Al-Razi Guess Paper consist of 100 MCQs, 100 Short Questions and Long Questions to get 100% Success in Examination

OBJECTIVE TYPE
Multiple Choice Questions

1. Ecology focuses on the relationship between organisms and their:
A Offspring
B Internal organs
C Genetic traits
d Environment

2. The study of the processes of heredity and variation in living organisms is known as:
A Ecology b Genetics
C Anatomy D Embryology

3. Computational Biology uses models and algorithms to:
A Analyze proteins
B Diagnose diseases
C Study climate change
d understand biological systems

4. Which branch of Biology involves the study of the classification of organisms?
a Taxonomy
B Palaeontology
C Physiology
D Biogeography

5. Fisheries and wildlife studies are related to:
A Animal Husbandry
B Agriculture
c Zoology and Aquaculture
D Forestry

6. Which step comes between making hypothesis and doing experiments?
a Making deductions
B Making observations
C Summarizing results
D Analysing data

7. According to the Quran, living things consist of:
A 50-60% water
B 70-75% water
c 60-90% water
D 95-100% water

8. Insulin made through bacteria is an example of the technique of:
A Parasitology
b Biotechnology
C Biochemistry
D Histology

9. The International Space Station (ISS) is an example of collaboration in:
a Space exploration
B Climate change research
C Human Genome mapping
D AI and robotics

10. When a theory is repeatedly validated, it becomes:
A A hypothesis
B A fact
C A new theory
d A law or principle

11. Regions with low biodiversity include:
A Tropical forests
B Coastal regions
C Deserts
d Polar regions

12. Which of the following taxonomic ranks represents the broadest rank?
A Species B Genus
C Kingdom d Domain

13. Classification helps in understanding:
A Ecosystem behavior
B Growth patterns
C Photosynthesis
d Organism diversity

14. Which of these organisms belongs to the domain Eukarya?
A Escherichia coli
b Yeast C Coronavirus
D None of these

15. The rank that comes after family in the Linnaean system:
A Order b Genus
C Class D Phylum

16. Which kingdom includes organisms that are primarily unicellular, eukaryotic, and often heterotrophic?
A Archaea b Protista
C Fungi D Plantae

17. The kingdom added to the classification system by Ernst Hackel in 1866 was:
A Plantae b Protista
C Animalia D Monera

18. Which of the following is the correct way for writing the scientific name of humans?
a *Homo sapiens*
B Homo sapiens
C *Homo Sapiens*
D homo sapiens

19. Cyanobacteria are found in:
A Eukarya b Bacteria
C Archaea D Protista

20. Most cells cannot be seen with:
a The naked eye
B A microscope
C Binoculars
D A magnifying glass

21. The process of cellular respiration occurs in:
A Nucleus
b Mitochondria
C Nucleus Ribosomes
D Golgi apparatus

22. The nucleus was observed by Robert Brown in:
A 1600 B 1665
c 1831 D 1800

23. What is the primary function of ribosomes?
A Energy production
b Protein synthesis
C Lipid synthesis
D DNA synthesis

24. Cholesterol is absent in the membranes of:
a Most bacteria
B Eukaryotic cells
C Plant cells
D Animal cells

25. Which of the following cell structures is involved in maintaining cell shape?
a Cytoskeleton
B Centrioles C Nucleus
D Lysosome

26. Chloroplasts are green because they contain:
A Carotenoids B Thylakoids
C Proteins d Chlorophyll

27. Which of the following cellular structures is found in animal cells and helps in cell division?
A Cell membrane
b Centriole
C Plasmodesma
D Vacuole

28. Which organelle can double its number by itself?
A Ribosomes B Lysosomes
c Mitochondria
D Golgi apparatus

29. The process responsible for repair and growth in the body is:
A Meiosis
B DNA synthesis
c Mitosis
D Protein synthesis

30. In which phase of cell cycle, maximum growth occurs in cell?
A M phase B S phase
c G1 phase D G2 phase

31. Liver cells temporarily enter which phase?
A G1 phase B S phase
c G0 phase D M phase

32. At which stage of mitosis chromosomes line up in the centre?
A Prophase b Metaphase
C Anaphase D Telophase

33. Spindle fibers attach to chromosomes at:
A Centrosome
b Kinetochores
C Telomeres D Chromatids

34. Centrosomes make mitotic spindle in;
a Animal cells
B Plant cells
C Prokaryotic cells
D All of these

35. Hydra reproduces by:
A Meiosis b Mitosis
C Fertilization
D Spore formation

36. Which event is unique to meiosis but not mitosis?
A DNA replication
B Chromosome alignment
c Crossing over
D Nuclear division

