A+ Academy – Online Teaching

بيولوجيا تحضيري القدس – أبو ديس

Biology

Topic: mid revesion 2

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1. Denaturation process is described by all of the following except:
   A) loss of the peptide bonds.
   B) loss of native conformation.
   C) loss of secondary structure.
   d) loss of tertiary structure

2. The difference between the sugar in DNA and the sugar in RNA is that the sugar in DNA ?

A) is a six-carbon sugar and the sugar in RNA is a five carbon sugar.
B) can form a double-stranded molecule.
C) is an aldehyde sugar and the sugar in RNA is a keto sugar.
D) is in the α configuration and the sugar in RNA is in the β configuration.
E) contains one less oxygen atom.

3. If one strand of a DNA molecule has the sequence of bases 5'ATTGCA3', the other complementary strand would have the sequence ?
   A) 5'TAACGT3'.
   B) 5'TGCAAT3'.
   C) 5'UAACGU3'.
   D) 3'UAACGU5'.
   E) 5'UGCAAU3'.

4. Which of the following pairs of base sequences could form a short stretch of a normal double helix of DNA?

A) 5'-purine-pyrimidine-purine-pyrimidine-3' with 3'-purine-pyrimidine-purine-pyrimidine-5'
B) 5'-AGCT-3' with 5'-TCGA-3'
C) 5'-GCGC-3' with 5'-TATA-3'
D) 5'-ATGC-3' with 5'-GCAT-3'
E) All of these pairs are correct.

5. Cytosine (C) pairs with --- by ---:
   A) G , 3 H-bonds.   B) A , 2 H-bonds.
   C) C , 2 H-bond.   D) G, 2 H-bond.

6. The polynucleotide backbone consist of all of the following except?
   A) Pentose sugar.   B) Phosphate group.
   C) Nitrogenous bases.   D) all of the above.

7. In the sugar of DNA the phosphate is attached to carbon number --- ?
   A) 5   B)1   C) 2   D) 3

8. A nitrogenous base that has a single ring structure is called ?
   A) purines.   B) pyrimidine.   C) both (A+B).

9. If the DNA compose of 30% guanine, what is the % of adenine?
   A) 20%
   B) 40%
   C) 30%
   D) 10%

Guanine 30 بده يكون معهم كمان 30cytosine لأنهم برتبطوا ببعض يعني صاروا 60
بضل 40 لل Adenine وthymine منقسمهم بالنص بطلع ال Aنسبته 20

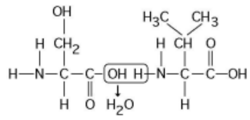
10. If a DNA double helix has 100 nucleotide pairs long, and contains 25 (A) bases, how many (C) bases does it has ?
    A- 50 bases.   B- 25 bases.
    C- 75 bases.   D- 100 bases .

11. What type of covalent bond between amino acid side chains (R groups) functions in maintaining a polypeptide's specific three-dimensional shape?
    A) ionic bond .
    B) hydrophobic interaction .
    c) disulfide bond .
    D) hydrogen bond .

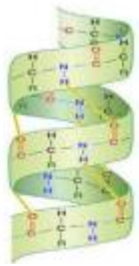
Polypeptide 3D shape= tertiary structure
كل الخيارات هي موجودة بالتيرشري بس هو سألني مين منهم
covalent

12. Which of the following statements is/are true regarding the chemical reaction illustrated in Figure ?
    A) It is a hydrolysis reaction.
    B) It results in a peptide bond.
    C) It joins two fatty acids together.
    D) It is a hydrolysis reaction and it results in a peptide bond.
    E) It is a hydrolysis reaction, it results in a peptide bond, and it joins two fatty acids together.

Dehydration between two amino acids



13. The structure in this Figure shows the
    A) 1-4 linkage of the α glucose monomers of starch.
    B) 1-4 linkage of the β glucose monomers of cellulose.
    C) double-helical structure of a DNA molecule.
    D) α helix secondary structure of a polypeptide.
    E) β pleated sheet secondary structure of a polypeptide.



14. Which of the following statements about the 5' end of a polynucleotid DNA is correct?

A) The 5' end has a hydroxyl group attached to the number 5 carbon of deoxyribose.
B) The 5' end has a phosphate group attached to the number 5 carbon of deoxyribose.
C) The 5' end has phosphate attached to the number 5 carbon of the nitrogenous base.
D) The 5' end has a carboxyl group attached to the number 5 carbon of deoxyribose.
E) The 5' end is the fifth position on one of the nitrogenous bases.

