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SSC-I NATIONAL BOOK FOUNDATION FBISE

BIOLOGY TEST - CHAPTER 6: MOLECULAR BIOLOGY

Name:		Roll No.		Section:

Total Time: 2:30 Hour
Time Allowed: 150 Minutes

Total Marks: 150

PAPER OBJECTIVE
SECTION-A (MARKS 150)

NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

Questions	A	B	C	D	A B C D
1. Biochemistry is the study of chemical compounds and processes within:	Rocks and minerals	The atmosphere	Industrial machines	Living organisms	○○○●
2. The branch of biochemistry concerned with biomolecule interactions inside cells is:	Molecular biology	Ecology	Taxonomy	Embryology	●○○○
3. Biochemical knowledge is essential to study the ___ of organisms.	Geography	Fossils	Physiology	Climate	○○●○
4. Which life process is explained in molecular terms?	Photosynthesis	Earthquake	Erosion	Rainfall	●○○○
5. Living bodies are composed of protoplasm made of elements called:	Bioelements	Isotopes	Alloys	Halogens	●○○○
6. How many naturally occurring elements are found on Earth?	16	60	92	118	○○●○
7. How many of the natural elements are bioelements?	6	16	10	92	○●○○
8. How many major bioelements are there?	10	16	4	6	○○○●
9. How many minor bioelements are there?	6	16	10	92	○○●○
10. Major bioelements make up what percentage of protoplasm?	99%	1%	70%	50%	●○○○
11. Minor bioelements constitute about what percentage of protoplasm?	1%	10%	99%	16%	●○○○
12. Which of the following is a major bioelement?	Phosphorus	Sodium	Magnesium	Iodine	●○○○
13. Which of the following is a minor bioelement?	Nitrogen	Calcium	Hydrogen	Zinc	○○○●
14. Which bioelement forms the largest proportion of the human body?	Carbon	Oxygen	Hydrogen	Calcium	○●○○

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Questions	A	B	C	D	A B C D
15. Which pair are both minor bioelements?	Iodine and copper	Carbon and iron	Oxygen and zinc	Calcium and sodium	●○○○
16. Complex organic biomolecules are polymers of smaller units called:	Isomers	Monomers	Isotopes	Ions	○●○○
17. Which biomolecule is found in cell wall, membrane and smooth ER according to the table?	Nucleic acids	Carbohydrates	Vitamins	Enzymes only	○●○○
18. Which biomolecule is a component of chromosomes and stores genetic information?	Starch	DNA	Wax	Glycogen	○●○○
19. Which biomolecules act as tools for translation in the cytoplasm?	RNAs	Lipids	Steroids	Disaccharides	●○○○
20. Proteins make up about what percent of the dry weight of a cell?	20%	10%	90%	55%	○○○●
21. Proteins are synthesized in cells by:	Lysosomes	Vacuoles	Ribosomes	Centrioles	○○●○
22. Proteins are chemically polymers of:	Amino acids	Fatty acids	Nucleotides	Monosaccharides	●○○○
23. Which element is usually present in proteins but NOT in carbohydrates?	Carbon	Hydrogen	Oxygen	Nitrogen	○○○●
24. The building blocks of proteins are:	Glucose units	Nucleotides	Fatty acids	Amino acids	○○○●
25. About how many types of amino acids are commonly found in proteins?	5-10	50-60	20-25	100	○○●○
26. In an amino acid, the central carbon atom is called:	Beta carbon	Gamma carbon	Alpha carbon	Delta carbon	○○●○
27. Which group is NOT attached to the alpha carbon of an amino acid?	Amino group	Carboxyl group	Phosphate group	Hydrogen atom	○○●○
28. What differs among different amino acids?	The amino group	The carboxyl group	The R group	The alpha carbon	○○●○
29. The R group of an amino acid determines its:	Chemical properties	Number of carbons	Peptide bond	Colour	●○○○
30. The bond joining two amino acids is called:	Peptide bond	Glycosidic bond	Hydrogen bond	Ester bond	●○○○
31. A linear polypeptide with specific amino acid sequence is which structure?	Primary structure	Secondary structure	Tertiary structure	Quaternary structure	●○○○

