:
    a) Resonance, where electrons are delocalized throughout the molecule.
    b) The presence of a long carbon chain.
    c) A high number of hydrogen atoms.
    d) Being highly soluble in water.

26. Determine the empirical formula for chrysotile asbestos. Chrysotile has the following percent composition: 28.03% Mg, 21.60% Si, 1.16% H, and 49.21% O. The molar mass for chrysotile is 520.8 g/mol.
    a) $Mg_3Si_2H_3O_8$
    b) $Mg_6Si_4H_6O_{16}$
    c) $Mg_9Si_{4H6}O_{18}$
    d) None of the above
27. A reaction has rate equation,

    Rate = k $[NO_2]^2$, it is ……

    a) First order
    b) Second order
    c) Third order
    d) Zero order
28. Emf generated by voltaic cell is called…….
    a) Oxidation potential
    b) Cell potential
    c) Redox potential
    d) None of above
29. A catalyst alters
    a) The direction of a reaction
    b) The rate of a reaction
    c) The concentration of a reaction
    d) The molecularity of a reaction
30. Electrolysis is a process which utilizes
    a) Chemical energy
    b) Electrical energy
    c) Heat energy
    d) Biochemical energy

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