15. Which of the following are nitrogenous bases of the pyrimidine type?

A) guanine and adenine .
B) cytosine and uracil .
C) thymine and guanine .
D) ribose and deoxyribose .
E) adenine and thymine .

16. Which of the following are nitrogenous bases of the purine type?
    A) cytosine and guanine .
    B) guanine and adenine .
    C) adenine and thymine .
    D) thymine and uracil .
    E) uracil and cytosine .

17. If a DNA sample were composed of 10% thymine, what would be the percentage of guanine?
    A) 10
    B) 20
    C) 40
    D) 80
    E) impossible to tell from the information given .

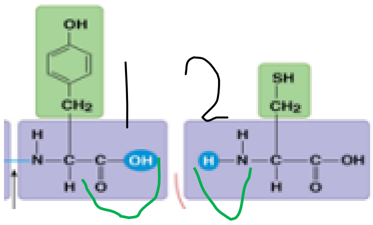
18. What is the structural feature that allows DNA to replicate?
    A) sugar-phosphate backbone .
    B) complementary pairing of the nitrogenous bases .
    C) disulfide bonding (bridging) of the two helixes .
    D) twisting of the molecule to form an α helix .
    E) three-component structure of the nucleotides

19. Which of the following is not a monomer/polymer pairing?
    A) monosaccharide/polysaccharide .
    B) amino acid/protein .
    C) triglyceride/phospholipid .
    D) deoxyribonucleotide/DNA .
    E) ribonucleotide/RNA.

20. Among these biological polymers, which has the least structural variety?
A) polysaccharides . B) proteins . C) DNA . D) RNA .

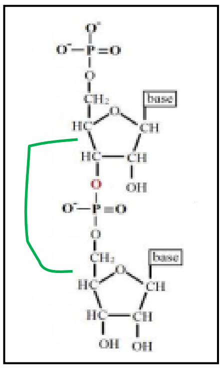
21. which one of the following is NOT a component of each monomer used to make proteins?
    A) a phosphorus atom, P.
    B) an amino functional group, NH2.
    C) a side chain, R.
    D) a carboxyl group, COOH.

22. which parts of the amino acids X and Y are involved in the formation of a peptide bond? X—Y
A) amino group of X and carboxyl group of Y.
B) carboxyl group of X and amino group of Y.
C) carboxyl group of X and side chain of Y.
D) side chains of both X and Y.



23. A tripeptide has _________.
A) three amino acids and two peptide bonds.
B) three amino acids and three peptide bonds.
C) two amino acids and three peptide bonds.
D) four amino acids and three peptide bonds

24. When nucleotides polymerize to form a nucleic acid ______.
A) a covalent bond forms between the sugar of one nucleotide and the phosphate of a second.
B) a hydrogen bond forms between the sugar of one nucleotide and the phosphate of a second
C) covalent bonds form between the bases of two nucleotides.
D) hydrogen bonds form between the bases of two Nucleotides



25. The central dogma of life states that
A) DNA is transcribed into RNA, which is translated into protein.
B) DNA is translated into protein.
C) DNA is translated into RNA, which is transcribed into protein.
D) RNA is transcribed into protein.

26. Hibernation is a type of behavioural adaptation:
    a) true b) false physiological

27. the ability of the body to maintain internal conditions is called:
    a) organization b) homeostasis c) responsiveness d) adaptation

28. the most abundant element in the human body is:
    a) hydrogen b) carbon c) oxygen d) nitrogen

29. the 2nd shell of the atom:
    a) contains 2 orbitals and each orbital holds 4 electrons
    b) contains 4 orbitals and each orbital holds 4 electrons
    c) contains 9 orbitals and each one holds 2 electrons
    d) none of the above

contains 4 orbitals and each orbital holds 2 electrons

30. nitrogenous bases are bases because:
    a) phosphate groups have the potential to decreasing the hydrogen ion concentration in the environment
    b) phosphate groups have the potential to increasing the hydrogen ion concentration in the environment
    c) amino groups have the potential to decreasing the hydrogen ion concentration in the environment
    d) amino groups have the potential to increasing the hydrogen ion concentration in the environment

31. the phosphate group of one nucleotide attached to the ……… group of the other nucleotide
    a) hydroxyl b) carboxyl c) ester d) diester

