Kuwait University

Office of Assistant Vice President for Evaluation and Measurement

Academic Aptitude Tests

Student Name	Version A

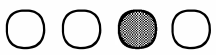
Civil ID No.

Instructions:

1. The aptitude tests consist of three tests.

Test	Number of Questions	Time
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

Atomic Mass:

Hydrogen (H) = 1.0
Carbon (C) = 12.0
Oxygen (O) = 16.0
Sulfur (S) = 32.1

Atomic Number:

Hydrogen (H) = 1
Carbon (C) = 6
Oxygen (O) = 8
Phosphorous (P) = 15
Chlorine (Cl) = 17
Potassium (K) = 19
Chromium (Cr) = 24
Iron (Fe) = 26
Bromine (Br) = 35

Mass Number:

Bromine (Br) = 80

Physical Constant:

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

1. Sublimation is the change of……..

(a) Solid to gas
(b) Solid to liquid
(c) Gas to liquid
(d) Liquid to gas

2. A cation is defined as:

(a) an atom or group of atoms with a net negative charge
(b) an atom or group of atoms with a net positive charge
(c) a stable atom
(d) a group of stable atoms

3. What is the chemical name of the compound ($Co_2(CrO_4)_3$)?

(a) Calcium dichromate
(b) Potassium dichromate
(c) Calcium chromate
(d) Cobalt chromate

4. Carbonic acid (H_2CO_3) is considered as……..

(a) Diprotic acid
(b) Monoprotic acid
(c) Triprotic acid
(d) Hexaprotic acid

5. Which of the following reactions is a combustion reaction?

(a) $2Al(s) + 3H_2SO_4(aq) \longrightarrow Al_2(SO_4)_3(aq) + 3H_2(g)$
(b) $N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$
(c) $2C_2H_6(g) + 7O_2(g) \longrightarrow 4CO_2(g) + 6H_2O(l)$
(d) $LiOH(aq) + HNO_3(aq) \longrightarrow LiNO_3(aq) + H_2O(l)$

6. Which of the following produces a basic solution when dissolved in water?

(a) NaCl
(b) $Ca(OH)_2$
(c) $NO_2(g)$
(d) HCl(g)

7. What is the chemical formula of a compound made of Ca^{2+} and Se^{2-} ions?

(a) Ca_2Se_3
(b) Ca_3Se_2
(c) Ca_3Se
(d) CaSe

8. If the solubility of potassium nitrate (KNO_3) at 20 ℃ is 30.0 g per 100 g of water, then, a solution which contains 25.0 g of potassium nitrate per 100 g water at the same temperature . will be ……..

(a) Unsaturated solution
(b) Supersaturated solution
(c) Saturated solution
(d) Buffer solution

9. The chemical formula ($CH_3CH_2CHCH_2$) represents an…….. …

(a) alkane
(b) alkyne
(c) alkene
(d) alcohol

10. Which of the following statements applies to strong acids?

(a) Strong acids are incompletely ionized in water
(b) Strong acids are completely ionized in water
(c) Strong acids have bitter taste
(d) Strong acids are poor conductors

11. When the following chemical reaction equation is balanced, the coefficients in the balanced equation are:

$PCl_3(l) + H_2O(l) \longrightarrow H_3PO_3(aq) + HCl(aq)$

(a) 3:3:3:1
(b) 1:3:1:3
(c) 1:3:3:1
(d) 1:1:1:3

12. What is the molar solubility of a saturated solution of silver iodide (AgI(s)) if the solubility product constant (K_{sp}) for (AgI) is equal to 8.51×10^{-17}?

$AgI(s) \rightleftharpoons Ag^+(aq) + I^-(aq)$

(a) 7.24×10^{-34} mole/liter
(b) 2.92×10^{-9} mole/liter
(c) 8.51×10^{-17} mole/liter
(d) 9.22×10^{-9} mole/liter

13. Which of the following is the correct set of oxidation numbers of all three elements present in potassium dichromate ($K_2Cr_2O_7$) according to the order of the elements as shown in the chemical formula?

