

Bank tests to Differentiate Credit

Question #1

S-elements are:

- a) elements filled at the outer s-sublevel
- b) the main groups
- c) the small periods.

Question #2

P-elements could be described as elements with:

- a) sub-side
- b) long periods
- c) which are filled outer p-sublevel

Question #3

D-elements are elements:

- a) which are filled penultimate d-sub;
- b) the main groups
- c) the small periods

Question #4

What element is macro element?

- a) S
- b) I
- c) Br

Question #5

What element is macro element?

- a) Cd
- b) Cu
- c) Na

Question #6

What element is micro element?

- a) C
- b) S
- c) I

Question #7

Chlorine ion is with such element in nature:

- a) Hydrogen

- b) Sodium, potassium, magnesium
- c) Oxygen and fluorine

Question #8

What micro element is in erythrocytes?

- a) Sodium
- b) Fluorine
- c) Iron

Question #9

What element is in bones?

- a) Sodium
- b) Fluorine
- c) Calcium

Question #10

Aluminium is:

- a) s - element
- b) p - element
- c) d - element

Question #11

Iron is:

- a) s - element
- b) d - element
- c) p - element

Question #12

Zinc is:

- a) s - element
- b) f - element
- c) d - element

Question #13

Manganese is:

- a) s - element
- b) d - element
- c) p - element

Question #14

Chlorine is:

- a) s - element

- b) d - element
- c) p - element

Question #15

What oxidation number of iron ion which are present in hemoglobin?

- a) +2
- b) +3
- c) +4

Question #16

Calcium has different biological functions. What function has it with phosphorus?

- a) In blood coagulation
- b) Activates the conversion of prothrombin to thrombin
- c) Bones and teeth formation

Question #17

What element with calcium is present in bones?

- a) Copper
- b) Phosphorus
- c) Chlorine

Question #18

What element has not in amino acids?

- a) Copper
- b) Oxygen
- c) Nitrogen

Question #19

What oxidation number of calcium ion which are present in human body?

- a) +2
- b) +3
- c) +1

Question #20

What oxidation number of sodium ion which are present in human body?

- a) +1
- b) +4
- c) +2

Question #21

Phosphorus in living organism is in form:

- a) PO_4^{-3}
- b) P^{-3}
- c) P_4

Question #22

Complex compounds are all except:

- a) $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$
- b) $\text{K}_2[\text{PtCl}_6]$
- c) CuSO_4

Question #23

What factor is influence for pH of buffer solution:

- a) Water product
- b) Ratio between solution component concentrations
- c) Heat capacity

Question #24

What elements are d-elements?

- a) Sodium, Potassium
- b) Calcium, Aluminum
- c) Iron, Manganese

Question #25

What elements are p-elements?

- a) Sodium, Potassium
- b) Fluorine, Chlorine
- c) Lithium, Beryllium

Question #26

What elements are s-elements?

- a) Sodium, potassium
- b) Vanadium, Aluminum
- c) Bromine, Iodine

Question #27

Iron is present as porphyrin form in all compounds except:

- a) Myoglobin
- b) Catalases
- c) Ferritin

Question #28

How many maximally electrons can be on the 3 p sub-shell (electronic energetic level)?

- a) 8
- b) 4
- c) 6

Question #29

What element is macro element?

- a) Hg
- b) Mn
- c) Ca

Question #30

Acid-base indicators - are:

- a) substances that do not change color with the change of pH
- b) substances that change color with the change of pH
- c) substances that change color depending on the method of titration

Question #31

Color of methyl orange in acidic medium:

- a) pink
- b) yellow
- c) colorless

Question #32

The range of color change of methyl orange is:

- a) 3,1-4,4
- b) 8,2-10,0
- c) 4,0-10,0

Question #33

Phenolphthalein in acidic medium:

- a) yellow
- b) raspberry
- c) colorless

Question #34

Phenolphthalein in basic medium is:

- a) yellow
- b) raspberry
- c) colorless

Question #35

The range of color change of phenolphthalein is:

- a) 3,1-4,4
- b) 3,1-8,2
- c) 8,2-10,0

Question #36

Ionic product of water is:

- a) the sum of the concentrations of protons and hydroxide ions
- b) the product of the concentrations of protons and hydroxide ions
- c) the ratio of the concentrations of protons and hydroxide ions

Question #37

The equation of ionic product of water at $T = 25^{\circ}\text{C}$:

- a) $\text{H}^+ + \text{OH}^- = 10^{-14}$
- b) $\text{H}^+ \cdot \text{OH}^- = 10^{-16}$
- c) $[\text{H}^+] \cdot [\text{OH}^-] = 10^{-14}$

Question #38

For $\text{pH} = 2$ ionic product of water is equal to:

- a) 10^{-2} mol/l
- b) 10^{-14} mol/l
- c) 10^{-12} mol/l

Question #39

Active acidity is:

- a) the concentration of hydrogen ions
- b) the concentration of hydroxyl ions
- c) concentration of acid

Question #40

Total acidity is:

- a) the concentration of non-dissociable acid molecules
- b) the concentration of an acid
- c) concentration of protons

Question #41

The formula for active acidity of strong acid :

- a) $[\text{H}^+] = \alpha [\text{acid}]$
- b) $[\text{H}^+] = \alpha + [\text{acid}]$
- c) $[\text{H}^+] = \alpha - [\text{acid}]$

Question #42

The formula for active acidity of weak acid solution:

- a) $[H^+] = \sqrt{Kd \cdot [acid]}$
- b) $[H^+] = [acid]$
- c) $[H^+] = Kd \cdot [acid]$

Question #43

Active basicity is:

- a) the concentration of base
- b) the concentration of hydroxide ions
- c) concentration of protons

Question #44

Potential basicity - is:

- a) the concentration of non-dissociable molecular basis
- b) the concentration of the base
- c) the concentration of hydrogen ions

Question #45

Total alkalinity - is:

- a) the concentration of non-dissociable molecular basis
- b) the concentration of base
- c) OH - concentration.

Question #46

The formula for the active alkalinity of a solution of weak base:

- a) $[OH^-] = \sqrt{Kd \cdot [base]}$
- b) $[OH^-] = [base]$
- c) $[OH^-] = Kd \cdot [base]$

Question #47

pH - is:

- a) natural logarithm of concentration of protons
- b) the negative logarithm of proton concentration
- c) the negative logarithm of concentration of an acid

Question #48

The formula for pH of strong acid solution:

- a) $\text{pH} = -\lg \alpha [\text{acid}]$
- b) $\text{pH} = -\lg \alpha + [\text{acid}]$
- c) $\text{pH} = -\lg \alpha - [\text{acid}]$

Question #49

The formula for pH of strong acid solution:

- a) $\text{pH} = -\lg K_d [\text{acid}]$
- b) $\text{pH} = -\lg [\text{acid}]$
- c) $\text{pH} = -\lg + [\text{acid}]$

Question #50

The formula for solution pH of weak acids:

- a) $\text{pH} = -\lg \sqrt{K_d \cdot [\text{acid}]}$
- b) $\text{pH} = -\lg [\text{acid}]$
- c) $\text{pH} = -\lg K_d \cdot [\text{acid}]$

Question #51

pOH - is:

