ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Total Time 3.5 hours
Total Marks: 100

Class: XII **MODEL EXAMINATION PAPER 2026**
Time Allowed: 20 minutes **SUBJECT: Elementary Chemistry and Chemical Pathology**
SECTION "A" (MULTIPLE CHOICE QUESTIONS) **Marks 16**

Q1: Attempt **ALL** questions. Each question carries **ONE** mark.

1. Which branch of chemistry is most helpful in understanding enzymes and DNA?
A. Physical Chemistry B. Biochemistry C. Inorganic Chemistry D. Organic Chemistry
2. Henry's Law is related to:
A. Temperature and solids B. Volume and liquids
C. Pressure and gases D. Light and solutions
3. Which ion plays a critical role in nerve transmission and muscle contraction?
A. Phosphate B. Sodium C. Iron D. Chloride
4. What does the Arrhenius concept define an acid as?
A. A substance that accepts a proton B. A substance that donates H^+
C. A substance that donates an electron pair D. A substance that donates OH^-
5. Which test is commonly used in both hematology and chemical pathology for anemia diagnosis?
A. Bilirubin B. CRP C. Ferritin D. ESR
6. This vitamin is essential for blood clotting:
A. Vitamin A B. Vitamin C C. Vitamin B D. Vitamin K
7. This hormone increases blood calcium levels:
A. Parathyroid hormone B. Thyroid hormone C. Calcitonin D. Glucagon
8. Which of the following is a derived quantity?
A. Length B. Area C. Mass D. Time
9. The primary function of carbohydrates in the human body is:
A. Hormone production B. Muscle repair
C. Energy supply D. Cell signaling
10. Which of the following reacts with acids to release CO_2 gas?
A. Sodium chloride B. Sodium carbonate C. Sodium hydroxide D. Sodium sulfate
11. Raoult's Law and Dalton's Law are related to:
A. Electrical conductivity B. Gas laws
C. pH of solutions D. Pressure and vapour behavior in mixtures
12. Bicarbonate (HCO_3^-) in the blood acts as a/an:
A. Energy source B. Buffer to regulate pH
C. Vitamin carrier D. Coagulant
13. This equipment is essential in filtration.
A. Test tube B. Pipette C. Funnel and filter paper D. Burette
14. Enzymes work by:
A. Raising activation energy B. Increasing product concentration
C. Lowering activation energy D. Breaking down enzymes
15. The following process converts a liquid into vapor and then back into liquid.
A. Filtration B. Evaporation C. Distillation D. Sublimation
16. This condition is associated with increased level of glucose in urine (glycosuria):
A. Hypertension B. Hypotension
C. Diabetes mellitus D. Diabetes insipidus

Practical Based Assessment (PBA) **Marks 16**

Q2: Attempt **ALL** questions. Each question carries **TWO** marks.

17. A chemist prepares four solutions, which one is more concentrated?
A. 10 g glucose in 100 mL water B. 20 g glucose in 100 mL water
C. 40 g glucose in 100 mL water D. 50 g glucose in 100 mL water
18. If an object weighs 2.5 kg, what will be its weight in grams?
A. 1000 g B. 1500 g C. 2000 g D. 2500 g
19. Which liver enzyme increases most significantly when liver cells are damaged?
A. ALP B. AST C. ALT D. Bilirubin
20. A book weighs 1.2 kg. How many such books will have a total weight of 6 kg?
A. 5 B. 6 C. 4 D. 10
21. Which one of the following is the most specific indicator of kidney function?
A. Total protein B. Albumin C. Creatinine D. Bilirubin

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22. Which unit is commonly used for expressing solution concentration?
A. m/s B. g/100 mL C. J/kg D. °C

23. Centrifugation separates blood components mainly based on:
A. Color intensity B. Solubility C. Density differences D. Chemical reaction rate

24. Which one shows the correct order of units from smallest to largest?
A. L < mL < cm^3 B. mL < L < m^3 C. m^3 < L < mL D. cm^3 < mL < m^3

END OF SECTION A

Class: XII **MODEL EXAMINATION PAPER 2026**
Time: 2 hours 40 minutes **SUBJECT: Elementary Chemistry and Chemical Pathology**
SECTION "B" & SECTION "C" **Total Marks 68**
SECTION "B" SHORT ANSWER QUESTIONS **36 Marks**

Q3: Answer any **NINE** questions from this section. All questions carry equal marks. Your answer should not exceed 30 – 40 lines.

i. Write the names, symbols, and characteristic properties of the Group VII-A elements.
ii. What is the role of vitamin D in calcium metabolism? What happens in case of vitamin D deficiency?
iii. Give four differences between metals and nonmetals with suitable examples.
iv. Write the name, symbol and atomic number of any four elements of group VIII-A of the periodic table.
v. Define distillation. Name any two types of distillation and briefly state their uses.
vi. Describe the classification of solutions based on the amount of solute.
vii. Define hyponatremia. List the major physiological functions of potassium (K^+) in the body.
viii. Give the chemical formulas of any four common compounds.
ix. Define isotonic, hypotonic, and hypertonic solutions.
x. What is an indicator? Describe its types with examples.
xi. List any four types of apparatus used in chemical pathology and state their primary uses.
xii. Define sedimentation, evaporation and decantation.

SECTION "C" DETAILED ANSWER QUESTIONS **32 Marks**

Q4: Answer any **TWO-PART** questions from this section. All questions carry equal marks.

i. a) Explain the periodic table with reference to its groups, periods, and blocks.
b) Compare alkali metals, alkaline earth metals, halogens, and noble gases in terms of their chemical properties and reactivity.

ii. a) What are salts? Explain the classification of salts with at least one example of each.
b) Describe filtration, explain its different methods, and discuss any two real-life applications of filtration.

iii. a) Describe the classification of lipids and discuss any two major lipid metabolic pathways.
b) Discuss the major liver function indicators along with their normal values and explain how abnormal values relate to clinical significance.

END OF PAPER