(a) +1, +6, -2
(b) +1, +3, -1
(c) +2, +12, -14
(d) +2, +6, -14

14. Which of the following compounds is an ionic compound?

(a) H_2
(b) H_2O
(c) KCl
(d) CH_4

15. Which of the following organic compounds is an aromatic compound?

(a) C_2H_2
(b) C_6H_{12}
(c) C_5H_{12}
(d) $C_6H_5CH_3$

16. A buffer solution composed of a weak acid and its conjugate base or a weak base and its conjugate acid resists change in ……

(a) pH
(b) pK_w
(c) pK_c
(d) pCl

17. For the following equilibrium system, the expression of the equilibrium constant (K_c) is:

$$2Cr(s) + 3H_2SO_4(aq) \rightleftharpoons Cr_2(SO_4)_3(aq) + 3H_2(g)$$

(a) $K_c = [Cr]\,[H_2SO_4]^3 / [Cr_2(SO_4)_3]\,[H_2]^3$
(b) $K_c = [Cr_2(SO_4)_3]\,[H_2]^3 / [H_2SO_4]^3$
(c) $K_c = 1 / [Cr_2(SO_4)_3]\,[H_2]^3$
(d) $K_c = [Cr_2(SO_4)_3]\,[H_2]^3 / [Cr]\,[H_2SO_4]^3$

18. A piece of metal with a mass of 81.4 g was placed in a graduated cylinder that contained 35.0 cm^3 of water, raising the volume to 47.5 cm^3. What is the density of the metal?

(a) 0.154 g/cm^3
(b) 0.592 g/cm^3
(c) 2.68 g/cm^3
(d) 6.51 g/cm^3

19. How many protons and electrons are present in the bromide ion (Br^-)?

(a) 35 protons and 36 electrons
(b) 35 protons and 35 electrons
(c) 35 protons and 34 electrons
(d) 80 protons and 34 electrons

20. What is the volume of 0.10 M silver nitrate solution ($AgNO_3(aq)$) needed for complete reaction with 1.75 mmole of sodium chloride solution (NaCl(aq))?

(a) 25.0 cm^3
(b) 17.5 cm^3
(c) 5.17 cm^3
(d) 0.175 cm^3

21. If the pH of tomato juice is 4.50, then the hydroxide ion concentration [OH^-] of the juice is:

(a) 3.16×10^{-5} mole/liter
(b) 1.00×10^{-14} mole/liter
(c) 3.16×10^{-9} mole/liter
(d) 1.00×10^{-7} mole/liter

22. The molar mass of fructose sugar ($C_{12}H_{22}O_{11}$) is ……

(a) 342.0 g/mole
(b) 420.0 g/mole
(c) 298.0 g/mole
(d) 266.0 g/mole

23. Which of the following ions has the largest number of unpaired electrons in the last subshell?

(a) P^{3-}
(b) Cr^{3+}
(c) Fe^{3+}
(d) O^{2-}

24. What is the number of moles of oxygen (O) present in 9.25 g of the compound ($Fe_2Cr_3O_{12}$)?
[molar mass of the compound ($Fe_2Cr_3O_{12}$) = 459.6 g/mole].

(a) 0.0201 mole
(b) 0.0403 mole
(c) 0.242 mole
(d) 0.0604 mole

25. How many grams of sulfur (S) are present in 12.75 g of aluminum thiosulfate ($Al_2(S_2O_3)_3$)?
[molar mass of aluminum thiosulfate = 390.6 g/mole]

(a) 12.75 g
(b) 2.095 g
(c) 9.430 g
(d) 6.287 g

Answers - English Exam — إجابـــات اختبـــار اللغـــة الانجليزيـــة

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

Answers - Mathematics Exam — إجابـــات اختبـــار الرياضـــيات

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

Answers - Chemistry Exam — إجابـــات اختبـــار الكيميـــاء

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