

ADMISSION EXAM - CHEMISTRY

- example

Notes:

1. The exact solution is marked by circling the letter in front of answers pen.
2. The task will not be recognized if not rounded solution or a more rounded solution.
3. In all matters there is only one correct answer.
4. The maximum estimated time quiz is 2 hours.

Please specify your competition number: _____

01. Number of atoms of carbon in the molecule of 2,6-dibromo-4-ethyl-1-isopropylcyclohexane is:

- a. 0
- b. 6
- c. 8
- d. 9
- e. 11

02. The element which is gas under normal conditions is:

- a. P₄
- b. S₈
- c. C₆₀
- d. Hg
- e. Cl₂

03. Chlorine and bromine:

- a. have the same number of protons in the atom's nucleus
- b. have the same number of electrons in the electron's cloud
- c. belong to the same group of the periodic system of elements
- d. belong to the same periode of the periodic system of elements
- e. are s-elements

04. The product of addition of 1 mol of water to the 1 mole of 1-propine is:

- a. alcohol
- b. aldehyde
- c. ketone
- d. alkene
- e. carboxyl acid

05. Aminoacid is:

- a. H₂N-CH₂CH₂CH₂CH-NH₂
- b. CH₃CH₂CH(NH₂)COOH
- c. COOH-CONH₂
- d. NH₂NH₂
- e. C₆H₅NH₂

06. The appearance of the silver seteling (sediment) is characteristic of positive:

- a. reaction of cellulose and iodine
- b. reaction of amylose and iodine
- c. Fehling's reaction
- d. Tollen's reaction
- e. ninhydrine reaction

07. Typical oxidizing agent is:

- a. H_2S
- b. NH_3
- c. KMnO_4
- d. Na
- e. He

08. Centrale ion in the molecule of hemoglobine is:

- a. Fe^{2+}
- b. Fe^{3+}
- c. Mg^{2+}
- d. Co^{2+}
- e. Ag^+

09. The angle between the hybridized orbitals of carbon atom's in the molecule of ethene is:

- a. 90°
- b. 120°
- c. $109^\circ 28'$
- d. 180°
- e. 60°

10. During chemical reactions, the total mass of the reaction product comparing with the total mass of reactants:

- a. is decreasing in the case of endotermic reactions
- b. is decreasing in the case of egzotermic reactions
- c. does not change
- d. is increasing in the case of endotermic reactions
- e. is increasing in the case of edzotermic reactions

11. The smel of rotten eggs has:

- a. H_2S
- b. CH_3COOH
- c. NH_3
- d. HCN
- e. CO

12. The substance which is present in milk is:

- a. ethanole
- b. methanole
- c. cellulose
- d. kasein
- e. apson salts

13. The noble gas is:

- a. $1s^2$
- b. $1s^2 2s^2 2p^6 3s^2$
- c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
- d. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
- e. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$

14. Poison gas phosgene is:

- a. diester of carbon acid and methanole
- b. diester of carbon acid and ethanole
- c. dichloride of carbon acid
- d. diamide of carbon acid
- e. comercial name for phosphorus acid

15. Number of atoms of hydrogen in 30 molecules of ammonia is:

- a. 3
- b. 10
- c. 30
- d. 90
- e. 300

16. The formula of ozone is:

- f. O
- g. O_2
- h. O_3
- d. O_4
- e. O_{60}

17. Human esencial aminoacids have in the most cases:

- a. D configuration
- b. L configuration
- c. R configuration
- d. S configuration
- e. cis configuration

18. The substance which is part of the molecule of lactose is:

- a. D-arabinose
- b. 2-deoxy-D-glucose
- c. L-glucose
- d. D-manose
- e. D-galaktose

19. Sugar acid with oxidized aldehyde group (C-1 atom) is:

- a. deoxyribose
- b. ribose
- c. deoxyribitole
- d. glukose acid
- e. glukuronic acid

20. Two molecules of monosaccharide are connected in one molecule of disaccharide with:

- a. hydrogen bond
- b. peptide bond
- c. coordinate covalent bond
- d. glucoside bond
- e. ester bond

21. The possible reaction is:

- a. $\text{HBr} + \text{H}_2\text{O}$
- b. $\text{NaBr} + \text{H}_2\text{O}$
- c. $\text{Br}_2 + \text{NaF}$
- d. $\text{HBr} + \text{KOH}$
- e. $\text{Br}_2 + \text{H}_2\text{O}$

22. The possible reaction is reaction of water with:

- a. Hg
- b. Na
- c. Au
- d. Pb
- e. Ar

23. The possible pH value in the diluted solution of weak acid is:

- a. ~1
- b. ~5
- c. 7
- d. ~8
- e. ~13

24. The atom of nitrogen is not present in the molecule of:

- a. tetrahydrofuran
- b. pyrrole
- c. pyridine
- d. nicotine
- e. heroine

25. The largest percent in the composition of the air belongs to:

- a. Ar
- b. $\text{H}_2\text{O}(\text{g})$
- c. O_2
- d. CO_2
- e. N_2

26. The name of bond between molecule alcohol and molecule of acid is:

- a. glycoside
- b. amide
- c. ester
- d. etheric
- e. peptide

27. Tocopherol is the name for vitamine:

- a. A
- b. B₆
- c. C
- d. D
- e. E

28. Strong acid is not:

- a. H₃PO₃
- b. HClO₄
- c. HClO₃
- d. HCl
- e. CF₃COOH

29. By mixing a solution of calcium nitrite and potassium sulfate:

- a. there is no reaction
- b. one of the reaction products is K₄[Ca(NO₂)₄SO₄]
- c. one of the reaction products is K
- d. one of the reaction products is nitrogen(IV)-oxide
- e. the settled compaund is calcium-sulfate

30. The settled (sediment) compound is:

- a. Na₂SO₃
- b. Na₂SO₄
- c. Na₂CO₃
- d. CaCO₃
- e. KCl

We wish you a successful entrance examination!