

University of Belgrade – Faculty of Medicine

Studies in English

CHEMISTRY

1. Which of the following elements is nonmetal?
 - a) Li
 - b) Ba
 - c) Zn
 - d) C

2. Which of the following compounds has nonpolar covalent bond?
 - a) Cl₂
 - b) NaCl
 - c) HBr
 - d) H₂O

3. Calculate the change of the rate of direct reaction: $2\text{NO}(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{NO}_2(\text{g})$ if the pressure in the system increases twice.
 - a) the rate is increased 3 times
 - b) the rate is increased twice
 - c) the rate is increased 8 times
 - d) the rate is decreased 3 times

4. Which of the offered answers describes correctly reaction if it is known that for this reaction $\Delta H_r < 0$ and $\Delta G < 0$?
 - a) Reaction is endothermic, heat is absorbed by the system from the surroundings and the reaction is nonspontaneous.
 - b) Reaction is exothermic, heat is absorbed by the system from the surroundings and the reaction is nonspontaneous.
 - c) Reaction is exothermic, heat is released from the system to the surroundings and the reaction is spontaneous.
 - d) Reaction is endothermic, heat is absorbed by the system from the surroundings and the reaction is spontaneous.

5. How many milliliters of potassium hydroxide (KOH) solution whose molar concentration is 0.3 mol/L are needed to prepare 500 mL of solution whose molar concentration is 0.03 mol/L?
- 10
 - 50
 - 100
 - 5
6. Which of the following compounds is neutral oxide?
- BaO
 - Na₂O
 - CO
 - N₂O₃
7. Which of the following acids is a strong one?
- HNO₃
 - HNO₂
 - HCN
 - H₂CO₃
8. Calculate the pOH of NaOH solution whose mass concentration is 0.4 g/L.
Mr(NaOH) = 40
- 2
 - 1
 - 12
 - 3
9. Which of the following salts undergoes hydrolysis giving acidic reaction?
- NaNO₃
 - KCl
 - CaCl₂
 - NH₄Cl
10. Which element or ion is oxidized in the following reaction:
 $2\text{Al} + 3\text{Cu}^{2+} \rightarrow 2\text{Al}^{3+} + 3\text{Cu}$
- Al
 - Cu²⁺
 - Al³⁺
 - Cu

11. What is the product obtained in the reaction of 1-pentene hydrogenation?

- a) 1-pentanol
- b) pentane
- c) 1-pentyne
- d) 2-pentanol

12. What is the product obtained in the reaction of benzene with Cl_2 in the presence of FeCl_3 ?

- a) benzoic acid
- b) nitrobenzene
- c) benzenesulfonic acid
- d) chlorobenzene

13. What is a product of 2-butanol oxidation?

- a) 2-butanone
- b) 2-butene
- c) methyl butanoate
- d) butanal

14. Which of the following compounds gives positive Fehling's reaction?

- a) acetone
- b) 2-pentanone
- c) 2-propanol
- d) propanal

15. What is a common name of pyruvic acid?

- a) 2-oxopropanoic acid
- b) 3-hydroxypropanoic acid
- c) 2-hydroxypropanoic acid
- d) 2-aminopropanoic acid

16. What are the products obtained in the reaction of propanoic acid and methanol?

- a) methyl propanoate and water
- b) methyl methanoate and water
- c) propyl methanoate and water
- d) methanoic acid and propanol

17. Which of the following amino acids has thiol –SH group?

- a) Ala
- b) Cys
- c) His
- d) Ser

18. What is a product obtained by reduction of D-mannose?

- a) D-mannitol
- b) D-sorbitol
- c) D-mannonic acid
- d) D-mannaric acid

19. Which of the following sugars has $\alpha(1\rightarrow4)$ glycosidic bond?

- a) maltose
- b) lactose
- c) sucrose
- d) cellobiose

20. Which of the following statements is correct?

- a) Linoleic acid is an essential fatty acid.
- b) Linoleic acid in hydrogenation reaction gives palmitic acid.
- c) Linoleic acid has 16 carbon atoms.
- d) Linoleic acid has one double bond.