32. the sugar and phosphate in nucleic acids lie on the inside of the helix forming DNA's backbone
    outside
    a) true b) false

33. all are true about the function of ribosomal RNA except:
    a) rRNa ensures the proper alignment of the mRNA and the Ribosomes.
    b) major constituent of ribosomes
    c) rRNa role involves regulating gene expression
    d) rRNA has an enzymatic activity

34. electrons encircle the nucleus of an atom at discrete energy levels called:
    a) valence shell b) electron shell
    c) valence electrons d) potential energy

35. the chemical behaviour of an atoms depends mostly on the number of electrons in:
    a) valence shell b) electron shell
    c) valence electrons d) potential energy

36. A region of space within an atom where an electron in a given subshell can be found.
    a) shells b) molecules c) compounds d) orbit

37. The attraction (pull) for shared electrons is called
    a) polar covalent bond
    b) non polar covalent bond
    c) electronegativity
    d) share electrons

38. Polar water molecules are attracted to each other and can form:
A) ionic bonds b) covalent bonds c) hydrogen bonds d) all of the above

39. Which is true about fats:
a) they are amphipathic
b) their fatty acids make them hydrophilic due to presence of a carboxyl group
c) they contain fatty acids
d) B+C
e) A+C

40. the link between fatty acids and glycerol is called diester link
a) true b) false
ester

41. enzymes that affect the rate of the reaction are called:
a) anabolic b) catabolic c)catalytic d) regulatory

42. essential amino acids:
   a) produced by human body
   b) not encoded by human genome
   c) there are 12 essential amino acids
   d) none of the above

43. which of the following is a positively charged amino acid
   a) lysine   b) glycine   c) valine   d) aspartate

44. which of the following is true:
   a) cis unsaturated fatty acids are natural components of plant oil
   b) cis unsaturated fatty acids are natural components of animal fat
   c) trans fats are liquid at room temperature
   d) trans fats are natural component of animal fats
   e) none of the above

45. in photosynthesis glucose and water are produced from carbon dioxide and oxygen
   a) true   b) false

$$\underset{\text{carbon dioxide}}{6\,CO_2} + \underset{\text{water}}{6\,H_2O} \xrightarrow{\text{Energy}} \underset{\text{glucose}}{C_6H_{12}O_6} + \underset{\text{oxygen}}{6\,O_2}$$

46. Octet rule refers to the tendency of atoms to prefer to have eight electrons in the valence shell.
   a) true   b) false

47. Radioactive isotopes uses includes all of the following except:
   a) tracers to follow the movement element.
   b) sterilize medical and dental instruments.
   c) kill cancer cells.
   d) imaging with PET scan
   e) all are true

48. monosaccharide in aqueous solutions are usually in ring forms.
   a) true   b) false

49. type of bond in starch is:
   a) ester   b) peptide   c) glycosidic   d) phosphodiester
   in lipids   in proteins   in nucleic acids

50. plant cell wall is composed of:
   a) cellulose   b) chitin   c) starch   d) glycogen

51. precursor of phospholipids is called:
   a) Phosphatidylcholine   b) phosphatidate
   c) Phosphatidylserine   d) diacylglycerol 3-phosphate
   e) all of the above   f) B+D only

52. all true about steroids except:

Carbon ring
Three ring 6 C one ring 5 C

a) they do not resemble other lipids steroids
b) they are hydrophobic and insoluble in water.
c) have four linked hydrogen rings
d) Many steroids also have the –OH functional group, which puts them in the alcohol classification (sterols).
e) In human body many hormones are steroids (testosterone, progesterone, and glucocorticoids).

53. polypeptide is a short chain of amino acids (typically 2 to 40) linked by chemical bonds peptide bonds

a) true b) false

2 to 50

54. Protein shape is critical to its function

a) true b) false

55. Which of these lead to permanent changes in the protein's shape

a) changes in temperature b) changes in pH c) exposure to chemicals
d) all of the above e) A+B only

56. immunoglobulins function is

a) coordinate body activities b) muscle contraction
c) protect body from pathogens d) carry substances across blood

RNA

57. DNA dictates the protein's structure in a process called translation

a) true b) false

58. it is the base pairing between ………. that allows for the correct amino acid to insert itself in the polypeptide chain.

a) tRNA and micro RNA
b) rRNA and mRNA
c) tRNA and mRNA
d) rRNA and tRNA

59. A chromosome may contain tens of thousands of genes

a) true false

60. RNA is single stranded

a) true b) false