- a) natural logarithm of the concentration of base
- b) the negative logarithm of the concentration of hydroxide ions
- c) the negative logarithm of the concentration of base

Question #52

The formula for pOH solution of base:

- a) $\text{pOH} = -\lg \alpha [\text{base}]$
- b) $\text{pOH} = -\lg \alpha + [\text{base}]$
- c) $\text{pOH} = -\lg \alpha - [\text{base}]$

Question #53

The formula for the solution pOH strong solution:

- a) $\text{pOH} = -\lg [\text{base}]$
- b) $\text{pOH} = -\lg \alpha + [\text{base}]$
- c) $\text{pOH} = -\lg \alpha - [\text{base}]$

Question #54

The sum of pH and pOH is:

- a) 7
- b) 14
- c) 1

Question #55

pH of blood is:

- a) 7.36
- b) 1.86
- c) 6.02

Question #56

pH of gastric juice is:

- a) 7
- b) 0,9-1,5
- c) 3,1-4,4

Question #57

pH of urine is:

- a) 4,8-7,5
- b) 8-10,5
- c) 3,1-4,4

Question #58

Venous blood pH is:

- a) greater than arterial blood
- b) less than the pH of arterial blood
- c) equal to the pH of arterial blood

Question #59

pH in the cell:

- a) less than the pH of the blood
- b) blood pH greater than pH in the cell
- c) equal to the pH of the blood

Question #60

Acidosis - a shift of pH of blood to:

- a) the alkaline side
- b) the acid side
- c) to pH 7

Question #61

Alkalosis it is a shift of pH of blood to:

- a) the acid side
- b) the alkaline side
- c) to pH 7

Question #62

pH of 0.0001 M sulphuric acid solution is:

- a) 1
- b) 4
- c) 10

Question #63

pOH 0.1 M HCl solution is:

- a) 1
- b) 12
- c) 13

Question #64

pOH 0.01 M KOH solution is:

- a) 12
- b) 2
- c) 7

Question #65

If the pOH of the solution is 4, the H⁺ concentration is:

- a) 10⁻⁴
- b) 10⁻⁷
- c) 10⁻¹⁰

Question #66

How does lungs maintain acid-base balance in the body:

- a) by excretion of water from the body
- b) by excretion of carbon dioxide from the body
- c) by excretion of salt from the body.

Question #67

The range of color change of phenolphthalein is:

- a) 3,1-4,4
- b) 3,1-8,2
- c) 8,2-10,0

Question #68

The condition for indicator in titration:

- a) pH range should be within about 1 pH unit of the end point
- b) pH range should close to the end point
- c) pH range should be in neutral medium

Question #69

pH = 6.5. What is medium of solution:

- a) Strong basic
- b) Neutral
- c) Weak acidic

Question #70

How pH of buffer solution is changed, if add 50 ml of water?

- a) Once
- b) Three times
- c) Do not change

Question #71

pH = 9 of solution. What is acidity of this solution?

- a) Strong basic
- b) Weak basic
- c) Neutral

Question #72

Mass fraction of a substance in solution is:

- a) ratio of mass of solution to the mass of the solute
- b) ratio of mass of substance to the mass of the solute
- c) the difference between the mass of solution and mass of solute

Question #73

The formula for mass fraction:

- a) $\omega = \frac{m_{\text{solution}}}{m_{\text{solvent}}} 100\%$
- b) $\omega = \frac{m_{\text{solution}}}{m_{\text{solvent}}} + 100\%$
- c) $\omega = \frac{m_{\text{solute}}}{m_{\text{solution}}} 100\%$

Question #74

Molar concentration is:

- a) the number of moles of solute per volume of solution
- b) the quantity in mass units of solution
- c) the number of moles of solute per volume of solvent

Question #75

The formula for molar concentration:

a)

$$\text{Molarity} = \frac{m_{\text{solute}}}{M_{\text{solute}} \cdot V_{\text{solution}}}$$

b)

$$\text{Molarity} = \frac{m_{\text{solute}}}{M_{\text{solute}} + V_{\text{solution}}}$$

c)

$$\text{Molarity} = \frac{M_{\text{solute}}}{m_{\text{solute}} \cdot V_{\text{solution}}}$$

Question #76

Equivalent entity (equivalence factor) of H₂SO₄:

a) 1;

b) 1/2;

c) 1/3.

Question #77

Equivalent entity (equivalence factor) of NaOH:

a) 1/2;

b) 1;

c) 1/3

Question #78

Normality (molar concentration of equivalent) - is:

a) the number of moles of equivalent of solvent per volume of solution

b) the number of substance per volume of solution

c) the number of moles equivalents of solute per volume of solution

Question #79

The formula for molar concentration equivalent:

a)
$$\text{Normality} = \frac{m_{\text{solute}}}{M_{\text{solute}} f_{\text{eqv}} \cdot V_{\text{solution}}}$$

b)
$$\text{Normality} = \frac{m_{\text{solute}} f_{\text{eqv}}}{M_{\text{solute}} \cdot V_{\text{solution}}}$$

c)
$$\text{Normality} = \frac{m_{\text{solute}}}{M_{\text{solute}} V_{\text{solution}}}$$

Question #80

Mass percent is:

- a) Mass of solute which is in 100 g of solution
- b) Mass of solute which is in 100 g of solvent
- c) Amount mole equivalents of solute which is in 1 liter of solution

Question #81

Acid-base titration is the:

- a) quantitative analysis of acids, bases, hydrolyzable salts
- b) quantitative analysis of any solution
- c) qualitative analysis of acids, bases, salts in the process of titration

Question #82

Choose the correct formula for calculation of analyte solution concentration

a)
$$C_{N_2} = \frac{C_{N_1} \cdot V_1}{V_2}$$

b)
$$C_{N_2} = \frac{C_{N_1} \cdot V_1}{V_1}$$

c)
$$C_{N_1} = \frac{C_{N_2} \cdot V_1}{V_2}$$

Question #83

Standard solution is a solution:

- a) with unknown concentration
- b) with accurately known concentration
- c) which is prepared by mass

Question #84

Solutions of initial substances can be prepared by:

- a) approximate mass
- b) accurate mass
- c) the following approximate mass

Question #85

The condition for indicator in titration:

- a) pH range should be within about 1 pH unit of the end point
- b) pH range should be close to the end point
- c) pH range should be in neutral medium

Question #86

Acid-base titration is based on:

- a) oxidation
- b) precipitation
- c) neutralization

Question #87

The basic equation of the neutralization method:

- a) $[H^+] + [OH^-] = H_2O$
- b) $H^+ + OH^- = H_2O$
- c) $[H^+] + [OH^-] = 10^{-14}$

Question #88

Titratant for neutralization method :

- a) $H_2C_2O_4 \cdot 2H_2O$, H_2SO_4 , NaOH, KOH
- b) H_2SO_4 , HCl, Na_2CO_3 , NaOH
- c) NaOH, KOH, H_2SO_4 , HCl

Question #89

Titration curves - are:

- a) graphic representations of the pH range of color change of indicator
- b) graphic representations of the pH change during addition of standard solution
- c) change in volume during the titration

Question #90

Titration curves show:

- a) change in volume of titration solution
- b) pH dependence of the volume of titrant solution
- c) a graphic indicator of change

Question #91

Stoichiometric point (end point) - is:

