

PARTS TWO & THREE (60x1.25= 75 Marks, 1 hour)

" Model Answer "

I. Match each of the carbohydrates (A-H) with the corresponding properties (1-8) and mark in the provided Answer Sheet on the last page:

A. Glucopyranose	B. Glycogen	C. Starch	D. Sucrose
E. Glycosaminoglycans	F. Cellulose	G. Lactose	H. Mannose

1. Sugar of milk — G
2. Epimer of glucose — H
3. Polysaccharide not digested by humans — F
4. Disaccharide of glucose and fructose — D
5. Polysaccharide of β -glucose — F
6. Adhesive components of the extracellular matrix — E
7. Composed of amylose and amylopectin — C
8. Polysaccharide of α -glucose present in animals — B

II. Match each of the amino acids (A-G) with the corresponding properties (9-16) and mark in the provided Answer Sheet on the last page:

A. Serine	B. Isoleucine	C. Histidine	D. Glutamate
E. Glycine	F. Cysteine	G. Proline	

9. Acidic amino acid — D
10. The smallest amino acid — E
11. Cyclic amino acid — G
12. Semi-essential amino acid — C
13. Sulphur-containing amino acid — F
14. Hydrophobic amino acid — B
15. OH-containing amino acid — A
16. Essential amino acid — B

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III. Match each of the terms (A-H) with the corresponding sentences (17-26) and mark in the provided Answer Sheet on the last page:

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| A. Membrane fluidity | B. Membrane carbohydrates |
| C. Membrane carriers | D. Diffusion of water |
| E. Membrane channels | F. Potocytosis |
| G. Membrane proteins | H. Na^+, K^+ -ATPase |

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| 17. Restrict uptake of hydrophobic compounds | — B |
| 18. Integral or peripheral | — G |
| 19. Restricted by presence of cholesterol | — A |
| 20. Transport of the vitamin folate | — F |
| 21. Establish an electrochemical gradient across neuron cell membranes | — H |
| 22. Owing to unsaturated phospholipids | — A |
| 23. Receptors or enzymes | — G |
| 24. Undergo conformational change | — C |
| 25. Osmosis | — D |
| 26. Pores of the membrane | — E |

IV. Match each of the scientific terms (A-H) with the corresponding sentences (27-35) and mark in the provided Answer Sheet on the last page:

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| A. Genes | B. Transcription |
| C. Genome | D. Ribosomes |
| E. Replication | F. Guanosine |
| G. Chromatin | H. Thymidine |

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| 27. Found in DNA but not RNA | — H |
| 28. The site of protein synthesis | — D |
| 29. An association of DNA with proteins | — G |
| 30. Information bearing portions of DNA | — A |
| 31. Can form 3 hydrogen bonds with cytosine | — F |
| 32. A nucleotide that always contains deoxyribose | — H |
| 33. Carried out by RNA polymerase | — B |
| 34. The entire complement of DNA | — C |
| 35. Carried out by DNA polymerase | — E |

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v. Select the **ONE** correct answer and mark in the provided Answer Sheet on the last page:

- 36) The main constituents of the earth's atmosphere are the following, EXCEPT:
(A) Nitrogen (B) Carbon dioxide (C) Oxygen
- 37) How many ATP molecules are produced for each glucose molecule used in aerobic respiration?
(A) 2-8 ATP (B) 12-15 ATP (C) 24-28 ATP (D) 36-38ATP
- 38) Stages of Cellular Respiration are the following, EXCEPT:
(A) Glycolysis (B) Citric acid cycle
(C) Fermentaion (D) Electron transport system
- 39) Natural selection process:
(A) Eliminates inferior species gradually over time
(B) Beneficial mutations result in the same organism
(C) Beneficial mutations are not aid survival
(D) Genes are not changed in response to the environment
- 40) Without water, life is not possible because:
(A) Not all living things originate from water
(B) 50% of any cell made up of water
(C) 80% of any cell made up of water & 10% is made up of carbon
(D) Clay & water are the basic components of life
- 41) What is the correct order of Hierarchical Clasification Systems?
(A) Kingdom-Phylum-Order-Genus
(B) Kingdom-Class-Family-Species
(C) Phylum-Class-Order-Family
(D) Kingdom-Class-Species-Order
- 42) Regarding to Stanley Miller's Origin of Life experiment:
(A) Not clarify chemical reactions occurred on the primitive earth
(B) Not all building blocks of life have been produced
(C) The conditions are not similar to those of the early earth
(D) The flask contained CH_4 , NH_3 , H_2 & circulating water vapor

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- 43) The main limiting factors of photosynthesis are:
(A) Sun light & water
(B) CO₂ & nitrogen
(C) CO₂, sunlight & water
(D) CO₂, sunlight & temperature
- 44) Light photosynthesis reactions convert sunlight into chemical energy in the form of: (A) ATP & FADH₂ (B) NADH & FADH₂ (C) NADH & NADPH (D) ATP & NADPH
- 45) Animals are characterized by the following EXCEPT:
(A) Development & growth (B) Response to stimuli
(C) Adaptation (D) Synthesis of its own food
- 46) Enzymes can change the:
(A) Activation energy (B) pH optimum of a reaction
(C) Enzyme specificity (D) None of the above
- 47) What is the correct general equation of the aerobic respiration?
(A) C₆H₁₂O₁₂ + 6 O₂ + 36 ADP + 36 P → 6 CO₂ + 12 H₂O + 36 ATP
(B) C₆H₁₂O₆ + 6 O₂ + 36 ADP + 36 P → 6 CO₂ + 6 H₂O + 36 ATP
(C) C₁₂H₁₂O₆ + 12 O₂ + 36 ADP + 36 P → 12 CO₂ + 12 H₂O + 36 ATP
- 48) A community is:
(A) A set whose members are part of the same species
(B) A set of populations of different species living in different place in a given time.
(C) A set of populations of the same species living in a given place in a given time.
(D) A set of populations of different species living in a given place in a given time
- 49) Biotic factors are:
(A) Living plants that are part of a given ecosystem
(B) The nonliving elements
(C) Composed of living & non-living factors
(D) All of the above
(E) None of the above
- 50) Order – Primata is characterized by the following:
(A) Have 5 fingers on each hand
(B) One of those fingers should be a thumb
(C) Have a collarbone (between neck & shoulders)
(D) All of the above

VI. Match each of the scientific terms in column (A) with the corresponding meaning in column (B) and mark in the provided Answer Sheet on the last page:

Column A		Column B	
(51)	Thylakoid (I)	A	Study the relationships between organisms & their environment; the interactions of individuals with groups & with their surroundings.
(52)	Phenotype (E)	B	Study human life, such as our existence & interaction with other life forms.
(53)	Ecosystems (J)	C	Hierarchical classification of natural organisms indicative of their structures & differences.
(54)	Biome (G)	D	The organisms living in a certain group or area, such as a city, a forest or a test tube
(55)	Stroma (H)	E	The observable physical or biochemical characteristics of the organism.
(56)	Ecology (A)	F	Change over time of the genetic composition of populations.
(57)	Taxonomy (C)	G	A group of ecosystems with similar biological features.
(58)	Evolution (F)	H	Dense fluid within the chloroplast. Site of conversion of carbon dioxide to sugar.
(59)	Physical anthropology (B)	I	Flattened sac-like membrane structures, where light energy is converted to chemical energy.
(60)	Populations (D)	J	Composed of organisms interacting with each other and with their environment such that energy is exchanged & the cycling of elements, emerge.

GOOD LUCK

