


Egypt-Japan University of Science and Technology
Entrance Exam (Undergraduate)

Subject: Chemistry		 <p>الجامعة المصرية اليابانية للعلوم والتكنولوجيا E-JUST Egypt-Japan University of Science and Technology エジプト日本科学技術大学</p>
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Student name:	Applicant E-JUST Admission ID:	

Choose the correct answer:

1. Rusting is when substances react slowly with

- A. hydrogen.
- B. nitrogen.
- C. oxygen.
- D. helium.

2. If the equilibrium constant value is less than (one) this means that

- A. the reverse reaction is dominating.
- B. the concentration of products is more than that of reactants.
- C. the reaction is completed and instant.
- D. A and C are correct.

3. The oxidation state of Cr atom in $K_2Cr_2O_7$ is

- A. 7
- B. 3
- C. 6
- D. 5

4. How many moles of alanine, $C_3H_7NO_2$ (molecular weight 89 g/mol), are there in 159 g of alanine?

- A. 1.42×10^4
- B. 1.786
- C. 0.992
- D. 0.560

5. Liquids have the same shape of the containers. This is one of the applications of

- A. surface tension.
- B. density.
- C. viscosity.
- D. molarity.

6. Energy cannot be created or destroyed, only transferred from one form to another. This statement is for.....

- A. first law of thermodynamics.
- B. second law of thermodynamics.
- C. ideal gas law.
- D. Avogadro's law.

7. An atom is electrically neutral because

- A. the number of electrons is always less than the number of protons.
- B. the number of neutrons is always equal to the number of protons.
- C. the number of electrons is always equal to the number of protons.
- D. the number of electrons is always equal to the number of neutrons.

8. The energy of a photon is proportional to its wavelength.

- A. inversely.
- B. directly.
- C. equal.
- D. no relation.

9. Which of the following pairs of liquids immiscible?

- A. Benzene (C_6H_6) and hexane (C_6H_{12}).
- B. water and methanol (CH_3OH).
- C. water and hexane.
- D. methanol and ethanol (C_2H_5OH).

10. What is the IUPAC name for CH_3COCH_3 ?

- A. Butanoic acid.
- B. Butanal.
- C. Propane-2-one.
- D. Propyl methanoate.

11. Which equation best represents the second ionization energy of calcium?

- A. $Ca(s) \rightarrow Ca^+(s) + e^-$
- B. $Ca(g) \rightarrow Ca^{2+}(g) + 2e^-$
- C. $Ca(g) \rightarrow Ca^+(g) + e^-$
- D. $Ca(s) \rightarrow Ca^{2+}(g) + 2e^-$

12. The chemical formula of sodium bicarbonate is

- A. NaCO_3 .
- B. Na_2CO_3 .
- C. $\text{Na}(\text{CO}_3)_2$.
- D. NaHCO_3 .

13. Sulfuric acid (H_2SO_4) is a acid.

- A. mono-proton.
- B. di-proton.
- C. tri-proton.
- D. poly-proton.

14. In endothermic reactions

- A. heat moves to the system from the surrounding.
- B. heat moves from the system to the surrounding.
- C. heat does not move from or to the system.
- D. heat moves from and to the system at the same time.

15. The melting points is

- A. the temperature at which a liquid changes to a gas.
- B. the temperature at which a solid changes to a gas.
- C. the temperature at which a gas changes to a solid.
- D. the temperature at which a solid changes to a liquid.

16. In the following reaction: $\text{N}_2 (\text{g}) + 3\text{H}_2 (\text{g}) \leftrightarrow 2\text{NH}_3 (\text{g})$, $\Delta H = - 92\text{KJ}$, you can increase the concentration of ammonia by.....

- A. reducing the amount of nitrogen.
- B. increasing the temperature.
- C. reducing the amount of hydrogen.
- D. increasing the pressure.

17. The element used mainly for fabricating the solar cells is

- A. magnesium.
- B. sodium.
- C. calcium.
- D. silicon.

18. Which of the following element normally exists as a monoatomic molecule?

- A. Cl
- B. H
- C. O
- D. He

19. Molecules that have the same molecular formula but different arrangement of atoms in their molecules are called

- A. isotopes
- B. isomers
- C. hydrocarbons
- D. aromatic compounds

20. Molarity is

- A. number of solute moles in one liter of solvent.
- B. number of solvent moles in one kilogram of solute.
- C. number of solute grams in one mole of solvent.
- D. number of solvent grams in one mole of solute.

Good Luck