37. Meiosis in animals results in the formation of:
A Zygotes b Gametes
C Spores
D Somatic cells

38. Xylem and phloem are part of the plant tissue:
A Epidermal tissue
b Vascular tissue
C Muscle tissue
D Epithelial tissue

39. The epithelial tissue in the stomach wall is responsible for producing:
A Mocus B Pepsinogen
C Hydrochloric acid
d All of these

40. An emergent property from organ system to organisms is:
A Muscle contraction
B Digestion
C Organ formation
d Consciousness

41. In a leaf, which tissue is primarily responsible for photosynthesis?
A Xylem b Mesophyll
C Epidermis D Phloem

42. The layer of the leaf covered by a waxy cuticle to reduce water loss is:
A Lower epidermis
B Phloem C Mesophyll
d Upper epidermis

43. The system that transports oxygen, nutrients, and waste is:
A Digestive B Skeletal
c Circulatory D Nervous

44. Which structures are responsible for the transport of food in plant body?
A Xylem tissue
B Palisade mesophyll
c Phloem tissue
D Spongy mesophyll

45. The cardiovascular system helps to regulate:
A Muscle strength
B Digestion
C Waste removal
d Temperature

46. Which plant system includes the stem and leaves?
A Root system
B Transport system
c Shoot system
D Vascular system

47. Biomolecules make up what percentage of the dry mass of protoplasm?
A 7% B 18%
C 50% d 93%

48. What is the primary function of carbohydrates?
a Provide energy
B Act as enzymes
C Regulate processes
D Make membranes.

49. A storage polysaccharide in plants is:
a Starch B Glycogen
C Cellulose D Chitin

50. Which of the following proteins is involved in oxygen transport?
A Insulin
b Haemoglobin
C Collagen D Keratin

51. Amino acid structure with the R group: CH_3:
a Alanine B Glycine
C Serine D Tyrosine

52. Which proteins are involved in defence against pathogens?
a Antibodies B Myosin
C Fibrinogen
D Haemoglobin

53. Phospholipids are found in:
a Cell membranes
B Hormones C Muscles
D Blood

54. Which nitrogenous base is found in RNA but not in DNA?
A Adenine B Thymine
c Uracil D Guanine

55. The RNA molecule involved in the delivery of amino acids during translation:
A mRNA b tRNA
C rRNA D DNA

56. Hummingbirds need to eat constantly due to:
A Low metabolism
b High metabolism
C Stored energy
D Photosynthesis

57. Primarily, all enzymes are;
A Nucleic acids
b Proteins
C Carbohydrates
D Lipids

58. Enzymes function in pathways by:
A Catalysing all steps
B Working in isolation
C Not passing products
d Catalysing specific steps

59. Enzymes are specific in their action because:
a Their active sites fit specific substrate.
B They are always proteins.
C They are consumed in reactions.
D They work only at high temprature.

60. The Induced Fit Model was proposed by:
A Emil Fischer
b Daniel Koshland
C Alfred Nobel
D Louis Pasteur

61. How does competitive inhibitor affect enzyme action?
A Attaches with the substrate.
B Changes enzyme shape.
c Attaches and blocks the active site.
D Blocks the cofactors.

62. After catalyzing the reaction, the enzyme:
A Active site alters
B Is destroyed
C Remains unchanged
d Releases product

63. Pepsin works best at:
A pH 9 B pH 7
C pH 8 d pH 1.5 - 2.0

64. Non-competitive inhibitors include:
A Vitamins B Sugars
C Antibiotics
d Heavy metals

65. Oxidation in redox reactions involves:
a Losing electrons
B Gaining electrons
C Breaking bonds
D Making ATP

66. When we get energy from ATP, which bonds are broken?
a P-P bonds B C-H bonds
C C-N bonds D C-O bonds

67. When ATP is broken down to ADP, the energy released is approximately:
A 100 kcal/mole
B 37.3 kcal/mole
C 73 kcal/mole
d 7.3 kcal/mole

