

**AMITY UNIVERSITY DUBAI, UAE**  
**SCHOOL OF ENGINEERING ARCHITECTURE INTERIOR DESIGN**  
**AMITY PLACEMENT TEST | SAMPLE – 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 carries 1 mark.
  2. Fill in all required details using ink or a ballpoint pen only.
  3. Electronic devices such as mobile phones or electronic diaries are not allowed in the examination room.
  4. Strict disciplinary action will be taken against any student found using unfair means.
  5. Once the allotted time is over, students must stop writing immediately and hand over their answer booklets to the invigilator.
- .....

1. A physical change is a change which:

- a) Alters the chemical composition of a substance
- b) Does not alter the chemical composition of a substance**
- c) Always results in a new substance
- d) None of the above

2. Which of the following is the SI unit of temperature?

- a) Celsius (°C)
- b) Fahrenheit (°F)
- c) Kelvin (K)**
- d) Rankine (°R)

3. Charles's Law states that:

- a) Volume is directly proportional to pressure at constant temperature
- b) Volume is inversely proportional to pressure at constant temperature
- c) Volume is directly proportional to temperature at constant pressure**

- d) Volume is inversely proportional to temperature at constant pressure
4. Which of the following is NOT a colligative property of solutions?
- a) Vapor pressure lowering
  - b) Boiling point elevation
  - c) Osmotic pressure
  - d) **Color**
5. What is the hybridization of the carbon atom in methane ( $\text{CH}_4$ )?
- a) sp
  - b)  $\text{sp}^2$
  - c)  **$\text{sp}^3$**
  - d)  $\text{sp}^3\text{d}$
6. What is the precision of a measurement?
- a) How close a measurement is to the true value
  - b) **How close a series of measurements are to each other**
  - c) The smallest unit of measurement that can be read on the instrument
  - d) The range of values that a measurement can take
7. Which of the following is an example of a physical change?
- a) Rusting of iron
  - b) Burning of gasoline
  - c) Digestion of food
  - d) **Dissolving sugar in water**
8. Which of the following is an example of an addition reaction?
- a) Combustion of methane
  - b) Halogenation of alkanes
  - c) Dehydration of alcohols
  - d) **Hydrogenation of alkenes**
9. Which of the following factors generally increases the solubility of a solid in a liquid?
- a) Decreasing temperature
  - b) Increasing pressure
  - c) Decreasing surface area of the solute
  - d) **Increasing temperature**
10. Which functional group is characterized by a ( $-\text{COOH}$ ) group?
- a) Aldehyde

- b) Ketone
- c) Alcohol
- d) Carboxylic acid**

11. A bond between two identical atoms is most likely to be:

- a) Ionic
- b) Polar covalent
- c) Nonpolar covalent**
- d) Metallic

12. Which of the following metals is the most reactive?

- a) Gold (Au)
- b) Silver (Ag)
- c) Copper (Cu)
- d) Potassium (K)**

13. Which of the following factors generally increases the rate of a chemical reaction?

- a) Decreasing temperature
- b) Increasing concentration of reactants**
- c) Decreasing surface area of reactants
- d) Adding an inhibitor

14. At constant temperature, for a given mass of an ideal gas

- a) The product of volume and pressure always remains constant**
- b) Pressure always remains constant
- c) Volume always remains constant
- d) None of the above

15. What are the most familiar electrolytes?

- a) Acids
- b) Bases
- c) Salts
- d) All of the above**

16. What value or values of  $ml$  are allowable for an orbital with  $l = 2$ ?

- a. 0
- b. 2
- c. -1
- d. all of the above**

17. Which of the following has the greatest electron affinity (most negative value)?
- a. **Cl**
  - b. K
  - c. He
  - d. Na
18. A compound has a composition of 87.5 % N and 12.5 % H . What is the empirical formula for this compound?
- a. **NH<sub>2</sub>**
  - b. N<sub>2</sub>H<sub>3</sub>
  - c. NH
  - d. N<sub>2</sub>H<sub>2</sub>
19. Which of the following pairs of elements can form an ionic compound?
- a. P and Br
  - b. Zn and K
  - c. C and O
  - d. **F and Ca**
20. Which of the following is a correct description for a Brønsted-Lowry acid-base reaction?
- a. weaker acid + weaker base → stronger acid + stronger base
  - b. weaker acid + stronger base → stronger acid + weaker base
  - c. stronger acid + weaker base → weaker acid + stronger base
  - d. **stronger acid + stronger base → weaker acid + weaker base**
21. Which of the following compounds is an example of a saturated hydrocarbon?
- a) Ethene
  - b) Ethyne
  - c) **Ethane**
  - d) None of the above
22. The simplest aldehyde is:
- a) **Methanal**
  - b) Ethanal
  - c) Propanal
  - d) Butanal
23. The process of the removal of water from a substance is called:
- a) Condensation
  - b) **Dehydration**

- c) Hydrolysis
- d) Sublimation

24. Identify 'A' in the following reaction:



- (a) **CH<sub>3</sub>COONa**
- (b) CH<sub>2</sub>(Na)COOH
- (c) NaOH
- (d) NaHCO<sub>3</sub>

25. The speed of a chemical reaction

- (a) is constant no matter what the temperature is.
- (b) is independent of the amount of contact surface of a solid involved.
- (c) between gases should in all cases be extremely rapid because the average kinetic energy of the molecules is great.
- (d) **varies inversely with the absolute temperature.**

26. A reaction in which a carboxylic acid reacts with a base to form a salt and water is .....

- (a) ionization
- (b) **neutralization**
- (c) hydrolysis
- (d) saponification

27. For a voltaic (or galvanic) cell using Ag,Ag<sup>+</sup> (1.0 M) and Zn,Zn<sup>2+</sup> (1.0 M) half-cells, which of the following statements is incorrect?

- (a) The zinc electrode is the anode.
- (b) Electrons will flow through the external circuit from the zinc electrode to the silver electrode.
- (c) **Reduction occurs at the zinc electrode as the cell operates.**
- (d) The mass of the zinc electrode will decrease as the cell operates.

28. Alpha particles are ..... charged

- a) Positive
- b) Negative
- c) Neutral
- d) Zero

29. When an atom absorbs energy, its electrons can move to a higher energy level. This process is called:

- a) **Excitation**

- b) Ionization
- c) Relaxations
- d) Emission

30. The ideal gas law is represented by the equation:

- a)  **$PV = nRT$**
  - b)  $PV = mRT$
  - c)  $V = nRT/P$
  - d) None of the above
- .....