- a) pH at which indicator changes its color
- b) pH at which the compounds react in equal mass
- c) pH at which compounds react in equivalent amounts

Question #92

Initial substance in acidimetry:

- a) $H_2C_2O_4 \cdot 2H_2O$, $H_2C_4H_4O_4$;
- b) $Na_2B_4O_7 \cdot 10H_2O$, Na_2CO_3 ;
- c) $H_2C_4H_4O_4$, $Na_2B_4O_7 \cdot 10H_2O$

Question #93

Titrant in alkalimetry:

- a) H_2SO_4 , HCl
- b) NaOH , KOH
- c) $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$

Question #94

pH of equivalent point in titration of strong acid by strong base is in:

- a) acidic medium
- b) basic medium
- c) neutral medium

Question #95

Choose the indicator for titration of strong acid by strong base:

- a) phenolphthalein
- b) methyl orange
- c) universal

Question #96

Which indicator is used during the titration of weak acid by strong base:

- a) phenolphthalein
- b) methyl-orange
- c) universal

Question #97

Alkalimetry can determine the concentration of:

- a) acid
- b) base
- c) salts, are not amenable to hydrolysis

Question #98

Initial substance in alkalimetry:

- a) $\text{H}_2\text{C}_4\text{H}_4\text{O}_4 \cdot 2\text{H}_2\text{O}$, $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
- b) $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$, Na_2CO_3
- c) $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$, $\text{H}_2\text{C}_4\text{H}_4\text{O}_4$

Question #99

Formula of sodium tetraborate hexahydrate:

- a) $\text{Na}_2\text{B}_4\text{O}_7 \cdot 2\text{H}_2\text{O}$
- b) $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
- c) $\text{Na}_3\text{BO}_3 \cdot 10\text{H}_2\text{O}$

Question #100

Which method of analysis can be used to determine the percentage of NaHCO_3 :

- a) acidimetry
- b) alkalimetry
- c) oxidimetry

Question #101

Titration determines:

- a) active acidity
- b) the potential acidity
- c) the total acidity.

Question #102

Total acidity is practically defined by:

- a) titration
- b) cryometry
- c) osmometry

Question #103

Acid-base balance - this is permanent in the human values:

- a) osmotic pressure
- b) blood pressure
- c) pH

Question #104

Which organs and tissues work in keeping acid-base equilibrium :

- a) heart, skin, bone
- b) lungs, kidneys, blood
- c) the lungs, tooth tissue, kidney.

Question #105

Acid-base titration is based on:

- a) oxidation
- b) precipitation
- c) neutralization

Question #106

Neutralization reaction is the reaction between:

- a) Strong acids
- b) Weak acids
- c) Acid and base

Question #107

What compounds is formed in neutralization reaction?

- a) Strong acids
- b) Salt and water
- c) Acid and base

Question #108

Buffer solution maintains constant pH as a result of adding to it:

- a) a small amount of strong acid or base and during breeding
- b) a big amount of strong acid or base and during breeding
- c) a strong acid or base

Question #109

Systems that do not change the pH by adding small amounts of strong acid or base, and during breeding are called:

- a) colloidal
- b) buffer
- c) real

Question #110

Buffer action - the ability of buffer solution consistently keep a constant:

- a) molar concentration of component
- b) pH
- c) the dissociation constants of weak electrolyte

Question #111

Composition of acid buffer system type are:

- a) strong acids and bases
- b) a weak acid and its salt, which formed a strong base
- c) strong acid and its salt, which formed a strong base

Question #112

Composition of acetate buffer:

- a) $\text{CH}_3\text{COOH} + \text{CH}_3\text{COOC}_2\text{H}_5$
- b) $\text{CH}_3\text{COOH} + \text{NaOH}$
- c) $\text{CH}_3\text{COOH} + \text{CH}_3\text{COONa}$

Question #113

Composition of hydrocarbonate buffer:

- a) $\text{H}_2\text{CO}_3 + \text{NaHCO}_3$
- b) $\text{H}_2\text{CO}_3 + \text{NaCl}$
- c) $\text{NaHCO}_3 + \text{NaCl}$

Question #114

Composition of basic buffer systems:

- a) strong acid and weak base;
- b) a weak base and salt of strong acid;
- c) strong acid and salt of strong base.

Question #115

Composition of ammonia buffer:

- a) $\text{NH}_4\text{OH} + \text{NH}_4\text{Cl}$
- b) $\text{NH}_4\text{OH} + \text{HCl}$
- c) $\text{NH}_4\text{NO}_3 + \text{HNO}_3$

Question #116

The equation of acidity for acidic buffer system:

- a) $[H^+] = Kd \frac{[acid]}{[base]}$
- b) $[H^+] = Kd \frac{[acid]}{[salt]}$
- c) $[H^+] = Kd \frac{[salt]}{[acid]}$

Question #117

Choose the correct formula for acidic buffer system pH calculation:

- a) $pH = -\lg Kd + \lg \frac{[acid]}{[salt]}$
- b) $pH = -\lg Kd - \lg \frac{[acid]}{[base]}$
- c) $pH = -\lg Kd - \lg \frac{[acid]}{[salt]}$

Question #118

Choose the correct formula for hydrocarbonate buffer system pH calculation:

- a) $pH = -\lg Kd + \lg \frac{[H_2CO_3]}{[NaHCO_3]}$
- b) $pH = -\lg Kd - \lg \frac{[H_2CO_3]}{[Na_2CO_3]}$
- c) $pH = -\lg Kd - \lg \frac{[H_2CO_3]}{[NaHCO_3]}$

Question #119

The equation of basicity for basic buffer system:

- a) $[OH^-] = K_d \frac{[base]}{[salt]}$
- b) $[OH^-] = K_d \frac{[salt]}{[base]}$
- c) $[OH^-] = K_d \frac{[acid]}{[base]}$

Question #120

pH of buffer system depends on:

- a) K_d value and ratio of components
- b) The amount of acid
- c) the amount and K_d value of components

Question #121

The mechanism of phosphate buffer in the blood:

- a) $NaH_2PO_4 + HCl \rightarrow H_3PO_4 + NaCl$
- b) $Na_2HPO_4 + HCl \rightarrow Na_3PO_4 + H_2O$
- c) $NaH_2PO_4 + NaOH \rightarrow Na_2HPO_4 + NaCl$

Question #122

Mechanism of action of hydrogencarbonate buffer in the blood:

- a) $NaHCO_3 + NaOH \rightarrow Na_2CO_3 + H_2O$
- b) $NaHCO_3 + HCl \rightarrow NaCl + H_2CO_3$
- c) $NaHCO_3 + NaOH \rightarrow H_2CO_3 + H_2O$

Question #123

Buffer capacity - the number of moles of strong acid or base that must be added to change :

- a) the pH of 1 ml of buffer system per 1 unit
- b) the pH of 1 L of buffer system per 1 unit
- c) the pH of 100 ml of buffer system per 1 unit

Question #124

The method of analysis to determine the practical buffer capacity is:

- a) electrometric
- b) titrimetric
- c) osmometric

Question #125

The formula for the buffer capacity by acid is:

- a) $\text{buffer capacity} = \frac{C_{\text{acid}} \cdot V_{\text{acid}}}{\Delta\text{pH} \cdot V_{\text{buffer solution}}}$
- b) $\text{buffer capacity} = \frac{C_{\text{acid}}}{\Delta\text{pH} \cdot V_{\text{buffer solution}}}$
- c) $\text{buffer capacity} = \frac{\text{number of moles of an acid}}{\Delta\text{pH}}$

Question #126

pH_{final} in the formula for calculation the buffer capacity by acid:

- a) 3.1
b) 8.2
c) 4.4

Question #127

Buffer capacity of blood by acid is:

- a) 0.02 mol/l
b) 0.1 mol/l
c) 0.05 mol/liter

Question #128

Buffer capacity of blood by acid comparing with capacity by base is:

- a) lower
b) higher
c) same

Question #129

If the poisoning was caused by the excess of carbonates in an organism, select the recommended adsorbent:

- a) chalk
b) barium sulfate
c) starch

Question #130

What is composition of phosphate buffer solutions?

