



# Kuwait University

Office of Assistant Vice President for Evaluation  
and Measurement

## Academic Aptitude Tests

Student Name

Version

A

Civil ID No.

### Instructions:

1. The aptitude tests consist of three tests.

<u>Test</u>	<u>Number of Questions</u>	<u>Time</u>
English	85	1 Hour
Mathematics	20 (No Calculator)	1 Hour
Chemistry	25	1 Hour

2. Mark all your answers on the **Answer Sheet** and in the proper section. On your answer sheet as shown below, using a pencil, darkenthe proper circle.



3. Verify all personal and test data on answer sheet and don't make any changes unless approved by the proctor.
4. Write down your name and Civil ID# on the test booklet.
5. Copy the test's version on your answer sheet.
6. Follow the proctor's instruction during the test.
7. During testing, be quite and avoid any cheating situation.
8. Observe the allocated and the announced time for each test.

## Chemistry Test

### **Gram Atomic Mass (g/mol):**

Oxygen (O) = 16.0

Sulfur (S) = 32.1

Beryllium (Be) = 9.01

### **Atomic Number:**

Hydrogen (H) = 1

Nitrogen (N) = 7

Oxygen (O) = 8

Sodium (Na) = 11

Chlorine (Cl) = 17

Scandium (Sc) = 21

Cobalt (Co) = 27

Copper (Cu) = 29

Cadmium (Cd) = 48

### **Physical Constants:**

Ion product constant for water ( $K_w$ ) at 25 °C =  $1.00 \times 10^{-14}$

1. The compound  $(\text{Ca}_2\text{Mg}_5(\text{Si}_4\text{O}_{11})_2(\text{OH})_2)$  is composed of the following elements:

- (A) Cadmium, magnesium, sulfur, hydrogen and oxygen
- (B) Calcium, magnesium, silicon, hydrogen and oxygen
- (C) Copper, magnesium, silicon, hydrogen and oxygen
- (D) Cobalt, manganese, sulfur, hydrogen and oxygen

2. Which of the following elements exists as solid at room temperature?

Sulfur (S), Mercury (Hg), Argon (Ar), Platinum (Pt), Bromine (Br)

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| (A) Sulfur (S) and Argon (Ar)      | (C) Mercury (Hg) and Bromine (Br) |
| (B) Mercury (Hg) and Platinum (Pt) | (D) Sulfur (S) and Platinum (Pt)  |

3. Which of the following processes leads to a **chemical change**?

- |                             |  |
|-----------------------------|--|
| (A) Mixing sand with stones | (C) Mixing aqueous solutions of silver nitrate and sodium chloride |
| (B) Boiling water           | (D) Cutting glass  |

4. What is the **number of ions** formed when the compound  $(\text{K}_2\text{H}(\text{PO}_4))$  is dissolved in water?

- |       |       |
|-------|-------|
| (A) 4 | (C) 3 |
| (B) 8 | (D) 2 |

5. Which of the following compounds is an organic compound ?

- |                                       |                            |
|---------------------------------------|----------------------------|
| (A) $\text{Na}_2\text{CO}_3$          | (C) $\text{CH}_3\text{OH}$ |
| (B) $\text{K}_2\text{Cr}_2\text{O}_7$ | (D) $\text{CO}$            |

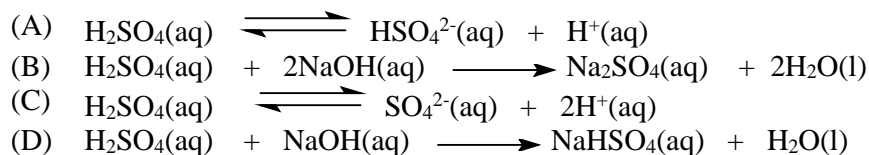
6. During electrolysis, the electric charge is carried through the solution by:

- |             |                   |
|-------------|-------------------|
| (A) Ions    | (C) Neutral atoms |
| (B) Protons | (D) Neutrons      |

7. What is the correct chemical name of the compound  $(\text{Fe}_2(\text{SO}_4)_3)$ ?

- (A) Iron(III) sulfite
- (B) Iron(III) thiosulfate
- (C) Iron(III) bisulfate
- (D) Iron(III) sulfate

8. Which of the following chemical equations represents complete neutralization reaction of sulfuric acid ( $\text{H}_2\text{SO}_4$ )?