68. Which type of chlorophyll is most common in plants?
a Chlorophyll a
B Chlorophyll b
C Chlorophyll c
D Chlorophyll d

69. What is released as a by-product during photosynthesis?
a Oxygen B Water
C Nitrogen
D Carbon dioxide

70. In which part of the chloroplast does the light-dependent reaction occur?
A Stroma
b Thylakoid membrane
C Outer membrane
D Matrix

71. In anaerobic respiration, glucose is:
A Fully oxidized
B Converted to oxygen
c Incompletely oxidized
D Converted to water

72. In yeast cells, anaerobic respiration leads to the production of:
A Lactic acid b Ethanol
C Acetic acid D Glucose

73. The Krebs cycle occurs in the:
a Mitochondrial matrix
B Nucleus
C Cytoplasm D Ribosome

74. Essential mineral for seed germination:
A Zinc B Boron
C Magnesium d Phosphorus

75. Which of the following plant nutrients is required in large amount?
A Iron B Zinc
c Potassium D Boron

76. The outermost covering of the root is called:
A Cortex B Endodermis
c Epidermis D Pericycle

77. When guard cells become turgid, they:
A Shrink
B Close stomata
c Open stomata
D Lose turgor

78. Root hairs absorb salts from soil by:
A Diffusion B Osmosis
c Active transport
D Filtration

79. Sucrose enters sieve tubes through:
A Osmosis B Diffusion
c Active transport
D Transpiration

80. The transpiration is regulated by:
A Mesophyll b Guard cells
C Xylem D Phloem

81. Which ion plays a role in the opening of stomata?
A Sodium (Na^+)
b Potassium (K^+)
C Calcium (Ca^{2+})
D Magnesium (Mg^{2+})

82. Succulent organs are present in:
a Xerophytes
B Hydrophytes
C Mesophytes D Halophytes

83. Budding occurs in:
a Yeast B Planarian
C Rhizopus D Amoeba

84. What is the primary method of reproduction in yeast?
A Binary fission
B Spore formation
c Budding
D Fragmentation

85. The reproductive structure that contains the embryo of a plant is:
a Seed B Leaf
C Root D Stem

86. Which of the following is an example of vegetative propagation through runners?
A Potato b Strawberry
C Onion D Ginger

87. A common method of artificial propagation is:
A Pollination B Budding
c Cutting D Spore formation

88. Which of these does NOT help a plant for vegetative propagation?
A Rhizome B Corm
C Runner d Flower

89. Cutting is commonly used for propagating:
A Papayas B Mangoes
c Roses D Wheat

90. Which structure form the female gametophyte in flowering plants?
A Pollen grain b Ovule
C Anther D Sepal

91. Embryo sac is formed inside;
A Filament B Anther
C Style d Ovule

92. Biostatistics helps in creating models to predict outcomes, such as:
A Designing clinical trials
B Determining sample sizes
C Planning experiments
d Predicting disease spread

93. In biostatistics, which method is used to predict future outcomes based on current data?
A Designing experiments
B Interpreting results
c Predicting outcomes
D Analyzing data

94. Analysing the effectiveness of fertilizers in farming practices is an example of biostatistics in:
A Epidemiology
b Agriculture C Genetics
D Public health

