1)

1. .In the following equation the product c is

$$\underset{a}{CH_3COOH} \leftrightharpoons \underset{b}{CH_3COO^-} + \underset{c}{H^+}$$

1) + a. acid
2) - b. base
3) - c. conjugate base
4) - d. None of the above

2) **2. .In the following equation the product b is**

$$\underset{a}{CH_3COOH} \leftrightharpoons \underset{b}{CH_3COO^-} + \underset{c}{H^+}$$

1) - a. Conjugate acid
2) + b. conjugate base
3) - c. conjugate base and acid
4) - d. None of the above

3) **3. .In the following equation the addition of acetic acid change the equilibrium to**

$$\underset{a}{CH_3COOH} \leftrightharpoons \underset{b}{CH_3COO^-} + \underset{c}{H^+}$$

1) - a. Products
2) + b. Reactants
3) - c. Decrease acidity
4) - d. None of the above

4) **4. .In the following equation the acidic media increase**

$$Ca_{10}(PO_4)_6(OH)_2 \underset{\text{Mineralization}}{\overset{\text{Demineralization}}{\rightleftharpoons}} 10Ca^{+2} + 6PO_4^{-3} + 2OH^-$$

1) + a. demineralization
2) - b. mineralization
3) - c. a and b
4) - d. not effect

5) **5. .In the following equation ,the increase fluoride ion**

$$Ca_{10}(PO_4)_6(OH)_2 + 2F^- \longrightarrow Ca_{10}(PO_4)_6(F)_2 + 2OH^-$$

1) - a. demineralization
2) + b. tooth enamel is strengthened
3) - c. tooth enamel is dissolved
4) - d. not effect

6) **6. .In the following equation the addition of acetic acid change the equilibrium to**

$$\underset{a}{NH_3} + H_2O \leftrightharpoons \underset{b}{NH_4^+} + \underset{c}{OH}$$

1) + a. Products

2) - b. Reactants
3) - c. increase acidity
4) - d. None of the above

7) **7. .In the following equation the product b**

$$\underset{a}{NH_3} + H_2O \leftrightharpoons \underset{b}{NH_4^+} + \underset{c}{OH^-}$$

1) + a.Conjugate acid
2) - b.conjugate base
3) - c.conjugate base and acid
4) - d.None of the above

8) **8. .The increase of CO2 in blood ,in the following equation**

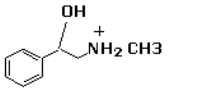
$$CO_2 + H_2O \rightleftharpoons H_2CO_3 \rightleftharpoons HCO_3^- + H^+$$

1) + a. increase acidity
2) - b. decrease acidity
3) - c. decrease the concentration of H +
4) - d. None of the above

9) 9. When the equilibrium constant is less than one (K ‹ 1),
1) - a. the concentration of the products is larger than the concentration of the reactants.
2) - b. .the equilibrium lies to the left and favors the products
3) - c. the concentration of the products is smaller than the concentration of the reactants.
4) + d. the equilibrium lies to the left and favors the reactant.

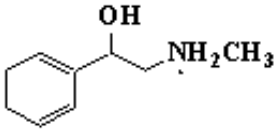
10) 10. When the equilibrium constant is equal to one (K= 1),
1) - a.the concentration of the products is larger than the concentration of the reactants.
2) - b..the equilibrium lies to the left and favors the products
3) + c.the concentration of the products is equal to the concentration of the reactants.
4) - d.None of the above

11) **11. According to hypothetical neurotransmitter which of the following agonist**

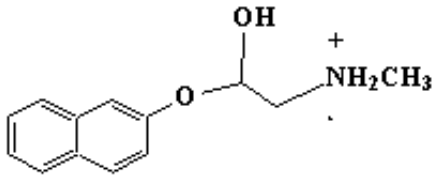


Hypothetical Neurotransmitter

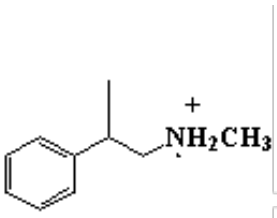
1) +



2) -



3) -



4) - d. None of the above

12) 12. Sulfur is present in:
1) - a. Carbohydrates
2) + b. Proteins
3) - c. Hemoglobin
4) - d. All of the above

13) 13. What type of elements are all carbons in the human body:
1) - a. Metals
2) + b. Nonmetals
3) - c. Metalloids
4) - d. All of the above

14) 14. Which elements are present in proteins:
1) - a. Oxygen
2) - b. Carbon
3) - c. Nitrogen
4) + d. All of the above

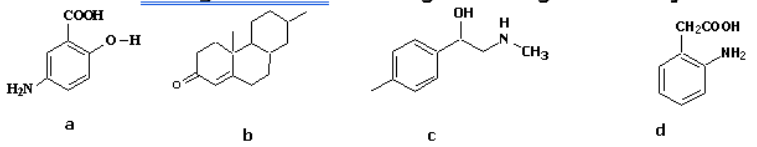
15) 15. What is the essential role of iron in the body:
1) + a. Formation of hemoglobin
2) - b. Thyroid gland function
3) - c. DNA synthesis
4) - d. None of the above