9.  $\text{CH}_3\text{COOH}(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{CH}_3\text{COO}^-(\text{aq}) + \text{H}_3\text{O}^+(\text{aq})$

In the above equilibrium system, which of the following is considered as conjugate base?

- (A)  $\text{CH}_3\text{COOH}(\text{aq})$  (C)  $\text{CH}_3\text{COO}^-(\text{aq})$   
(B)  $\text{H}_3\text{O}^+(\text{aq})$  (D)  $\text{H}_2\text{O}(\text{l})$

10. Which of the following atoms in its ground state has **seven** electrons in its last d energy sublevel?

- (A) Scandium atom (Sc) (C) Copper atom (Cu)  
(B) Cobalt atom (Co) (D) Cadmium atom (Cd)

11. Which of the following represents a pair of molecular compounds?

- (A) CO and KBr (C)  $\text{I}_2$  and  $\text{NiCl}_2$   
(B)  $\text{Na}_2\text{S}$  and  $\text{H}_2\text{S}$  (D)  $\text{CCl}_4$  and NO

12. When the coordinate covalent bond of the hydronium ion ( $\text{H}_3\text{O}^+$ ) is formed, the oxygen atom (O) :

- (A) loses electrons (C) shares with two of its electrons  
(B) shares with one of its electrons (D) shares with four of its electrons

13. Which of the following compounds contains **ionic** bond?

- (A)  $\text{Na}_2\text{O}$  (C)  $\text{H}_2\text{O}$   
(B) HCl (D)  $\text{NO}_2$

14. In which of the following substances, the **oxidation number** of manganese (Mn) is +7?

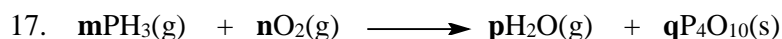
- (A)  $\text{MnO}_2$  (C)  $\text{Mn}$   
(B)  $\text{KMnO}_4$  (D)  $\text{Mn}_2\text{O}_3$

15. Which of the following values of  $[\text{H}^+]$  or  $[\text{OH}^-]$  represents a basic solution?

- (A)  $[\text{OH}^-] = 1.0 \times 10^{-9} \text{ mol / liter}$  (C)  $[\text{H}^+] = [\text{OH}^-] = 1.0 \times 10^{-7} \text{ mol / liter}$   
(B)  $[\text{H}^+] = 1.0 \times 10^{-3} \text{ mol / liter}$  (D)  $[\text{H}^+] = 1.0 \times 10^{-10} \text{ mol / liter}$

16. The compound  $(\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_2\text{CH}_3)$  contains :

- (A) Carboxylic acid group (C) Ether group  
(B) Aldehyde group (D) Ester group

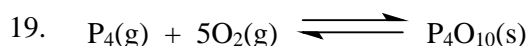


After balancing the above chemical equation, the coefficient (**n**) before  $\text{O}_2(\text{g})$  is:

- (A) 8 (C) 4  
(B) 6 (D) 5

18. The simplest chemical test that can be used to distinguish between aqueous solution of barium nitrate ( $\text{Ba}(\text{NO}_3)_2$ ) and aqueous solution of sodium chloride ( $\text{NaCl}$ ) is by using aqueous solution of \_\_\_\_\_

- (A) lithium nitrate ( $\text{LiNO}_3$ ) (C) barium chloride ( $\text{BaCl}_2$ )  
(B) sulfuric acid ( $\text{H}_2\text{SO}_4$ ) (D) nitric acid ( $\text{HNO}_3$ )



What is the equilibrium constant expression for the above equilibrium system?

- (A)  $K = P_{\text{P}_4} \cdot P_{\text{O}_2}^5$   
(B)  $K = P_{\text{P}_4} / P_{\text{O}_2}^5$   
(C)  $K = P_{\text{P}_4\text{O}_{10}} / P_{\text{P}_4} / P_{\text{O}_2}^5$   
(D)  $K = 1 / P_{\text{P}_4} \cdot P_{\text{O}_2}^5$

20. What is the molar solubility of a saturated solution of calcium sulfite ( $\text{CaSO}_3$ ) if the value of the solubility product constant ( $K_{\text{sp}}$ ) is equal to  $3.00 \times 10^{-7}$ ?