- a) HHb/Hb^-
b) $\text{H}_2\text{CO}_3/\text{HCO}_3^-$
c) $\text{H}_2\text{PO}_4^-/\text{HPO}_4^{2-}$

Question #131

What is composition of bicarbonate buffer solutions?

- a) HHb/Hb⁻
- b) H₂CO₃/HCO₃⁻
- c) H₂PO₄⁻/HPO₄²⁻

Question #132

What is composition of hemoglobin buffer solutions?

- a) HHb/Hb⁻
- b) H₂PO₄⁻/HPO₄²⁻
- c) HHbO₂/HbO₂⁻

Question #133

What is composition of protein buffer solutions?

- a) HHb/Hb⁻
- b) H₂PO₄⁻/HPO₄²⁻
- c) NH₂RCOOH/NH₂RCOO⁻

Question #134

Blood buffer solution is all except:

- a) H₂PO₄⁻/HPO₄²⁻
- b) H₂CO₃/HCO₃⁻
- c) NH₃/NH₄⁺

Question #135

Blood buffer solution is:

- a) H₂SO₄/HSO₄⁻
- b) NH₃/NH₄⁺
- c) H₂CO₃/HCO₃⁻

Question #136

The capacity of a buffer systems depends on:

- a) Name of components
- b) Temperature solution
- c) The molar concentration of the acid-conjugate base pair

Question #137

Buffer capacity is directly proportional to the.....

- a) Pressure
- b) Concentration of water
- c) Concentration of the buffer solution components

Question #138

Colligative properties of solutions are caused by:

- a) potential energy of all particles in the P_{osm}
- b) thermal motion and the amount of kinetic particles in the solution.
- c) the nature and kinetics of particles in solution

Question #139

Osmosis - is:

- a) unidirectional motion of solute molecules through a semi-permeable membrane
- b) unidirectional motion of solvent molecules across a semi-permeable membrane towards greater concentration of salt
- c) unidirectional motion of solvent molecules across semi-permeable membrane towards a lower concentration

Question #140

Choose the kind of molecules which move through Semi-permeable membrane:

- a) solution
- b) solvent
- c) solute

Question #141

Examples of natural semi-permeable membrane:

- a) cellophane
- b) polypropylene
- c) animal intestine

Question #142

Examples of artificial semi-permeable membrane:

- a) cellophane
- b) the polyethylene
- c) paper

Question #143

Osmotic pressure - is:

- a) air pressure that stops osmosis
- b) hydrostatic pressure, which stops osmosis
- c) hydrostatic pressure, which directs osmosis in the opposite direction

Question #144

Van't Hoff's formula for electrolyte solution:

- a) $P = i CRT$
- b) $P = CRT$
- c) $P = n CRT$

Question #145

Van't Hoff's formula for non-electrolyte solution:

- a) $P = CRT$
- b) $P = i \cdot CRT$
- c) $P = n \cdot CRT$

Question #146

Osmotic pressure of electrolyte solution is greater than the osmotic non-electrolyte solution (molar concentration of each solution 1 mol/L) because:

- a) electrolytes do not dissociate
- b) electrolytes dissociate
- c) because of kinetic particles are equal

Question #147

How does isotonic coefficient relates to the dissociation degree:

- a) $i = 1 - \alpha \cdot (n - 1)$
- b) $i = 1 + \alpha \cdot (n - 1)$
- c) $i = 1 - \alpha + (n - 1)$

Question #148

Hypotonic solution, has an osmotic pressure:

- a) less than the osmotic pressure of the second solution
- b) equal to the osmotic pressure of the second solution
- c) greater than the osmotic pressure of the second solution

Question #149

Isotonic solution, has an osmotic pressure:

- a) less than the osmotic pressure of the second solution
- b) equal to the osmotic pressure of the second solution.
- c) greater than the osmotic pressure of the second solution.

Question #150

Hypertonic solution has an osmotic pressure:

- a) less than the osmotic pressure of the second solution
- b) equal to the osmotic pressure of the second solution.
- c) greater than the osmotic pressure of the second solution.

Question #151

Choose the mass fraction of NaCl in isotonic with blood solution:

- a) 1%
- b) 0,5%
- c) 0,9%

Question #152

Choose the mass fraction of NaCl in hypertonic with blood solution:

- a) 1%
- b) 10%
- c) 0,9%

Question #153

Isoosmia - this is property of living organisms to maintain the relative constancy of:

- a) pH
- b) blood pressure
- c) osmotic pressure

Question #154

Value of osmotic pressure of blood:

- a) 7.36 atm
- b) 7.7 atm
- c) 22.4 atm

Question #155

Osmotic concentration of blood:

- a) 1 mol/l
- b) 0.303 mol/l
- c) 0.7 mol/liter

Question #156

Permanence the osmotic pressure is supported by:

- a) kidneys
- b) skin and bones
- c) liver

Question #157

Hemolysis is:

- a) wrinkled cells in hypotonic solution;
- b) destruction of cells in hypotonic solution;
- c) steady state cells

Question #158

Plasmolysis is:

- a) increase in cell volume
- b) wrinkling cells in hypertonic solution
- c) destruction of cells in hypotonic solution

Question #159

What is the direction of osmosis during plasmolysis?

- a) out of cell
- b) osmosis stops
- c) in to cell

Question #160

Oncotic blood pressure is:

- a) 1 atm
- b) 4 atm
- c) 0.04 atm

Question #161

Oncotic blood pressure is caused by:

- a) electrolytes
- b) proteins
- c) in electrolytes

Question #162

25% solution MgSO_4 is laxative because it's:

- a) isotonic solution
- b) hypertonic solution
- c) hypotonic solution

Question #163

Saturated vapor pressure above solution in comparison with the saturated vapor above solvent is:

- a) more
- b) less
- c) the same

Question #164

Solutions freeze at temperatures:

- a) 0°C
- b) above 0°C
- c) below 0°C .