16) 16. Sodium iodide (NaI) containing radioactive iodine-131 is primarily used for:
1) + a. Evaluating thyroid gland function
2) - b. Eliminating cancerous cells in the thyroid
3) - c. Promoting bone and teeth development
4) - d. All of the above

17) 17. Which type of interaction leads to irreversible binding between drugs and receptors:
1) + a. Covalent bonding
2) - b. Ionic attraction
3) - c. Hydrogen bonding
4) - d. Van der Waals interactions

18) 18. Which elements are known as the building-block elements in the human body:
1) - a. Oxygen, carbon, hydrogen, and sodium
2) + b. Oxygen, carbon, hydrogen, and nitrogen
3) - c. Sodium, potassium, chlorine, and sulfur
4) - d. Oxygen, carbon, hydrogen, and iodine

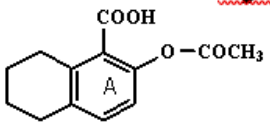
19) **19. The arrangement the following according to solubility in blood are**



1) + a. a> d> c>b
2) - b. d>a>c>b
3) - c. a> d> b> c
4) - d. b > c> d > a

20)

20. The Hyberdization of carbons in A ring?



1) - a. SP3
2) + b.SP2
3) - c. SP1
4) - d. None of the above

21) What is an example of a weak acid used in buffer systems?
1) - a. Hydrochloric acid
2) + b. Acetic acid
3) - c. Sulfuric acid
4) - d. Nitric acid

22) 22. Which of the following major minerals or macronutrients
1) - a. Sodium
2) - b. potassium,
3) - c. chlorine
4) + d. all of the above

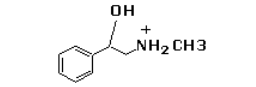
23) 23. Nonmetals—oxygen, carbon, hydrogen, and nitrogen—comprise
1) + a.96% of the mass of the human body
2) - b. 0.1–2% of the mass of the human body
3) - c. at least 100 mg.
4) - d. usually less than 15 mg.

24) 24. Which of the following major minerals
1) - a. iodine
2) - b. zinc
3) + c. sodium
4) - d. nitrogen

25) 25. Isotope are atoms of the same element having different number of
1) - a. electrons
2) - b. protons
3) + c. neutrons

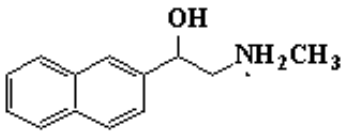
4) - d. None of the above

26) **26. According to hypothetical neurotransmitter which of the following is agoinst**

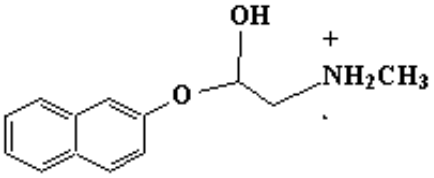


Hypothetical Neurotransmitter

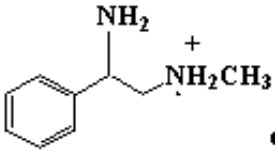
1) -



2) -



3) +



4) - d. None of the above

27) Which form of a drug is more likely to enter biological membranes?

1) - a. Ionized form
2) + b. Unionized form
3) - c. Solid form
4) - d. Liquid form

28) **28. In the following equation the neutral media increase**

$$Ca_{10}(PO_4)_6(OH)_2 \underset{\text{mineralization}}{\overset{\text{demineralization}}{\rightleftharpoons}} 10\,Ca^{2+} + 6PO_4^{3-} + 2\,OH^-$$

1) - a. demineralization
2) - b. mineralization
3) - c. demineralization and mineralization
4) + d. Not effect

29) 29.What is a common laboratory finding in metabolic acidosis?

1) - a. Diabetics

2) - b. Severe diarrhea
3) - c. Prolonged extensive exercise
4) + d. All of the above

30) 30. The present of ionization of the basic drug has PKa= 7at PH=4.4 equal
1) - a. 9 %
2) - b. 9%
3) + c.99.8%
4) - d. 0.99%

31) **31. The increase of HCO_3^- ,in the following equation**

$$CO_2 + H_2O \rightleftharpoons \underset{\text{carbonic acid}}{H_2CO_3} \rightleftharpoons \underset{\text{bicarbonate}}{HCO_3^-} + H^+$$

1) - a. increase acidity
2) + b. decrease acidity
3) - c. increase the concentration of H +
4) - d. None of the above

32) 32. Tooth decay results when chemical factors within the mouth cause the rate of
1) - a. mineralization to exceed the rate of demineralization
2) - b.demineralization equal the rate of mineralization
3) + c.demineralization more than the rate of mineralization
4) - d. demineralization less than the rate of mineralization

33) **33. .In the following equation the drink of water give**

$$Ca_{10}(PO_4)_6(OH)_2 \underset{\text{Mineralization}}{\overset{\text{Demineralization}}{\rightleftharpoons}} 10Ca^{+2} + 6PO_4^{-3} + 2OH^-$$

