

1. Heavy chains of IgG antibody may be separated from light chains with

- |                 |                    |
|-----------------|--------------------|
| A. ethanolamine | B. mercaptoethanol |
| C. pepsin       | D. Papain          |

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2. In competitive inhibition

- |                                |                                |
|--------------------------------|--------------------------------|
| A. apparent $K_m$ is unchanged | B. apparent $K_m$ is decreased |
| C. $V_{max}$ is decreased      | D. $V_{max}$ is unchanged      |

3. Which of the following fatty acids will have a melting point higher than that of palmitic acid (16:0)?

- |                         |                            |
|-------------------------|----------------------------|
| A. myristic acid (14:0) | B. palmitoleic acid (16:1) |
| C. Oleic acid (18:1)    | D. Stearic acid (18:0)     |

4. Dinitrophenol inhibits cell function by disrupting

- |                              |                            |
|------------------------------|----------------------------|
| A. TCA cycle                 | B. Glycolysis              |
| C. Oxidative phosphorylation | D. Hepatic gluconeogenesis |

5. High energy compounds include all of the following except

- |                    |                         |
|--------------------|-------------------------|
| A. enol phosphates | B. esters               |
| C. thioesters      | D. phosphate anhydrides |



11. In Calvin cycle, the acceptor of  $\text{CO}_2$  is

- A. ribulose bis phosphate      B. ribulose mono phosphate
- C. phosphoglyceric acid      D. phosphoenol pyruvate

12. Enzyme required for transcription is

- A. RNA-ase      B. Endonuclease
- C. RNA polymerase      D. DNA polymerase

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13. Cistron is

- A. functional unit of DNA      B. functional unit of RNA
- C. non-functional unit of DNA      D. non-functional unit of RNA

14. In human beings, 45 chromosomes / single X / XO abnormality causes

- A. Down's syndrome      B. Klinefelter's syndrome
- C. Turner's syndrome      D. Edward's syndrome

15. Epistasis is due to

- A. interaction of two alleles of the same gene
- B. interaction of two separate genes
- C. polygenes
- D. multiple alleles



1  
16. A gene that shows its effect on more than one character is

- A. polygene                      B. pleiotropic gene  
C. multifactor gene            D. multiple gene

2  
17. During meiosis I, the number of chromosomes is

- A. doubled                      B. remains same  
C. halved                        D. Quadrupled

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18. In non-dividing cell, most DNA is located in

- A. Mitochondria                B. Chloroplasts  
C. Chromosomes               D. Chromatin

19. One turn of B-form DNA is

- A. 0.34nm                        B. 2nm  
C. 3.4nm                         D. 20nm

20. Which enzyme is required for polymerase chain reaction?

- A. Ribonuclease                B. Taq polymerase  
C. Deoxyribonuclease        D. Endonuclease

3  
21. Treatment of cancer by X-rays or gamma rays is

- A. radiotherapy
- B. chemotherapy
- C. surgery
- D. immunotherapy

22. What is true for haemoglobin but not for myoglobin?

- A. it is highly helical
- B. it binds oxygen
- C. the iron atom is in negative valence state
- D. it exhibits positive cooperativity

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23. Nucleolus of eukaryotic cell is

- A. site for packaging of r-RNAs with ribosomal proteins
- B. bounded by membrane
- C. site for synthesis of RNA polymerase
- D. visible in metaphase

24. Semiconservative DNA replication was demonstrated in classic experiments of

- A. Hershey and Chase
- B. Meselson and Stahl
- C. Watson and Crick
- D. Jacob and Monod

25. Transfer of DNA bands from agarose gel to nitrocellulose membrane is

A. Southern transfer

B. Western transfer

C. Northern transfer

D. Gene transfer

26. Human egg is larger than human sperm because it has

A. larger nucleus

B. more cytoplasm

C. more membranes

D. all of the above

27. Distribution of two or more specific molecules within a cell is studied by

A. dark field microscopy

B. bright field microscopy

C. fluorescent microscopy

D. phase contrast microscopy

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28. Cellular totipotency is demonstrated by