Question #165

Blood freezes at temperature:

- a) 0°C
- b) -7,7°C
- c) -0,56°C

Question #166

Saturated vapor pressure of water is equal to:

- a) atmospheric pressure at 100°C
- b) osmotic pressure of 100°C
- c) oncotic pressure

Question #167

Elevation of boiling point of solutions depend on:

- a) concentration
- b) volume
- c) temperature

Question #168

Physiological solution is:

- a) Those solutions, which have the same osmotic pressure as blood plasma
- b) Those solutions, which have the greater osmotic pressure then blood plasma
- c) Solution is one in which the concentration of solute is greater than its concentration in a saturated solution

Question #169

Value of osmotic pressure is charecterised by:

- a) van't Hoff law
- b) Raoult's law
- c) Henderson-Hasselbalch law

Question #170

Physiological solution of sodium chloride is solution, which percent by weight is:

- a) 0.9 %
- b) 2.61 %
- c) 1.63 %

Question #171

Thermodynamic equilibrium condition:

- a) $\Delta G > 0$
- b) $\Delta G < 0$
- c) $\Delta G = 0$

Question #172

Chemical thermodynamics studies the thermodynamic properties of substances depending on:

- a) status, color, structure
- b) the composition, structure, energy
- c) the status, composition, structure

Question #173

Thermodynamic system - a body or group of bodies that:

- a) separated from the environment
- b) not separated from the environment
- c) connection associated with each other

Question #174

Isolated thermodynamic system communicates with the external environment by:

- a) mass and energy
- b) energy
- c) no exchange mass or energy

Question #175

Closed thermodynamic system is a system that:

- a) exchange only mass
- b) exchange mass and energy
- c) exchange only energy

Question #176

Open system:

- a) exchange only mass with the surrounding
- b) exchange mass and energy with the surrounding
- c) exchange only energy with the surrounding

Question #177

A living organism is _____ system

- a) an open
- b) a closed
- c) a homogeneous

Question #178

In homogeneous systems:

- a) present the surface of phases
- b) there is no interface phase

c) its properties at all points are different

Question #179

Units of reaction heat effect are:

- a) kcal or kJ
- b) Kcal or W
- c) J or Volts.

Question #180

Hess Law states that the thermal effect of chemical reaction depends upon:

- a) the number of stages of the process
- b) the nature and substance of the initial and final state of the system
- c) the nature and concentration of initial substances

Question #181

Heat effect of a reaction does not depend on its pathway, but on its:

- a) initial and final concentration
- b) the initial pressure and end state
- c) initial and final states

Question #182

Endothermic process:

- a) have energy
- b) transfers energy
- c) absorbs energy

Question #183

Exothermic process:

- a) releases energy
- b) absorbs energy in the form of useful work
- c) allocates energy during the synthesis of macromolecules

Question #184

Macroergic compounds in humans is:

- a) glucose
- b) ATP
- c) glycogen

Question #185

In the body, chemical energy from nutrients is converted to:

- a) work
- b) internal energy
- c) enthalpy

Question #186

Specify endergonic process in humans:

- a) oxidation of carbohydrates
- b) protein synthesis
- c) polysaccharides synthesis

Question #187

The human body - the system:

- a) stationary
- b) irreversible
- c) reversible

Question #188

Entropy - a measure of:

- a) disorder systems
- b) aggregation of particles
- c) ordering system

Question #189

Human Body is - :

- a) homogeneous system
- b) single-phase system
- c) heterogeneous system

Question #190

If a system can exchange only energy with the surroundings but not matter, it is called:

- a) Exogenous
- b) Isolated
- c) Closed

Question #191

In spontaneous processes the Gibbs's energy is:

- a) Maximal
- b) Negative
- c) Positive

Question #192

Heat effect of reaction oxidation 1 mole of compound at standard state is called:

- a) Standard enthalpy of combustion
- b) Standard enthalpy of formation
- c) Standard enthalpy of neutralization

Question #193

The activation energy - is:

- a) the maximum energy needed for a chemical reaction to take place
- b) the minimum energy needed for a chemical reaction to take place.
- c) the average energy of active molecules that can react

Question #194

Van't Hoff's formula is:

- a) $\frac{V_{t2}}{V_{t1}} = \gamma^{\frac{t2-t1}{2}}$
- b) $\frac{V_{t2}}{V_{t1}} = \gamma^{\frac{t2+t1}{10}}$
- c) $\frac{V_{t2}}{V_{t1}} = \gamma^{\frac{t2-t1}{10}}$

Question #195

Chemical reaction rate equation for heterogeneous processes:

- a) $R = \frac{\Delta C}{S \cdot \Delta \tau}$
- b) $R = \frac{\Delta C}{\Delta \tau}$
- c) $R = \frac{\Delta n}{\Delta \tau}$

Question #196

The rate of chemical reactions is affected by the following factors:

- a) the nature of substances, the potential temperature
- b) mass concentration, temperature
- c) the nature of substances, concentration and temperature

Question #197

The law of mass action states that the rate of chemical reaction:

- a) is directly proportional to the molecular concentrations of the reactants
- b) is inversely proportional to the molecular concentrations of the products

c) is inversely proportional to the molecular concentrations of the reactants

Question #198

The equation applicable to the law of mass action is:

- a) $v = k [A] [B]$
- b) $v = k [A]^a [B]^b$
- c) $v = k [A]^a / [B]^b$

Question #199

Temperature coefficient shows how many times:

- a) the reaction rate increases with increasing temperature at 100°C
- b) the reaction rate increases with increasing temperature by 1°C
- c) the reaction rate decreases with increasing temperature at 10°C

Question #200

Biological life exists within the temperature:

- a) -100 +100°C
- b) -50 +50°C
- c) -1 +40°C

Question #201

The activation energy - is:

- a) the maximum energy needed for a chemical reaction to take place
- b) the minimum energy needed for a chemical reaction to take place
- c) the average energy of active molecules that can react

Question #202

The lower activation energy:

- a) the less molecules collide with each other
- b) the more molecules collide with each other
- c) the greater the number of Avogadro

Question #203

Enzymes:

- a) reduce the activation energy
- b) increase the activation energy
- c) do not affect the activation energy

Question #204

Monomolecular reaction is a reaction in which:

- a) a single molecule undergoes transformation in the elementary event
- b) a unit volume undergoes transformation in the elementary event
- c) a pressure of 1 atm undergoes transformation in the elementary event

Question #205

An example of the bimolecular reaction:

- a) hydrolysis
- b) dissociation
- c) isomerization

Question #206

The reaction rate of zero order:

- a) does not depend on concentration
- b) depends on the square of the concentrations
- c) depends on the ratio of concentrations

Question #207

A parallel reactions is a reaction in which:

- a) the initial substances produced several end products
- b) there is possible feedback
- c) the initial substances produce similar end products

Question #208

Catalyst:

- a) changes the speed of chemical reaction
- b) increases the rate of chemical reaction
- c) decreases the rate of chemical reaction

Question #209

Promoter - a compound that

- a) poison the catalyst
- b) enhances the effect of catalysts
- c) react with a catalyst

Question #210

Enzymatic catalyst is:

- a) thermo-specific
- b) nonselective
- c) affects the constant equilibrium

Question #211

The substance precipitates when the concentration of its ions is:

- a) higher SP
- b) higher or lower SP
- c) equal or lower SP

Question #212

The chemical equilibrium of the reaction $2\text{SO}_3 \rightarrow 2\text{SO}_2 + \text{O}_2$ as the result of pressure increase shifts in:

- a) right side
- b) does not shift
- c) left side

Question #213

Irreversible reaction is accompanied the formation:

- a) of strong electrolyte
- b) of complex compound
- c) of weak electrolyte

Question #214

The equilibrium constant is depended on:

- a) the nature of the reactants
- b) the presence of a catalyst
- c) the concentration of the reactants

Question #215

The value of the equilibrium constant does not depend on:

- a) temperature
- b) the presence of a catalyst
- c) nature of the reactants

Question #216

Proteins specialized to catalyze biological reactions are:

- a) Enzymes
- b) Hormones
- c) Indicators

Question #217

Ascorbic acid is detected using a dye. The standard redox potential of the last is 0.217 V and the dye is 0.14 V. Ascorbic acid is:

- a) oxidized
- b) reduced
- c) neither oxidized nor reduced

Question #218

Immersing the electrode in the redox system solution where the concentration of oxidized form is predominant, the electrode is charged:

- a) negatively
- b) positively
- c) no change

Question #219

The transformation of $\text{FeSO}_4 \rightarrow \text{Fe}_2(\text{SO}_4)_3$ is:

- a) oxidation
- b) reduction
- c) no change

Question #220

The oxidation stage of the oxidizing agent in redox reactions:

- a) increase
- b) decrease
- c) no change

Question #221

The transformation of $\text{Fe}_2\text{O}_3 \rightarrow \text{Fe}$ is:

- a) oxidation
- b) reduction
- c) no change

Question #222

The redox potential appears when the redox electrode is immersed in the solution of:

- a) oxidizing agent
- b) reducing agent
- c) both of them

Question #223

Potentiometric titration is used to detect:

- a) potential acidity
- b) active acidity
- c) total acidity

Question #224

E in Nernst equation: $E = E^0 - \frac{RT}{nF} \ln Q$ is:

- a) Mass-action expression
- b) Electrode potential
- c) Standard electrode potential

Question #225

For determination of pH solution is used:

- a) Centrifuger
- b) Photoelectrocolorimetr.
- c) pH-meter

Question #226

What value of standard electrode potential for standard hydrogen electrode:

- a) - 0.34V
- b) 0V
- c) 0.15V

Question #227

Glass electrode is:

- a) Metal-metal ion electrode
- b) Gas-ion electrodes
- c) Membrane electrode

Question #228

What equation is using for calculated pH solutions in electrochemistry:

- a) Nernst
- b) Arrhenius
- c) Electro-neutrality

Question #229

Diagram of silver-silver chloride electrode is:

- a) Ag/AgCl, KCl
- b) Hg/Hg₂Cl₂, KCl
- c) Pt, H₂/2H⁺

Question #230

Potentiometry is:

- a) Physic-chemical method of research concentration of ions, electrode potential, which used the EMF measuring
- b) Aggregation of the particles arising from the stabilizing effect of this secondary minimum
- c) Increase of the boiling temperature of solutions

Question #231

Hydrogen electrode is:

- a) Metal-metal ion electrode
- b) Gas-ion electrodes
- c) Metal-insoluble salt-anion electrode

Question #232

The coefficient of the surfactant surface activity in Duclo-Traube rule is:

- a) 1.5-2.0
- b) 2-4
- c) 2-3.5

Question #233

Increasing the temperature, the surface tension at the interface liquid-gas is:

- a) lowered
- b) accelerated
- c) the surface tension does not depend on the temperature

Question #234

If $\frac{d\sigma}{dc} > 0$ the adsorption is

- a) negative
- b) positive
- c) it does not influence on the adsorption

Question #235

Increasing the polarity, the surface tension at the interface liquid-gas is:

- a) lowered
- b) accelerated
- c) the surface tension does not depend on the polarity

Question #236

The Gibbs equation for the adsorption is:

- a) $G = \frac{C}{RT} \cdot \frac{dC}{d\sigma}$
- b) $G = \frac{C}{RT} \cdot \frac{d\sigma}{dC}$
- c) $G = -\frac{C}{RT} \cdot \frac{d\sigma}{dC}$

Question #237

The surface inactive agent solutions have the surface tension comparing with the surface tension of pure solvent:

- a) higher
- b) lower
- c) equal

Question #238

The positive adsorption at the interface liquid-gas:

- a) decreases the surface tension
- b) increases the surface tension
- c) does not influence on the surface tension

Question #239

The strong inorganic electrolytes are:

- a) the cationic surfactant
- b) anionic one
- c) the surface-inactive agent

Question #240

The surfactant molecules are concentrated at the interface in the way of the polar groups are situated in:

- a) aqueous phase
- b) gas phase
- c) solid phase

Question #241

Using Al_2O_3 as the adsorbent select the cation predominantly adsorbing into the Al_2O_3 surface:

- a) Na^+
- b) Ba^{2+}
- c) Pt^{4+}

Question #242

The suspension of what adsorbent is used for removal of intoxication caused by alkaloid poisoning?

- a) activated charcoal
- b) silica
- c) bentonite

Question #243

What is the name of the adsorbent which are characterized by a process equivalent exchange of ions?

- a) ionites
- b) ion - Selective film
- c) zeolites

Question #244

Which adsorbent is used for surfactants adsorption from polar solvents.

- a) Silica gel
- b) Activated charcoal
- c) Graphite

Question #245

The less adsorbed substances moving in the chromatography column...

- a) slowly
- b) faster
- c) don't move

Question #246

Application of an activated charcoal in medical practice based on its:

- a) Strong adsorption capacity
- b) Hydrophobic properties
- c) Hydrophilic properties

Question #247

The adsorbent is

- a) Titrant
- b) The substance that is adsorbed by the adsorbent
- c) There is the adsorption process on its surface

Question #248

The desorption is the

- a) Ionic changing
- b) To adsorb the substance by the adsorbent
- c) The reverse process to an adsorption

Question #249

What adsorbents are called the molecular sieves?

- a) soot
- b) phenol-formaldehyde resins
- c) zeolite

Question #250

The chromatography is based on the phenomenon of:

- a) Adsorption
- b) Osmosis
- c) Electrolysis

Question #251

How many times will the surface activity of surfactant increase according to the increasing of the hydrocarbon radical on group $-CH_2$?

- a) in 2.5 times
- b) in 3,5 times
- c) in 5,5 times

Question #252

The change in concentration of one or more components in the surface layer of sorbent is called

- a) Desorption
- b) Capillary condensation
- c) Adsorption

Question #253

What's phenomenon observing when the all volume of the liquid phase absorb the inert gas?

- a) Absorption
- b) Capillary condensation
- c) Chemisorption

Question #254

Surface active substances (surfactants) is widely used in pharmaceutical practice, as a stabilizer of dispersed systems. A characteristic feature of the surfactant's structure is:

- a) Diphilic
- b) Polarity
- c) Non-polarity

Question #255

The process by which chemical interaction occurs between adsorbate's molecules and active centers of adsorbent is called:

- a) chemisorption
- b) adsorption
- c) sublimation

Question #256

An important characteristic of liquids is the surface tension. For what of the substance is it the maximal?