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Questions	A	B	C	D	A B C D
32. Which is NOT a level of protein structure given in the book?	Primary	Tertiary	Quaternary	Quinary	○○○●
33. Protein shape (fibrous or globular) depends on its:	Sugar content	Lipid content	Water content	Structural level	○○○●
34. Energy provided by one gram of protein is:	9.1 kcal	2 kcal	1 kcal	4 kcal	○○○●
35. Which protein acts as antigen on cell membrane surface?	Keratin	Actin	Membrane proteins	Histones	○○●○
36. Most enzymes are:	Lipids	Proteins	Carbohydrates	Steroids	○●○○
37. Protein hormones act as:	Chemical messengers	Cell wall material	Energy stores	Insulators	●○○○
38. Antibodies are proteins produced by:	Red blood cells	White blood cells	Platelets	Muscle cells	○●○○
39. Haemoglobin is a protein involved in:	Transport of O_2 and CO_2	Muscle contraction	Hair formation	Blood clotting	●○○○
40. Actin and myosin are involved in:	Blood clotting	Immunity	Hormone action	Muscle contraction	○○○●
41. Collagen provides support and strength to skin, bones and:	Chlorophyll	Feathers	Plasma	Cartilage	○○○●
42. Which protein makes hair, nails, feathers and horns hard?	Collagen	Actin	Keratin	Haemoglobin	○○●○
43. Which protein attaches to DNA to form a chromosome?	Keratin	Myosin	Histone	Collagen	○○●○
44. Which is a rich plant source of proteins?	Sugarcane	Lentils	Coconut oil	Cotton	○●○○
45. Which is an animal source of protein?	Egg	Sugar beet	Sunflower oil	Cotton	●○○○
46. The biuret test is used to detect:	Proteins	Lipids	Starch	Glucose	●○○○
47. A positive biuret test gives which colour?	Blue	Brick red	Pink or violet	Cloudy white	○○●○
48. In the biuret test, which reagents are added to the sample?	HCl and iodine	NaOH and copper sulphate	Ethanol and water	Benedict's and heat	○●○○

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Questions	A	B	C	D	A B C D
49. Lipids are described as heterogeneous compounds that are:	Hydrophilic	Highly water soluble	Hydrophobic	Always solid	○○●○
50. Lipids are composed of:	C, N and P only	C, H and O	H and N only	Fe and S only	○●○○
51. Why do lipids have double the energy of carbohydrates per gram?	Higher C-H ratio	More oxygen	More water	More nitrogen	●○○○
52. Energy released by one gram of lipid is about:	4 kcal	2 kcal	20 kcal	9.1 kcal	○○○●
53. Triglycerides are made up of fatty acids and:	Glucose	Amino acid	Glycerol	Ribose	○○●○
54. A tri-acyl glyceride contains:	Three glycerols and one fatty acid	Two glycerols, two fatty acids	One glycerol and three fatty acids	One glycerol and one fatty acid	○○●○
55. Saturated fatty acids have:	Double bonds only	Triple bonds only	All C-C single bonds	No carbon atoms	○○●○
56. Saturated fats are generally ___ at room temperature.	Solid	Liquid	Gaseous	Crystalline	●○○○
57. Unsaturated fatty acids contain:	Only single bonds	No hydrogen	No carbon	Double or triple C-C bonds	○○○●
58. Which is an example of an unsaturated oil?	Butter	Olive oil	Cheese	Ghee	○●○○
59. Lipids having phosphate group along with glycerol and fatty acids are:	Steroids	Triglycerides	Waxes only	Phospholipids	○○○●
60. Steroids have a structure of:	One ring	Straight chain	Two chains	Three rings	○○○●
61. Vitamin D is derived from:	Glucose	Amino acids	Starch	Cholesterol	○○○●
62. Components of the plasma membrane among lipids include:	Waxes and starch	Glycogen	Haemoglobin	Phospholipids and cholesterol	○○○●
63. Which hormone is a lipid-based steroid hormone?	Insulin	Haemoglobin	Keratin	Testosterone	○○○●
64. Insects use waxes for:	Constructing hives	Making hormones	Transporting oxygen	Storing glycogen	●○○○
65. The waxy cuticle of leaves mainly:	Absorbs water	Makes starch	Prevents water loss	Stores protein	○○●○

