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OLABISI ONABANJO UNIVERSITY

DEPARTMENT OF BIOCHEMISTRY

REMO CAMPUS, IKENNE

2011/2012 HARMATTAN SEMESTER EXAMINATION

COURSE CODE: BCH 201/MDB 201:1 (Paper II) TIME ALLOWED: 1Hour

COURSE TITLE: INTRODUCTION TO BIOCHEMISTRY DATE: 27TH JULY 2012

INSTRUCTION: Select the best answer and mark X on the answer sheet provided.

1. The sugar with the structure below has _____ steren-isomers.

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      CHO
       |
H -C - OH
       |
H -C - OH
       |
      CH2OH
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(a) 2 (b) 4 (c) 6 (d) 8 (e) 10

$2^n = 2^2 = 4$

2. The orientation of sugars into D and L-Configurations is based on resemblances to D- and L-:
(a) Fructose (b) Galactose (c) Glyceraldehyde (d) Sorbose (e) Ribitol

3. Glucose and Mannose are epimers, it means that:

(a) They are mirror images of each other.

(b) One is an aldose, the other a ketose.

(c) One is a pyranose, the other a ketose.

(d) They rotate plane-polarized light in opposite directions.

(e) They differ only in configurations of one carbon atom.

4. A non-polymer of glucose
(a) Amylose (b) Glycogen (c) Amylopectin (d) Cellulose (e) Inulin

5. The following statements about glycogen are true except:
(a) It's a polysaccharide (b) There are alpha-1, 4-glycosidic linkages
(c) There are alpha-1, 6-glycosidic linkages (d) Glycogen is an unbranched molecule
(e) All the monosaccharides in glycogen are alpha-D-glucose.

6. Which of the following is a nucleotide?
(a) Caffeine (b) Guanosine (c) Adenylic acid (d) 5-hydroxyl methyl cytosine (e) Thymine

7. The linkage in the nucleoside is called
(a) O-glycosidic linkage (b) alpha-1, 4-glycosidic linkage (c) Disulphide linkage
(d) N-glycosidic linkage (e) alpha-1, 6-glycosidic linkage

8. DNA template is utilized in which process?
(a) Aminoacylation (b) Translation (c) Glycosylation (d) Transcription (e) None of the above

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11. An enzyme that initiates the transcription of an operon is
(a) Permease (b) Galactosidase (c) RNA polymerase (d) DNA polymerase (e) Esterase

12. Post-translational modifications of polypeptide chains include the following except:
(a) Methylation (b) Phosphorylation (c) Hydroxylation
(d) Excision and Splicing (e) Attachment of prosthetic group

13. The removal of introns from RNA accompanied by joining of its exons is:
(a) Excision (b) Ligation (c) Reverse Transcription (d) Replication (e) Splicing

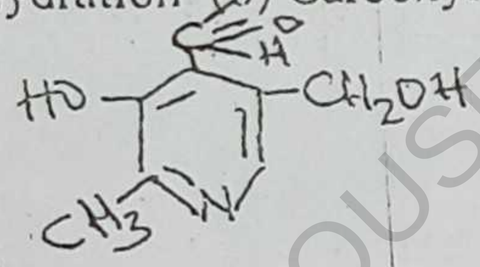
14. The term codon is a sequence of
(a) One Nucleotide (b) Two Nucleotides (c) Three Nucleotides
(d) Three polynucleotides (e) Three Nucleosides

15. The synthesis of the Leading strand proceeds in _____ direction(s) as replication fork
(a) Opposite (b) same (c) both (d) perpendicular (e) diagonal

16. Pyridoxal phosphate is derived from Vitamin
(a) B_6 (b) B_1 (c) B_{12} (d) B_2 (e) Niacin

17. A tightly bound coenzyme is called a
(a) Holoenzyme (b) Apo-enzyme (c) Prosthetic Group (d) Metalloenzyme (e) Cofactor

18. Biotin is involved in which of the following types of reaction
(a) Dehydration (b) Carboxylation (c) Deamination (d) Hydroxylation (e) Decarboxylation



19. The structure above is that of
(a) Vitamin A (b) Vitamin D (c) Vitamin B_6 (d) Vitamin B_2 (e) Vitamin B_5

20. The Co-enzyme derived from the above is involved in _____ reaction
(a) Carboxylation (b) Decarboxylation (c) Oxidoreduction
(d) Aminotransferase (e) None of the above

21. The class of the enzyme catalyzing metabolic reactions in which bonds are formed is called
(a) Lyases (b) Ligases (c) Isomerases (d) Hydrolases (e) Transferases