A. only gymnosperm cells

B. all plant cells

C. all eukaryotic cells

D. only bacterial cells

29. Post-translational modifications of polypeptide include all the following except:

A. capping by 7-methylguanine B. proteolytic cleavage

C. disulfide bond formation

D. removal of methionine



30. The function of glyoxisomes

- A. converting fats to sugars
- B. converting sugars to fats
- C. deamination and converting amino acids to fatty acids
- D. amination and changing fatty acids to amino acids

31. Albumins are

- A. acidic proteins
- B. basic proteins
- C. neutral proteins
- D. none of these

7/32. The amino acid which contains hydroxyl group is

- A. alanine
- B. isoleucine
- C. arginine
- D. Threonine

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8/33. The minimum number of carbons in a carbohydrate is

- A. 6
- B. 4
- C. 3
- D. 1

34. Blood group substances consists of

- A. lactose
- B. maltose
- C. mucose
- D. Fucose

35. In Benedict's solution, a reducing sugar causes conversion of

- A. cupric to cuprous state
- B. cuprous to cupric state
- C. ferrous to ferric state
- D. ferric to ferrous state

36. Glycogen synthetase activity is depressed by

- A. insulin
- B. cyclic AMP
- C. glucose
- D. Fructokinase

37. The range of total concentration of cholesterol in normal adults is

- A. 75-300 mg percent
- B. 250-400 mg percent
- C. 150-250 mg percent
- D. 200-350 mg percent

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38. Arachidonic acid is a precursor of

- A. vitamin A
- B. prostaglandins
- C. vitamin K
- D. sex hormones

39. Phenylketonuria is characterised by

- A. gastritis
- B. pain in the bones
- C. nephrosis
- D. mental deficiency



40. The neurotransmitter serotonin is also known as
- A. 5-hydroxy tryptophan      B. 5-hydroxy tryptamine  
C. 5-hydroxy indole acetic acid      D. Indole acetic acid

41. Which of the following is predominantly an extracellular ion? 12
- A. potassium      B. sodium °  
C. magnesium      D. Calcium °

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42. Cephalin is a
- A. phospholipid      B. terpenoid  
C. sterol      D. phosphoprotein
43. Which is an intermediate of Kreb's cycle?
- A. acetyl-CoA      B. malonyl-CoA  
C. succinyl- CoA      D. glutaryl- CoA

44. Which of the following is incorrect about nucleic acids? 13
- A. DNA is single stranded in some viruses  
B. RNA is double stranded occasionally  
° C. Length of one helix is  $45\text{\AA}$  in B-DNA  
° D. One turn of Z-DNA has 10 bases

45. Chitin is a polymer of
- A. N-acetyl muramic acid      B. N-acetyl glucosamine  
C. N-acetyl gluconic acid      D. N-acetyl neuraminic acid
46. Which of the following is true regarding starch, glycogen, cellulose and chitin?
- A. each is built from a single type of monomer ✓  
B. only chitin has a core protein ✓  
C. all have  $\alpha$  1-4 bonds ✓  
D. starch is built from a different monomer than are the others
47. Coenzyme FMN and FAD are derived from vitamin
- A. C      B. B6 ✓  
C. B1      D. B2
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48. If the genetic code consisted of four bases per codon rather than three, the maximum number of unique amino acids that could be encoded would be
- A. 16      B. 64  
C. 128      D. 256
49. Voluntary muscular coordinations are under the control of ✓
- A. cerebrum      B. cerebral hemisphere ✓  
C. cerebellum      D. medulla oblongata

50. Histamine, heparin and serotonin are produced by

- A. mast cells
- B. plasma cells
- C. mesenchyma cells
- D. Fibroblasts

51. Mitochondria do not occur in

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- A. bacteria
- B. brown algae
- C. red algae
- D. green algae

15

52. Which of the following properties of liquid increases with increase in temperature?

- A. vapour pressure
- B. density
- C. viscosity
- D. surface tension

16

53. An ideal gas cannot be liquefied because

- A. its critical temperature is above  $0^{\circ}\text{C}$
- B. forces acting between its molecules are negligible
- C. it solidifies before becoming a liquid
- D. its molecules are relatively small in size