- a) Water
- b) Ethanol
- c) Benzene

Question #257

What method is used for determination surface tension:

- a) Potentiometry
- b) Chromatography
- c) Stalagmometric method

Question #258

The substance thus adsorbed on the surface is called:

- a) Adsorption
- b) Adsorbate
- c) Adsorbent

Question #259

Chromatography is:

- a) Concentrated one matter in surface other
- b) Transferred matters from solid into the gas state
- c) Method of separation mixtures into individual compounds

Question #260

Cation exchange resins is:

- a) OH⁻-exchange resins
- b) Cl⁻ -exchange resins
- c) H⁺- exchange resins

Question #261

Anion exchange resins is:

- a) OH⁻-exchange resins
- b) Na⁻-exchange resins
- c) Ca-exchange resins

Question #262

Many drugs are dispersed systems. Which type of dispersed systems are emulsions (G-gas, L-Liquid, S-solid)?

- a) L-L
- b) L-S
- c) S-S

Question #263

In the medicine there are often used drugs such as suspensions. Which type of disperse systems is this (G-gas, L-Liquid, S-solid)?

- a) S-L
- b) G-G
- c) G-L

Question #264

The structural unit of the colloidal solution of medicinal substance is:

- a) micelle
- b) zwitter-ion
- c) molecule

Question #265

Colloidal dispersion systems are the system which include, the next size of particles:

- a) 10^{-7} - 10^{-9} m
- b) 10^{-4} - 10^{-7} m
- c) 10^{-4} m

Question #266

Emulsion, ointment, pasta, etc., can be prepared by crushing of solid and liquid substances. This method is called

- a) dispersion
- b) condensation
- c) sedimentation

Question #267

For purification of the colloidal solution is used such method as:

- a) dialysis and ultrafiltration
- b) coagulation
- c) sedimentation

Question #268

What from of dispersion system is the smoke (G-gas, L-Liquid, S-solid)?

- a) G/S
- b) S/G
- c) L/L

Question #269

System with size dispersed phase particle $\leq 10^{-9}$ m is:

- a) True solution
- b) Microheterogeneous
- c) Macroheterogeneous

Question #270

Which properties have dispersion systems?

- a) Thermodynamics instable system
- b) Homogeneous system
- c) Thermodynamics stable system

Question #271

Osmotic pressure of colloid systems...

- a) is very low
- b) doesn't change according to the increasing of temperature
- c) is very high

Question #272

What's reagent that can use for peptisation of AgCl sediment?

- a) HNO₃
- b) KOH
- c) NH₄Cl

Question #273

The coagulation power of an electrolytes ions depend on:

- a) mole fraction concentration of sol
- b) the charge of coagulation ions
- c) the viscosity of the dispersed medium

Question #274

What is the coagulation value of an electrolyte?

- a) the minimal sol's concentration, after its increasing can be observed coagulation
- b) the minimal molarity electrolyte's concentration, after its increasing can be observed coagulation
- c) the minimal molarity concentration of the nonelectrolyte, after its increasing can be observed coagulation

Question #275

Coagulation power of an electrolyte is directly proportional to the:

- a) viscosity of the dispersed medium
- b) degree of dissociation
- c) valency of its ions

Question #276

The rules of selective adsorption are:

- a) Panet-Faiences'
- b) Vant - Goff
- c) Duklo - Trauber

Question #277

These methods involve the joining together of a large number of smaller particles to form particles of colloidal size.

- a) Peptization
- b) Condensation
- c) Polymerisation

Question #278

For purification colloidal solution is used such method except:

- a) Electrodialysis
- b) Titration
- c) Dialysis

Question #279

Blood serum is dispersed system. What type dispersed system is it?

- a) True solution
- b) Solid
- c) Colloidal solution

Question #280

What coagulation value?

- a) The minimum amount of an electrolyte that must be added to one liter of a colloidal solution so as to bring coagulation
- b) Amount of strong acid
- c) Amount of stabilisator

Question #281

Osmotic pressure of colloidal solution is:

- a) Very great
- b) Stable all time
- c) Very small

Question #282

Phenomenon of mat luminescence of colloid solution at passing of light:

- a) Coagulation
- b) Diffraction
- c) Opalescence

Question #283

How can gels classify?

- a) elastic, non-elastic
- b) electrolyte, non-electrolyte
- c) with high viscosity, with less viscosity

Question #284

What's the name of gel formation process?

- a) gelation
- b) precipitation
- c) sedimentation

Question #285

For synthesis of polymers is used reaction:

- a) Polymerization
- b) Oxidation
- c) Peptization

Question #286

Choose linear polymer

- a) Cellulose
- b) Starch
- c) Glycogen

Question #287

Choose homopolymer

- a) Protein
- b) DNA
- c) Amylose

Question #288

Sweling is

- a) spontaneous adsorption of big amount water by HMS
- b) process of increasing of HMS mass as a result of boiling
- c) Firs step of crystallization of HMS

Question #289

IEP (isoelectric point of high molecular substance) is:

- a) the maximal concentration of HMC in the solution
- b) the pH, at which HMS stays in the isoelectric state
- c) the minimal concentration of HMC in the solution

Question #290

Osmotic pressure of HMS comparing with osmotic pressure of strong electrolyte is:

- a) Lower
- b) Higher
- c) Same

Question #291

Swelling of albumins is

- a) Limited
- b) Impossible
- c) Unlimited

Question #292

Molecular mass of high molecular substance is greater than:

- a) 10000 Da
- b) 100 Da
- c) 10 Da

Question #293

Choose natural branched homopolymer

- a) Polyvinyl acetate
- b) Glycogen
- c) Albumin

Question #294

What polymer is natural?

- a) Polyethylene
- b) Starch
- c) Kapron

Question #295

Hydrogen bonds are typical for such structure of proteins:

- a) Quaternary
- b) Secondary
- c) Primary

Question #296

The amount of liquids which is absorbed one unit of polymer is named:

- a) Swelling degree
- b) Hydrolysis degree
- c) Polymerization degree

Question #297

Linked water:

- a) Water which is in the human body
- b) Water molecules, which pass to the polymer and form hydrate layers
- c) Water in food

Question #298

“Free water”:

- a) Water molecules, which pass to the polymer and form hydrate layers
- b) Water which is adsorbed polymer after formation hydrate layers
- c) Water in food

Question #299

On the swelling process influence all factors except:

- a) pH medium
- b) Catalyst
- c) Nature of polymer and solvent

Question #300

Value of pH solution in which an proteins is in isoelectric state, name

- a) Isoelectric point of protein
- b) Synthesis of protein
- c) Solubility of protein

Answers:

1. Correct answer: a;
2. Correct answer: c;
3. Correct answer: a;
4. Correct answer: a;
5. Correct answer: c;
6. Correct answer: c;
7. Correct answer: b;
8. Correct answer: c;
9. Correct answer: c;
10. Correct answer: b;
11. Correct answer: b;
12. Correct answer: c;
13. Correct answer: b;
14. Correct answer: c;
15. Correct answer: a;
16. Correct answer: c;
17. Correct answer: b;
18. Correct answer: a;
19. Correct answer: a;
20. Correct answer: a;
21. Correct answer: a;
22. Correct answer: c;
23. Correct answer: b;
24. Correct answer: c;
25. Correct answer: b;
26. Correct answer: a;
27. Correct answer: c;
28. Correct answer: c;
29. Correct answer: c;
30. Correct answer: b;
31. Correct answer: a;
32. Correct answer: a;
33. Correct answer: c;
34. Correct answer: b;
35. Correct answer: c;
36. Correct answer: b;
37. Correct answer: c;
38. Correct answer: b;
39. Correct answer: a;
40. Correct answer: b;
41. Correct answer: a;