22. Which of the following equations represents Lineweaver Burk's equation?
(a) $\frac{s}{V} = \frac{1}{V_{max}}[S] + K_m$ (b) $V = K_m \frac{V}{[S]} + V_{max}$
(c) $\frac{1}{V} = K_m \frac{V_{max}}{[S]} + \frac{1}{V_{max}}$ (d) $\frac{1}{V} = \left(\frac{K_m}{V_{max}}\right)\frac{1}{[S]} + \frac{1}{V_{max}}$

23. Lactate Dehydrogenase isozymes differ
(a) Molecular weight (b) Km for pyruvate (c) Number of subunits
(d) A and B are correct (e) A and C are correct

24. Data that would be useful in developing an assay for a serum enzyme of clinical interest include all of the following EXCEPT:
(a) The molecular weight of the pure enzyme

25. Plasma GPT is very commonly measured as a test for GOT
(a) Hepatocellular disease (b) Myocardial Infarction (c) Renal disease
(d) Pulmonary embolism (e) Cholestatic jaundice

26. Human tissues contain _____ isoenzymes of lactate dehydrogenase.
(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

27. If GGCA is a nucleotide sequence in DNA, which one of the following would be compliment
(a) GCCT (b) CCGT (c) CCGU (d) CGCT (e) GCCA

28. Which of the following is a rare purine base
(a) Guanine (b) Hypoxanthine (c) Uric acid (d) Allopurinol (e) 6-methyladenine

29. Which of the following is NOT a property of nitrogenous bases?
(a) soluble in water (b) exist in at least two tautomeric forms depending on pH
(c) absorb UV light at 260nm (d) weakly basic (e) All of the above

30. Which of the following agents will cause DNA denaturation:
(a) High temperature (b) UV light (c) alkali (d) Acid (e) A and C

31. In transcription
(a) DNA template is fully conserved
(b) DNA template is semi-conserved
(c) DNA template is not conserved
(d) DNA template is palindromic
(e) DNA template is pruned.

32. Peptidyl transferase is required for
(a) elongation of protein synthesis (b) termination of protein synthesis
(c) activation of amino acid (d) peptide bond formation on the ribosome
(e) translocation of growing polypeptide

33. Sugars differing from one another only in the configuration around the reducing carbon are called (a) Monomers (b) Anomers (c) Epimers (d) Enantiomers (e) Chiral

34. In amylopectin, glucose molecules are linked to the main chain by α-glycosidic bonds in the linkage(s): (a) 1 ⟶ 6 (b) 1 ⟶ 2 (c) 1 ⟶ 3 (d) 1 ⟶ 4 (e) A an B

35. The carbonyl group of monosaccharides can be reduced to form
(a) Sugar acids (b) Aldonic acids (c) Aldaric (d) Sugar alcohols (e) All of the above

36. Heteropolysaccharides contain
(a) the same monosaccharide units
(b) two or more different monosaccharide units
(c) assembled polysaccharide units
(d) None of the above
(e) different Dermatan sulphate units

37. The enzymes called amylases breakdown
(a) Chitin (b) Xylans (c) Aminoglycans (d) Starch and glycogen (e) All of the above

38. In deoxyribose, oxygen is missing from D-ribose molecule at
(a) Carbon 2 (b) Carbon 3 (c) Carbon 4 (d) Carbon 1 (e) Carbon 5

39. One of the following is not a major component of cell coat of higher animals-
(a) Cerebrosides (b) Gangliosides (c) Glycoproteins
(d) Mucopolysaccharides (e) Plasmalema

42. When two sugars differs only in the configuration around only one carbon atom, they are Called (a) Stereo-isomerism (b) Enantiomers (c) Epimers (d) Mutarotation (e) Anomers

Use the options below to answer questions 43- 46

(a) 12.5 (b) 11.64 (c) 12.3 (d) 7.0 (e) 1.7

43. The pH of 10 ml 0.02 M solution of NaOH is 12·3 d

44. The pH of the mixture when 8 ml of 0.02 M HCl is added to question 43 above 11·64

45. The pH of the mixture above (in 44) at equivalence 7·0

46. The pH of 0.001 M solution of a weak base, given that the pKb is 6. 12·5

47. Ribozymes are

(a) RNA degrading RNAs (b) Enzymes catalyzing ribonucleotide synthesis
(c) Protein enzymes employed in biotechnological studies.
(d) Enzymes with stronger catalytic power
(e) None of the above

48. In competitive inhibition, the

(a) Vmax is increased (b) Km is increased (c) Both Vmax and Km are increased
(d) Km is increased as Vmax is decreased (e) None of the above.

49. Specificity of enzyme action is a remarkable feature because

(a) It ensures that there is no side reactions and bye-products
(b) It makes the reaction faster
(c) It regulates the enzyme activity
(d) It prevents the binding of inhibitors
(e) All of the above.

50. The best enzyme that could be measured for the diagnosis of a bone disease is

(a) Acid Phosphatase (b) Alkaline Phosphatase (c) Amylases
(d) Aspartate amino transferase (c) Alanine amino transferase