17

54. The wavelength of light is inversely proportional to its

- A. radius
- B. velocity
- C. energy
- D. quantum number

18



55. Magnetic quantum number specifies

- A. size of orbitals  $\downarrow$       B. shape of orbitals  $\neq$  19  
C. nuclear stability  $\checkmark$       D. orientation of orbitals

56. If the value of  $H_R < H_p$ , then the reaction is

- $\checkmark$  A. exothermic      B. endothermic 20  
C. spontaneous      D. all of the above

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57. Plants are examples of

- A. open system  $\circ$       B. closed system 21  
C. isolated system       $\circ$  D. adiabatic system

58. A real gas shows ideal behaviour at

- A. low temperature and low pressure 22  
B. low temperature and high pressure  
C. high temperature and low pressure  
D. high temperature and high pressure

59. The number of gram equivalents of a solute dissolved in a solution is called

- A. molarity      B. normality  $\circ$  23  
C. molality      D. mole fraction  $\circ$

60. Activation energy of a chemical reaction can be determined by

- A. changing concentrations of reactants
- B. changing velocity of reaction  $\times$
- C. rate constants at standard temperature  $\times$
- D. rate constants at two different temperatures

61. Which of the following is true for the order of a reaction?

- A. it is never zero
- B. it is always a whole number
- C. it is a theoretical concept and depends on the rate determining step reaction
- D. it is equal to the sum of exponents of the molar concentration of the reactants

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62. For a process to be spontaneous

- A.  $\Delta G$  must be -ve
- B.  $\Delta G$  must be +ve
- C.  $\Delta H$  must be -ve
- D.  $\Delta S$  must be -ve

63. Fog is an example of colloidal system of

- A. liquid dispersed in gas
- B. gas dispersed in solid
- C. solid dispersed in gas
- D. solid dispersed in liquid

64. Oswald dilution law is applicable
- A. only to strong electrolytes
  - B. only to weak electrolytes
  - C. to both strong and weak electrolytes
  - D. none of these

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65. The addition of a polar solvent to a solid electrolyte results in
- A. polarization
  - B. association
  - C. ionization
  - D. none of the above

29

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66. Among the following the one that will produce maximum elevation in boiling point is
- A. 0.1M glucose
  - B. 0.2M glucose
  - C. 0.1M magnesium sulphate
  - D. 0.1M barium chloride

67. Precipitation occurs when the product of concentration of ions
- A. equals their solubility product
  - B. exceeds their solubility product
  - C. is less than their solubility product
  - D. None of the above

30



68. The third law of thermodynamics was first formulated by

A. Nernst <sup>0</sup>

B. Newton <sup>2</sup>

31

C. Faraday <sup>0</sup>

D. Joule <sup>2</sup>

69. Maleic acid and fumaric acid are

A. optical isomers

B. chain isomers

C. functional isomers

D. geometrical isomers

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70. The function of  $\text{AlCl}_3$  in Freidel-Craft's reaction is to

A. absorb water

B. absorb  $\text{HCl}$

32

C. produce electrophile

D. produce  $\text{HCl}$

71. Which of the following does not undergo aldol condensation?

A. formaldehyde

B. acetaldehyde

33

C. propionaldehyde

D. Acetone

72. Using Baeyer's reagent, what type of bonds are detected in organic compounds?

A. single bond

B. double bond

34

C. triple bond

D. both A and C

73. On fermentation, sugar gives ethanol and

- A. water  
B. oxygen  
C. carbon dioxide  
D. sulphur dioxide

95 ✓

74. Commercial detergents mainly contain sodium salt of which acid?

- A. alkylbenzene sulphonic      B. phthalic  
C. benzoic      D. Salicylic

36

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75. When ammonia is treated with carbon dioxide, then which one of the following is formed?