42. Correct answer: a;
43. Correct answer: b;
44. Correct answer: a;
45. Correct answer: b;
46. Correct answer: a;
47. Correct answer: c;
48. Correct answer: a;
49. Correct answer: b;
50. Correct answer: a;
51. Correct answer: b;
52. Correct answer: a;
53. Correct answer: a;
54. Correct answer: b;
55. Correct answer: a;
56. Correct answer: b;
57. Correct answer: a;
58. Correct answer: b;
59. Correct answer: a;
60. Correct answer: b;
61. Correct answer: b;
62. Correct answer: b;
63. Correct answer: c;
64. Correct answer: b;
65. Correct answer: c;
66. Correct answer: b;
67. Correct answer: c;
68. Correct answer: a;
69. Correct answer: c;
70. Correct answer: c;
71. Correct answer: a;
72. Correct answer: b;
73. Correct answer: c;
74. Correct answer: a;
75. Correct answer: a;
76. Correct answer: b;
77. Correct answer: b;
78. Correct answer: c;
79. Correct answer: a;
80. Correct answer: a;
81. Correct answer: a;
82. Correct answer: a;
83. Correct answer: b;

84. Correct answer: b;
85. Correct answer: a;
86. Correct answer: c;
87. Correct answer: b;
88. Correct answer: c;
89. Correct answer: b;
90. Correct answer: b;
91. Correct answer: c;
92. Correct answer: b;
93. Correct answer: b;
94. Correct answer: c;
95. Correct answer: a;
96. Correct answer: a;
97. Correct answer: a;
98. Correct answer: c;
99. Correct answer: b;
100. Correct answer: a;
101. Correct answer: c;
102. Correct answer: a;
103. Correct answer: c;
104. Correct answer: b;
105. Correct answer: c;
106. Correct answer: c;
107. Correct answer: b;
108. Correct answer: a;
109. Correct answer: b;
110. Correct answer: b;
111. Correct answer: b;
112. Correct answer: c;
113. Correct answer: a;
114. Correct answer: b;
115. Correct answer: a;
116. Correct answer: b;
117. Correct answer: c;
118. Correct answer: c;
119. Correct answer: a;
120. Correct answer: c;
121. Correct answer: c;
122. Correct answer: b;
123. Correct answer: b;
124. Correct answer: b;
125. Correct answer: a;

126. Correct answer: c;
127. Correct answer: c;
128. Correct answer: b;
129. Correct answer: a;
130. Correct answer: c;
131. Correct answer: b;
132. Correct answer: a;
133. Correct answer: a;
134. Correct answer: a;
135. Correct answer: c;
136. Correct answer: c;
137. Correct answer: c;
138. Correct answer: b;
139. Correct answer: b;
140. Correct answer: b;
141. Correct answer: c;
142. Correct answer: a;
143. Correct answer: b;
144. Correct answer: a;
145. Correct answer: a;
146. Correct answer: b;
147. Correct answer: b;
148. Correct answer: a;
149. Correct answer: b;
150. Correct answer: c;
151. Correct answer: c;
152. Correct answer: b;
153. Correct answer: c;
154. Correct answer: b;
155. Correct answer: b;
156. Correct answer: a;
157. Correct answer: b;
158. Correct answer: b;
159. Correct answer: a;
160. Correct answer: c;
161. Correct answer: b;
162. Correct answer: b;
163. Correct answer: b;
164. Correct answer: c;
165. Correct answer: c;
166. Correct answer: a;
167. Correct answer: a;

168. Correct answer: a;
169. Correct answer: a;
170. Correct answer: a;
171. Correct answer: c;
172. Correct answer: b;
173. Correct answer: a;
174. Correct answer: c;
175. Correct answer: c;
176. Correct answer: b;
177. Correct answer: a;
178. Correct answer: b;
179. Correct answer: a;
180. Correct answer: b;
181. Correct answer: c;
182. Correct answer: c;
183. Correct answer: a;
184. Correct answer: b;
185. Correct answer: a;
186. Correct answer: a;
187. Correct answer: a;
188. Correct answer: a;
189. Correct answer: c;
190. Correct answer: c;
191. Correct answer: b;
192. Correct answer: a;
193. Correct answer: b;
194. Correct answer: c;
195. Correct answer: a;
196. Correct answer: c;
197. Correct answer: a;
198. Correct answer: b;
199. Correct answer: a;
200. Correct answer: a;
201. Correct answer: b;
202. Correct answer: b;
203. Correct answer: a;
204. Correct answer: a;
205. Correct answer: a;
206. Correct answer: a;
207. Correct answer: a;
208. Correct answer: a;
209. Correct answer: b;

210. Correct answer: a;
211. Correct answer: b;
212. Correct answer: a;
213. Correct answer: c;
214. Correct answer: a;
215. Correct answer: b;
216. Correct answer: a;
217. Correct answer: a;
218. Correct answer: a;
219. Correct answer: a;
220. Correct answer: b;
221. Correct answer: b;
222. Correct answer: c;
223. Correct answer: b;
224. Correct answer: b;
225. Correct answer: c;
226. Correct answer: b;
227. Correct answer: c;
228. Correct answer: a;
229. Correct answer: a;
230. Correct answer: a;
231. Correct answer: b;
232. Correct answer: c;
233. Correct answer: b;
234. Correct answer: a;
235. Correct answer: b;
236. Correct answer: c;
237. Correct answer: a;
238. Correct answer: a;
239. Correct answer: c;
240. Correct answer: a;
241. Correct answer: c;
242. Correct answer: a;
243. Correct answer: a;
244. Correct answer: a;
245. Correct answer: b;
246. Correct answer: a;
247. Correct answer: c;
248. Correct answer: c;
249. Correct answer: c;
250. Correct answer: a;
251. Correct answer: b;

252. Correct answer: c;
253. Correct answer: a;
254. Correct answer: a;
255. Correct answer: a;
256. Correct answer: a;
257. Correct answer: c;
258. Correct answer: b;
259. Correct answer: c;
260. Correct answer: c;
261. Correct answer: a;
262. Correct answer: a;
263. Correct answer: a;
264. Correct answer: a;
265. Correct answer: a;
266. Correct answer: a;
267. Correct answer: a;
268. Correct answer: b;
269. Correct answer: a;
270. Correct answer: a;
271. Correct answer: a;
272. Correct answer: c;
273. Correct answer: b;
274. Correct answer: b;
275. Correct answer: c;
276. Correct answer: a;
277. Correct answer: b;
278. Correct answer: b;
279. Correct answer: c;
280. Correct answer: a;
281. Correct answer: c;
282. Correct answer: c;
283. Correct answer: a;
284. Correct answer: a;
285. Correct answer: a;
286. Correct answer: a;
287. Correct answer: c;
288. Correct answer: a;
289. Correct answer: b;
290. Correct answer: a;
291. Correct answer: a;
292. Correct answer: a;
293. Correct answer: b;

- 294. Correct answer: b;
- 295. Correct answer: b;
- 296. Correct answer: a;
- 297. Correct answer: a;
- 298. Correct answer: b;
- 299. Correct answer: b;
- 300. Correct answer: a;