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Questions	A	B	C	D	A B C D
66. Which vitamin is lipid in nature?	Vitamin C	Vitamin A	Vitamin B	Vitamin B12 only	○●○○
67. Wax for commercial use is obtained from:	Cereals	Sugar cane	Milk	Insect combs	○○○●
68. Fats and oils are tested in the emulsion test using:	Iodine	Biuret	Benedict's solution	Ethanol	○○○●
69. A positive emulsion test gives a:	Violet colour	Blue colour	Milky white emulsion	Clear solution	○○●○
70. Carbohydrates are also called:	Peptides	Steroids	Saccharides	Nucleotides	○○●○
71. The word saccharide comes from the Greek word meaning:	Starch	Water	Sugar	Carbon	○○●○
72. The most common carbohydrate is:	Cellulose only	Glucose	Lactose	Maltose	○●○○
73. Glucose is made in green plants by:	Respiration	Photosynthesis	Digestion	Fermentation	○●○○
74. Photosynthesis uses CO_2 from air and ___ from soil.	O_2	H_2O	N_2	NaCl	○●○○
75. Energy released by one gram of glucose is about:	9.1 kcal	4 kcal	1 kcal	12 kcal	○●○○
76. Plants use glucose to form complex molecules like:	Glycogen and chitin	Lipids only	Starch and cellulose	DNA and RNA	○○●○
77. The C:H:O ratio in carbohydrates is:	1:1:2	1:2:1	2:1:1	1:2:2	○●○○
78. The literal meaning of carbohydrate is:	Hydrates of carbon	Sugar of carbon	Acid of carbon	Salt of carbon	●○○○
79. The general formula of carbohydrates is:	C_xH_y	$C_x(H_2O)_y$	C_xN_y	C_xP_y	○●○○
80. The molecular formula of glucose is:	$C_6H_{12}O_6$	$C_5H_{10}O_5$	$C_{12}H_{22}O_{11}$	$C_3H_6O_3$	●○○○
81. Cell wall of plants is made of:	Chitin	Cellulose	Peptidoglycan	Glycogen	○●○○
82. Fungal cell wall contains:	Cellulose	Peptidoglycan	Starch	Chitin	○○○●

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Questions	A	B	C	D	A B C D
83. Bacterial cell wall contains:	Cellulose	Chitin	Peptidoglycan	Glycogen	○○●○
84. Cellulose in human diet acts as:	Main energy source	Roughage	Hormone	Enzyme	○●○○
85. Common table sugar is:	Lactose	Maltose	Sucrose	Fructose	○○●○
86. Excess glucose in plants is stored as:	Glycogen	Cellulose	Starch	Chitin	○○●○
87. Excess glucose in animals is stored as:	Glycogen	Starch	Cellulose	Chitin	●○○○
88. Glycogen is stored in animals in muscles and:	Bones	Skin	Liver	Hair	○○●○
89. Chitin forms the exoskeleton of:	Arthropods	Mammals	Birds	Fish	●○○○
90. Maltose is mainly found in:	Milk	Cotton	Meat	Cereals	○○○●
91. Lactose is known as:	Cane sugar	Malt sugar	Fruit sugar	Milk sugar	○○○●
92. Cotton is pure:	Starch	Glycogen	Chitin	Cellulose	○○○●
93. Carbohydrates are classified on the basis of number of:	Carbon rings	Saccharide units	Nitrogen atoms	Fatty acids	○●○○
94. Monosaccharides are:	Tasteless and insoluble	Complex polymers	Sweet, soluble crystalline solids	Always liquids	○○●○
95. A monosaccharide having 5 carbon atoms is called:	Triose	Hexose	Heptose	Pentose	○○○●
96. The formula of ribose is:	$C_6H_{12}O_6$	$C_5H_{10}O_5$	$C_5H_{10}O_4$	$C_{12}H_{22}O_{11}$	○●○○
97. Ribose is found in:	Cellulose	Milk	Starch	Nucleotides of nucleic acids	○○○●
98. Monosaccharides in water mostly exist as:	Open chain only	Polymers	Crystals	Ring structure	○○○●
99. Which of the following is a disaccharide?	Sucrose	Glucose	Ribose	Galactose	●○○○

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Questions	A	B	C	D	A B C D
100. The molecular formula of disaccharides is:	$C_6H_{12}O_6$	$C_5H_{10}O_5$	$C_{12}H_{24}O_{12}$	$C_{12}H_{22}O_{11}$	○○○●
101. Sucrose is formed by condensation of glucose and:	Fructose	Galactose	Another glucose	Ribose	●○○○
102. Maltose is formed from:	Glucose and fructose	Two glucose molecules	Glucose and galactose	Two fructose molecules	○●○○
103. Lactose is formed from glucose and:	Fructose	Ribose	Galactose	Maltose	○○●○
104. Formation of a disaccharide releases:	CO_2	A water molecule	Oxygen	Nitrogen	○●○○
105. Polysaccharides are polymers of more than how many monosaccharides?	Two	Ten	Three	Five	○●○○
106. Which is a polysaccharide?	Maltose	Fructose	Glycogen	Sucrose	○○●○
107. Polysaccharides are usually:	Very sweet	Crystalline	Tasteless	Highly soluble	○○●○
108. Nucleic acids store and transfer:	Energy	Oxygen	Hereditary information	Water	○○●○
109. The two types of nucleic acids are:	DNA and ATP	RNA and protein	DNA and lipids	DNA and RNA	○○○●
110. Nucleic acids are made up of units called:	Amino acids	Fatty acids	Monosaccharides	Nucleotides	○○○●
111. Which is NOT a component of a nucleotide?	Phosphate group	Pentose sugar	Fatty acid	Nitrogenous base	○○●○
112. The pentose sugar in DNA is:	Ribose	Glucose	Fructose	Deoxyribose	○○○●
113. Which nitrogenous base is a purine?	Cytosine	Thymine	Uracil	Adenine	○○○●
114. Which nitrogenous base is a pyrimidine?	Adenine	Guanine	Cytosine	Phosphate	○○●○
115. Which base is found in RNA but not in DNA?	Thymine	Guanine	Adenine	Uracil	○○○●
116. The nitrogenous base is attached to which carbon of pentose sugar?	3rd carbon	1st carbon	5th carbon	4th carbon	○●○○

