

7) Select the amphoteric oxide among the following:

- a) BaO b) Ag₂O c) Al₂O₃ d) SiO₂ e) no answer is correct

8) What is the mass percentage of copper in copper (II) sulfate? [A_r (Cu) = 64, A_r (S) = 32, A_r(O) = 16]

- a) 40% b) 10% c) 16% d) 22% e) no answer is correct

9) What type of hybridization do carbon atoms have in the molecule of ethene?

- a) sp₃ b) sp₂ c) sp d) sp₃d e) no answer is correct

10) Which of the following elements is lying in the third period of the periodic table:

- a) B b) He c) Li d) O e) no answer is correct

11) Select the correct answer: For neutralization of 25 ml of 0.2 mol/l NaOH solution is needed:

- a) 50 ml of a 0.1 mol/l HCl solution d) 25 ml of a 0.1 mol/l HCl solution
b) 5 ml of a 0.1 mol/l HCl solution e) no answer is correct
c) 10 ml of a 0.1 mol/l HCl solution

12) The concentration of OH⁻ in an aqueous solution at T=25°C is 1.10⁻⁵. What is the pH of the solution?

- a) 5 b) 6 c) 8 d) 9 e) no answer is correct

13) The solution of aluminium chloride has concentration 0,02 mol/l. What is the concentration of chloride anions in the solution?

- a) 0,02 mol/l b) 0,04 mol/l c) 0,06 mol/l d) 0,08 mol/l
e) no answer is correct

14) Select one strong hydroxide among the following:

- a) Fe(OH)₃ b) NaOH c) NH₃ d) Al(OH)₃ e) no answer is correct

15) When dissolved in water, all of the following compounds are strong electrolytes EXCEPT

- a) H₂CO₃ b) HNO₃ c) HCl d) NaBr e) no answer is correct

16) The pH of aqueous HCl solution is 4. What is the concentration of the acid?

- a) 0,4 mol/l b) 4 mol/l c) 1.10⁴ mol/l d) 1.10⁻⁴ mol/l
e) no answer is correct

17) Select one acid-base conjugated pair according to Bronstedt theory among the following:

- a) $\text{H}_3\text{PO}_4/\text{H}_2\text{PO}_4^-$ b) $\text{H}_2\text{CO}_3/\text{CO}_2$ c) $\text{NO}_3^-/\text{NO}_2^-$ d) H^+/OH^-
e) no answer is correct

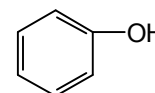
18) Which of the following compounds will form intermolecular hydrogen bonds between the molecules?

- a) H_2S b) CH_3OH c) C_6H_6 d) HI e) no answer is correct

19) Which of the following reagents should be added to an ammonium salt solution so as to display free ammonia:

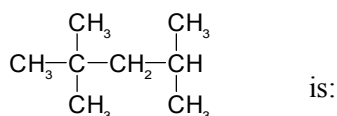
- a) CaCl_2 b) KOH c) HCl d) H_2SO_4
e) no answer is correct

20) Select the correct name for the following compound:



- a) styrene b) toluene c) xylene d) phenol e) no answer is correct

21) The correct systematic name of the hydrocarbon with the condensed structural formula



- a) 1,1,3,3-tetramethylbutane c) 2,2,4-trimethylpentane
b) 2,2,4,4-tetramethylbutane d) isooctane
e) no answer is correct

22) Which of the following compounds will be formed by hydration of ethene:

- a) acetaldehyde b) acetone c) ethane d) formic acid
e) no answer is correct

23) Which of the following compounds will be formed by the hydrogenation of butanal?

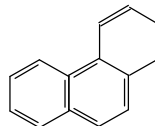
- a) butanoic acid b) 1-butanol
c) propanoic acid d) 2-butanol
e) no answer is correct

24) Which of the following molecular formulas is the correct molecular formula of diethylether?

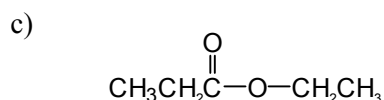
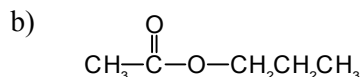
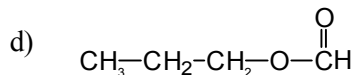
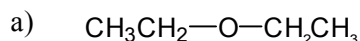
- a) $\text{C}_4\text{H}_{10}\text{O}$ b) $\text{C}_4\text{H}_8\text{O}_2$ c) $\text{C}_4\text{H}_8\text{O}$ d) $\text{C}_4\text{H}_8\text{O}_3$
e) no answer is correct

25) The common name of the following compound is:

- a) naphthalene b) anthracene c) pyrene
d) phenanthrene e) no answer is correct

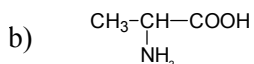
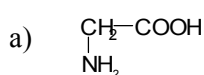


26) Which of the following compounds will be formed by a reaction of propanol and formic acid (at the presence of H^+ ions of a strong acid):

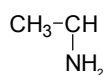


e) no answer is correct

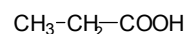
27) Which of the following compounds can form two optical isomers (enantiomers):



c)

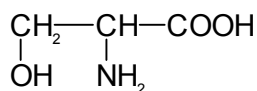


d)



e) no answer is correct

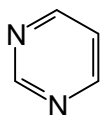
28) Give the correct common name of the standard amino acid whose condensed structural formula is:



a) threonine b) tyrosine c) serine

d) asparagine e) no answer is correct

29) The name of given compound is:



a) purine b) nicotine c) pyridine d) pyrrol e) no answer is correct

30) Which of the following types of bonds is characteristic for the structures of oligosaccharides and polysaccharides?

a) peptide bond b) glycosidic bond c) ester bond d) amide bond e) no answer is correct

31) Which two monosaccharides will be formed by hydrolytic cleavage of sucrose?

- a) glucose and fructose b) two glucoses c) glucose and galactose d) two fructoses
e) no answer is correct

32) How many carbon atoms is contained in the amino acid with the common name leucine:

- a) 5 b) 6 c) 7 d) 4 e) no answer is correct

33) Which of the following bases will pair with thymine in the structure of DNA:

- a) adenine b) guanine c) cytosine d) uracil e) no answer is correct

34) The main nitrogen compound that is formed by metabolism of amino acids in human is:

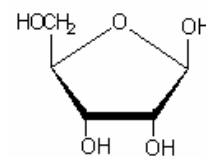
- a) ammonia b) nitrate c) uric acid d) urea
e) no answer is correct

35) Nucleosides are composed of:

- a) base and phosphoric acid b) base and pentose c) base, pentose and phosphoric acid
b) d) pentose and phosphoric acid e) no answer is correct

36) Select the name of the given monosaccharide:

- a) β -D-glucofuranose b) β -D-fructofuranose
c) α -D-fructofuranose d) β -D-ribofuranose
e) no answer is correct



37) Select the systematic name of oleic acid:

- a) cis-9-octadecenoic acid b) cis-9-octadecanoic acid c) cis-9-hexadecenoic acid
d) cis-9-hexadecanoic acid e) no answer is correct

38) Select the purine base among the following:

- a) guanine b) uracil c) thymine d) cytosine e) no answer is correct

39) Select the type of interaction that stabilizes the regular secondary structures of proteins:

- a) hydrogen bonds b) peptide bonds c) disulfidic bridges d) ionic interactions

40) Which of the following amino acids contains sulfur in its structure :

- a) alanine b) methionine c) tyrosine d) histidine e) no answer is correct