- (A)  $5.48 \times 10^{-4} \text{ mol / liter}$  (C)  $4.58 \times 10^{-7} \text{ mol / liter}$   
(B)  $3.00 \times 10^{-7} \text{ mol / liter}$  (D)  $3.16 \times 10^{-3} \text{ mol / liter}$

21. What is the volume that is occupied by 175.0 g of lead, if the density of lead is equal to  $11.35 \text{ g/cm}^3$ ?
- (A)  $19.86 \text{ cm}^3$  (C)  $30.80 \text{ cm}^3$   
(B)  $175.0 \text{ cm}^3$  (D)  $15.42 \text{ cm}^3$
22. In which of the following compounds is the percent by mass of sulfur (S) less than 20.0 %?
- (A)  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$  (248.2 g / mol) (C)  $\text{K}_2\text{SO}_4$  ( 174.3 g / mol)  
(B)  $\text{Ce}(\text{HSO}_4)_4$  ( 528.4 g / mol) (D)  $(\text{NH}_4)_2\text{S}_2\text{O}_8$  (228.20 g / mol)
23. What is the volume of a solution prepared by dissolving 0.375 g of cobalt nitrate ( $\text{Co}(\text{NO}_3)_2$ ) in water to prepare a solution with a concentration of 0.050 mole / liter?  
[molar mass of cobalt nitrate ( $\text{Co}(\text{NO}_3)_2$ )= 182.9 g / mol]
- (A)  $41.0 \text{ cm}^3$  (C)  $24.4 \text{ cm}^3$   
(B)  $50.0 \text{ cm}^3$  (D)  $75.0 \text{ cm}^3$
24. How many grams of oxygen (O) are there in 125.5 g of white lead (basic lead carbonate,  $\text{Pb}_3(\text{CO}_3)_2 \cdot (\text{OH})_2$ )?  
[molar mass of white lead = 775.6 g / mol]
- (A) 7.930 g (C) 15.87 g  
(B) 20.71 g (D) 10.57 g
25. What is the number of moles of beryllium (Be) in 24.75 g of the compound ( $\text{Be}_3\text{Al}_2(\text{SiO}_3)_6$ )?  
[molar mass of the compound ( $\text{Be}_3\text{Al}_2(\text{SiO}_3)_6$ ) = 537.6 g / mol]
- (A) 0.04604 mol (C) 0.1381 mol  
(B) 0.09208 mol (D) 0.2762 mol

اجابات اختبار اللغة الانجليزية

Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers
1 -	(A B C D)	19 -	(A B C D)	37 -	(A B C D)	55 -	(A B C D)	73 -	(A B C D)
2 -	(A B C D)	20 -	(A B C D)	38 -	(A B C D)	56 -	(A B C D)	74 -	(A B C D)
3 -	(A B C D)	21 -	(A B C D)	39 -	(A B C D)	57 -	(A B C D)	75 -	(A B C D)
4 -	(A B C D)	22 -	(A B C D)	40 -	(A B C D)	58 -	(A B C D)	76 -	(A B C D)
5 -	(A B C D)	23 -	(A B C D)	41 -	(A B C D)	59 -	(A B C D)	77 -	(A B C D)
6 -	(A B C D)	24 -	(A B C D)	42 -	(A B C D)	60 -	(A B C D)	78 -	(A B C D)
7 -	(A B C D)	25 -	(A B C D)	43 -	(A B C D)	61 -	(A B C D)	79 -	(A B C D)
8 -	(A B C D)	26 -	(A B C D)	44 -	(A B C D)	62 -	(A B C D)	80 -	(A B C D)
9 -	(A B C D)	27 -	(A B C D)	45 -	(A B C D)	63 -	(A B C D)	81 -	(A B C D)
10 -	(A B C D)	28 -	(A B C D)	46 -	(A B C D)	64 -	(A B C D)	82 -	(A B C D)
11 -	(A B C D)	29 -	(A B C D)	47 -	(A B C D)	65 -	(A B C D)	83 -	(A B C D)
12 -	(A B C D)	30 -	(A B C D)	48 -	(A B C D)	66 -	(A B C D)	84 -	(A B C D)
13 -	(A B C D)	31 -	(A B C D)	49 -	(A B C D)	67 -	(A B C D)	85 -	(A B C D)
14 -	(A B C D)	32 -	(A B C D)	50 -	(A B C D)	68 -	(A B C D)		
15 -	(A B C D)	33 -	(A B C D)	51 -	(A B C D)	69 -	(A B C D)		
16 -	(A B C D)	34 -	(A B C D)	52 -	(A B C D)	70 -	(A B C D)		
17 -	(A B C D)	35 -	(A B C D)	53 -	(A B C D)	71 -	(A B C D)		
18 -	(A B C D)	36 -	(A B C D)	54 -	(A B C D)	72 -	(A B C D)		