1) - a. demineralization
2) - b. mineralization
3) - c. a and b
4) + d. not effect

34) 34. Which of the following major minerals
1) - a. iodine
2) - b. zinc
3) + c. sodium
4) - d. nitrogen

35) 35. . Isotope are atoms of the same element having different number of
1) - a. electrons
2) - b. protons
3) + c. neutrons
4) - d. None of the above

36) What is a common laboratory finding in metabolic acidosis?
1) - a. Elevated blood pH
2) + b. Decreased bicarbonate levels
3) - c. Increased oxygen saturation
4) - d. Elevated glucose levels

37) Which of the following elements is NOT a macronutrient?
1) - a. Calcium
2) + b. Iron
3) - c. sodium

4) - d. Magnesium

38) What is the primary role of phosphorus in the human body?
1) - a. Oxygen transport
2) - b. body fluids
3) + c. Genetic information transfer
4) - d. Muscle contraction

39) Which of the following elements is required for thyroid function?
1) + a. Iodine
2) - b. Calcium
3) - c. Magnesium
4) - d.Sodium

40) What is needed in at least 100 mg daily in the diet?
1) - a. Building block elements
2) + b. Macronutrients
3) - c. Trace elements
4) - d. Antioxidants

41) What role does zinc play in the body?
1) - a. Oxygen transport
2) + b. Enzyme functioning
3) - c. Genetic information transfer
4) - d. Muscle contraction

42) Which substance is found in the highest concentration in the human body?
1) - a. Proteins
2) + b. Water
3) - c. Lipids
4) - d. Nucleic acids

43) What is formed when an atom gains one or more electrons?
1) - a. Cation
2) + b. Anion
3) - c. Isotope
4) - d. Neutron

44) If an atom has 6 protons and 8 neutrons, what is its mass number (A)?
1) - a. 6
2) - b. 8
3) + c. 14
4) - d. 2

45) What are ions?
1) - a. Neutral particles
2) + b. Electrically charged particles
3) - c. Atoms with equal numbers of protons and electrons
4) - d. Only negative particles

46) How is iodine-131 used in medicine?
1) - a. Only for diagnostic purposes.
2) - b. Only for therapeutic purposes.
3) + c. For both diagnostic and therapeutic uses.
4) - d. As a nutrient supplement.

47) What micronutrient is essential for synthesizing the thyroid hormone thyroxine?
1) - a. Calcium
2) + b. Iodine

3) - c. Iron
4) - d. Zinc

48) What are bonding electrons?
1) - a. Electrons that are lost during a chemical reaction.
2) + b. Pairs of valence electrons shared between atoms in a covalent bond.
3) - c. Electrons that do not participate in bonding.
4) - d. Electrons found only in noble gases.

49) What does hydrophilic mean?
1) - a. Water-hating
2) + b. Water-loving
3) - c. Lipid-loving
4) - d. Solvent-neutral

50) Lipophilic molecules are generally:
1) - a. Polar
2) + b. Nonpolar
3) - c. Ionic
4) - d. Hydrophilic

51) What kind of interactions do lipophilic molecules primarily engage in?
1) - a. Ionic interactions
2) - b. Hydrogen bonding
3) + c. Van der Waals forces
4) - d. Covalent bonding

52) If a molecule is described as hydrophilic, it is likely to:
1) - a. soluble in lipid solvents.
2) + b. Form hydrogen bonds with water.
3) - c. not soluble in water.
4) - d. nonpolar.

53) What is required for the drug to enter the cell membran ?
1) - a. High temperature
2) + b. Lipid solubility
3) - c. Water solubility
4) - d. Ionization

54) How does a drug leave the body?
1) - a. Through the skin
2) - b. By evaporating
3) + c. Through the kidneys in aqueous urine or into the GI tract in biliary fluids (liver)
4) - d. By being metabolized into gas

55) Which of the following is an example of an isotonic solution used in hospitals?
1) - a. 0.9% saline solution
2) - b. 5.0% (w/v) glucose solution
3) - c. 90% dextrose solution
4) + d. Both a and b

56) What is the primary chemical species that causes demineralization in tooth enamel?
1) - a. Ca^{2+} ions
2) - b. OH^{-} ions
3) + c. H^{+} ions
4) - d. F^{-} ions

57) When water moves from the side with pure solvent to the side with dissolved glucose, what is this process called?

1) - a. Diffusion
2) - b. Filtration
3) + c. Osmosis
4) - d. Evaporation

58) What type of bond is formed between hydrogen and atoms like O, N, ?
1) - a. Covalent bond
2) - b. Ionic bond
3) + c. Hydrogen bond
4) - d. Van der Waals interaction

59) What does the partition coefficient (P) measure?
1) - a. The size of the molecule
2) + b. The affinity for lipid with aqueous phases
3) - c. The rate of absorption
4) - d. The covalent bonds

60) Which of the following pairs of atoms can form a hydrogen bond?
1) + a. O and H
2) - b. C and H
3) - c. N and C
4) - d. F and Na