- A. urea                      B. aniline  
C. phenol                  D. carboxylic acid

35

$$NH_3 + CO_2$$

76. Which among the following is acidic in nature?

- A. alkanes                      B. alkenes  
C. alkynes                        D. Arenas

38

77. A reaction in which one enantiomer is preferentially formed is known as

- A. asymmetric synthesis      B. resolution  
C. racemization      D. optical rotation

39

78. Diethyl ether is used as an

A. antibiotic

B. antiseptic

C. anaesthetic

D. Analgesic

40

79. Carbylamine test is done to test the presence of

A. Primary amines

B. Secondary amines

C. Tertiary amines

D. None of the above

41

80. Aldehyde can be differentiated from ketone by using

A. concentrated sulphuric acid

B. resorcinol

C. anhydrous zinc chloride

D. Schiff's reagent

42

81. Which of the following is the best indicator for a strong acid and strong base titration?

A. methyl orange

B. phenolphthalein

C. litmus solution

D. both methyl orange and phenolphthalein

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44

82. Alkenes readily undergo

A. substitution reactions

B. addition reactions

C. elimination reactions

D. rearrangement reactions

44



83.  $\text{RCOCl}$  reacts with  $\text{RMgBr}$  to yield

- A. aldehyde                      B. primary alcohol  
C. secondary alcohol              D. tertiary alcohol

$\text{CHO} + \text{RMgBr} \rightarrow \text{RCHO} + \text{R}^-$

45

84. The functional group present in cresol is

- A. alcoholic  $-\text{OH}$                       B. phenolic  $-\text{OH}$   
C. aldehydic  $-\text{CHO}$                       D. carboxylic  $-\text{COOH}$

46

85. A primary amine is formed from an amide by treatment with bromine and alkali.

The primary amine has

- A. one carbon atom less than amide  
B. one carbon atom more than amide  
C. one hydrogen atom less than amide  
D. one hydrogen atom more than amide

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86. The following is required for the activation of succinate dehydrogenase

- A. Calcium                      B. Magnesium  
C. Sodium                      D. Potassium

48

87.  $\alpha$ -helix is disrupted by certain amino acids like

- A. proline                      B. arginine  
C. histidine                      D. lysine

88. The initial product of carbon dioxide fixation in C3 plants is
- A. glyceraldehydes 3-phosphate    B. dihydroxyacetone phosphate  
C. 3-phosphoglycerate    D. Phosphoenolpyruvate

89. Coenzyme form of thiamine is
- A. thiamine triphosphate    B. thiamine phosphate  
C. thiamine pyrophosphate    D. carboxy thiamine

90. Membrane fluidity increases as
- A. percentage of unsaturated fatty acid increases  
B. percentage of unsaturated fatty acid decreases  
C. percentage of saturated fatty acid increases  
D. length of fatty acid side chain increases

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91. Fatty acids enter cellular respiration as
- A. one-carbon fragment    B. two-carbon fragment  
C. three-carbon fragment    D. long chains of 20 carbon atoms

92. Respiration and photosynthesis both require

- A. Glucose    B. cytochromes  
C. Chlorophyll    D. Sunlight

93. What is needed for the transport of palmitic acid from cytosol into mitochondria?

- A. Coenzyme-Q
- B. Acyl carrier protein
- C. Ubiquinone
- D. Carnitine

94. The energy change at constant pressure and temperature is called

- A. entropy change
- B. enthalpy change
- C. heat change
- D. internal energy change

50 p & T

95. Uncoupling of oxidative phosphorylation implies that

- A. The ATPase activity of mitochondria is abolished
- B. The mitochondria ceases to oxidise succinate
- C. ATP formation ceases but respiration continues
- D. ATP formation continues but respiration ceases

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96. Which of the following is not correct about the collagen triple helix

- A. It is an  $\alpha$ -helix
- B. It is rich in glycine
- C. It is rich in proline
- D. It is rich in hydroxyproline

97. Which of the following is not correct about the collagen triple helix

- A. It is rich in glycine
- B. It is rich in proline
- C. It is rich in hydroxyproline
- D. It is an  $\alpha$ -helix



98. Cholesterol is essential for normal membrane function because it

- A. Cannot be made by higher animals like mammals
- B. Spans the thickness of the bilayer
- C. Keeps membrane fluid
- D. Catalyses lipid flip-flop in the bilayer

81

Ques.

1-

99. An uncompetitive inhibitor of the enzyme binds to

- A. Active site of the enzyme
- B. Site other than active site
- C. Enzyme substrate complex
- D. Any other site and modifies part of the enzyme.

82

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100. An average protein will not be denatured by

- A. Urea
- B. iodoacetate
- C. pH 10
- D. heating to 90°C

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