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Questions	A	B	C	D	A B C D
117. The phosphate group is attached to which carbon of pentose sugar?	5th carbon	1st carbon	2nd carbon	4th carbon	●○○○
118. Who isolated nuclein from the nuclei of human pus cells?	Watson	Friedrich Miescher	Crick	Mendel	○●○○
119. The structure of DNA was explained by:	Miescher	Watson and Crick	Mendel	Darwin	○●○○
120. The two strands of DNA are:	Antiparallel	Parallel	Identical	Unconnected	●○○○
121. The backbone of the DNA ladder consists of:	Sugar and phosphate	Bases	Amino acids	Fatty acids	●○○○
122. In DNA, adenine always pairs with:	Cytosine	Thymine	Guanine	Uracil	○●○○
123. In DNA, cytosine always pairs with:	Guanine	Adenine	Thymine	Uracil	●○○○
124. How many hydrogen bonds join cytosine and guanine?	Three	Two	One	Four	●○○○
125. How many hydrogen bonds join adenine and thymine?	Three	One	Four	Two	○○○●
126. The diameter of the DNA double helix is about:	2 nm	3.4 nm	1.1 nm	10 nm	●○○○
127. DNA strands are held together by:	Peptide bonds	Ionic bonds	Hydrogen bonds	Glycosidic bonds	○○●○
128. If a DNA has 20% adenine, it will have what % thymine?	20%	30%	40%	80%	●○○○
129. Transmission of characters from parents to offspring is:	Mutation	Respiration	Digestion	Heredity	○○○●
130. In non-dividing cells, DNA exists as thin fibres called:	Chromosomes	Chromatin	Ribosomes	Nucleoli	○●○○
131. Chromatin is composed of DNA and:	Histones	Keratin	Collagen	Myosin	●○○○
132. DNA coiled around histones forms bead-like:	Ribosomes	Lysosomes	Nucleosomes	Vacuoles	○○●○
133. During cell division chromatin condenses to form:	Ribosomes	Nucleoli	Mitochondria	Chromosomes	○○○●

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Questions	A	B	C	D	A B C D
134. A small piece of DNA that codes for a protein is a:	Nucleotide	Gene	Histone	Ribosome	○●○○
135. The total number of genes in a set of chromosomes is the:	Genome	Genotype	Chromatin	Nucleosome	●○○○
136. The pentose sugar in RNA is:	Deoxyribose	Ribose	Glucose	Fructose	○●○○
137. RNA is generally:	Double stranded	Triple stranded	Single stranded	Circular only	○○●○
138. Nitrogen bases of RNA are overhung because they are:	Paired with DNA	Not paired with another strand	Absent	Joined to histones	○●○○
139. RNA is made from DNA by the process of:	Translation	Transcription	Replication	Fermentation	○●○○
140. The main function of RNA is to synthesize:	Lipids	Proteins	Starch	Vitamins	○●○○
141. The three types of RNA are mRNA, tRNA and:	dRNA	rRNA	sRNA	nRNA	○●○○
142. Which RNA carries DNA's message from nucleus to cytoplasm?	tRNA	rRNA	DNA	mRNA	○○○●
143. Which RNA brings amino acids to the ribosome?	tRNA	mRNA	rRNA	DNA	●○○○
144. Which RNA is a component of ribosomes?	mRNA	rRNA	tRNA	DNA	○●○○
145. The flow DNA → RNA → protein is called the:	Central dogma	Cell theory	Gene pool	Natural selection	●○○○
146. Transcription is the formation of ___ from DNA.	Protein	mRNA	Lipid	Glucose	○●○○
147. Translation takes place on:	Nucleus	Mitochondria	Ribosomes	Lysosomes	○○●○
148. In translation, mRNA codes are translated into:	Polypeptide chain	DNA	Starch	Lipid	●○○○
149. Transcription and translation together are called:	Gene expression	Replication	Mutation	Fermentation	●○○○
150. During transcription, how many DNA strands of a gene are copied?	Two	Three	One	None	○○●○

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