## إجابات اختبار الرياضيات

Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers
1 -	(A) (B) (C) (D)	6 -	(A) (B) (C) (D)	11 -	(A) (B) (C) (D)	16 -	(A) (B) (C) (D)
2 -	(A) (B) (C) (D)	7 -	(A) (B) (C) (D)	12 -	(A) (B) (C) (D)	17 -	(A) (B) (C) (D)
3 -	(A) (B) (C) (D)	8 -	(A) (B) (C) (D)	13 -	(A) (B) (C) (D)	18 -	(A) (B) (C) (D)
4 -	(A) (B) (C) (D)	9 -	(A) (B) (C) (D)	14 -	(A) (B) (C) (D)	19 -	(A) (B) (C) (D)
5 -	(A) (B) (C) (D)	10 -	(A) (B) (C) (D)	15 -	(A) (B) (C) (D)	20 -	(A) (B) (C) (D)

## إجابات اختبار الكيمياء

Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers
1 -	(A) (B) (C) (D)	6 -	(A) (B) (C) (D)	11 -	(A) (B) (C) (D)	16 -	(A) (B) (C) (D)	21 -	(A) (B) (C) (D)
2 -	(A) (B) (C) (D)	7 -	(A) (B) (C) (D)	12 -	(A) (B) (C) (D)	17 -	(A) (B) (C) (D)	22 -	(A) (B) (C) (D)
3 -	(A) (B) (C) (D)	8 -	(A) (B) (C) (D)	13 -	(A) (B) (C) (D)	18 -	(A) (B) (C) (D)	23 -	(A) (B) (C) (D)
4 -	(A) (B) (C) (D)	9 -	(A) (B) (C) (D)	14 -	(A) (B) (C) (D)	19 -	(A) (B) (C) (D)	24 -	(A) (B) (C) (D)
5 -	(A) (B) (C) (D)	10 -	(A) (B) (C) (D)	15 -	(A) (B) (C) (D)	20 -	(A) (B) (C) (D)	25 -	(A) (B) (C) (D)

إجابات اختبار اللغة العربية

Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers	Q's#	Answers
1 -	(A B C D)	11 -	(A B C D)	21 -	(A B C D)	31 -	(A B C D)	41 -	(A B C D)	51 -	(A B C D)
2 -	(A B C D)	12 -	(A B C D)	22 -	(A B C D)	32 -	(A B C D)	42 -	(A B C D)	52 -	(A B C D)
3 -	(A B C D)	13 -	(A B C D)	23 -	(A B C D)	33 -	(A B C D)	43 -	(A B C D)	53 -	(A B C D)
4 -	(A B C D)	14 -	(A B C D)	24 -	(A B C D)	34 -	(A B C D)	44 -	(A B C D)	54 -	(A B C D)
5 -	(A B C D)	15 -	(A B C D)	25 -	(A B C D)	35 -	(A B C D)	45 -	(A B C D)	55 -	(A B C D)
6 -	(A B C D)	16 -	(A B C D)	26 -	(A B C D)	36 -	(A B C D)	46 -	(A B C D)	56 -	(A B C D)
7 -	(A B C D)	17 -	(A B C D)	27 -	(A B C D)	37 -	(A B C D)	47 -	(A B C D)	57 -	(A B C D)
8 -	(A B C D)	18 -	(A B C D)	28 -	(A B C D)	38 -	(A B C D)	48 -	(A B C D)	58 -	(A B C D)
9 -	(A B C D)	19 -	(A B C D)	29 -	(A B C D)	39 -	(A B C D)	49 -	(A B C D)	59 -	(A B C D)
10 -	(A B C D)	20 -	(A B C D)	30 -	(A B C D)	40 -	(A B C D)	50 -	(A B C D)	60 -	(A B C D)