95. If the data set is 5, 8, 12, 15, 20, what is the median?
A 8 b 12 C 15 D 20

96. The middle value of a data set when arranged in ascending order:
A Mode b Median
C Mean D Variance

97. In a data set with values 3, 3, 6, 7, 8, 9, 9, what is the mode?
A 3 B 6
C 7 d Both 3 and 9

98. The measure least affected by extreme values in a data set:
a Median B Mean
C Mode D Range

99. The x-axis in a bar chart represents:
A Data range b Categories
C Frequencies
D Scale of values

100. Bar heights show:
a Frequency B Patterns
C Percentages
D Relationships

Short Questions

1. What is the role of Biostatistics in biological research?
Ans. See on page No. 4

2. What is Computational Biology?
Ans. See on page No. 12
3. What is the required degree for Fisheries and Wildlife careers?
Ans. See on page No. 5
4. Differentiate between Morphology and Physiology.
Ans. See on page No. 12
5. What is the role of Ecology in Biology?
Ans. See on page No. 3
6. What are the developmental stages of humans described in Sura Al-Mominoon, Verse 14?
Ans. See on page No. 5
7. What is the main advantage of interdisciplinary collaboration in science?
Ans. See on page No. 6
8. What is a hypothesis in scientific research?
Ans. See on page No. 7
9. How is a scientific law formed?
Ans. See on page No. 8
10. What deduction did biologists make based on King's hypothesis about malaria?
Ans. See on page No. 9
11. What distinguishes domain Bacteria from Archaea?
Ans. See on page No. 21
12. How is the biodiversity crucial for humans and for the planet Earth?
Ans. See on page No. 25
13. What makes viruses different from living organisms?
Ans. See on page No. 22
14. What are the shortcomings of the three-kingdom classification system?
Ans. See on page No. 25
15. Why cannot we classify viruses in any kingdom?
Ans. See on page No. 25
16. How do fungi obtain nutrients?
Ans. See on page No. 22
17. Enlist the distinguishing characteristics of fungi.
Ans. See on page No. 25
18. What is the Two-Kingdom Classification system?
Ans. See on page No. 20
19. Differentiate between 'kingdom' and 'phylum' in the Linnaean system.
Ans. See on page No. 20
20. How do proteins behave in the fluid-mosaic model?
Ans. See on page No. 31
21. What key role does the Golgi apparatus play in eukaryotic cells?
Ans. See on page No. 40
22. What are microtubules, and what functions do they perform?
Ans. See on page No. 32
23. Which organelle detoxifies harmful subistances and breaks down lipids?
Ans. See on page No. 40
24. What is the function of Smooth Endoplasmic Reticulum (SER)?
Ans. See on page No. 33
25. What could happen if lysosomal enzymes stop working properly?
Ans. See on page No. 40
26. Describe the membranes of mitochondria.
Ans. See on page No. 34
27. How are chromatin and chromosomes related?
Ans. See on page No. 41
28. How do prokaryotic and eukaryotic flagella differ?
Ans. See on page No. 36
29. What happens when sister chromatids fail to separate during anaphase?
Ans. See on page No. 49
30. Enlist the events that occur during the G1 phase of interphase?
Ans. See on page No. 53
31. What is the role of meiosis in plants?
Ans. See on page No. 50
32. During which phase of mitosis sister chromatids separate?
Ans. See on page No. 53
33. How does non-disjunction differ from disjunction?
Ans. See on page No. 50
34. How is cytokinesis in animal cell different from plant cell?
Ans. See on page No. 54
35. What are the key events of anaphase in mitosis?
Ans. See on page No. 54
36. Write any four differences between Meiosis and Mitosis.
Ans. See on page No. 51
37. How is mitosis related to the process of regeneration?
Ans. See on page No. 54
38. What is an organism?
Ans. See on page No. 58
39. How do the smooth muscles contribute to the stomach's function?
Ans. See on page No. 63
40. What is the function of mesophyll tissue in leaves?
Ans. See on page No. 59
41. What is the role of the shoot system in plants?
Ans. See on page No. 63
42. What does the skeletal system do?
Ans. See on page No. 60
43. How does the human body maintain a stable internal temperature?
Ans. See on page No. 63
44. What is homeostasis?
Ans. See on page No. 60
45. What is the function of the integumentary system in homeostasis?
Ans. See on page No. 60
46. How do molecules form?
Ans. See on page No. 58
47. What are polysaccharides? Mention two examples.
Ans. See on page No. 69
48. What are the main functions of carbohydrates in the body?
Ans. See on page No. 74
49. What are essential amino acids?
Ans. See on page No. 69

50. Name two common monosaccharides and two disaccharides.
Ans. See on page No. 74
51. What is the difference between saturated and unsaturated fatty acids?
Ans. See on page No. 70
52. Define amino acid and draw its structure.
Ans. See on page No. 75
53. Briefly describe the function of DNA.
Ans. See on page No. 75
54. What is the specific base pairing in DNA?
Ans. See on page No. 71
55. What is the role of lipids in the cell?
Ans. See on page No. 68
56. What is the relationship between anabolism and energy?
Ans. See on page No. 81
57. Which type of metabolism demands input of energy? Give an example.
Ans. See on page No. 87
58. What is a prosthetic group in relation to enzymes?
Ans. See on page No. 82
59. Provide an example of a specific enzyme-substrate pair.
Ans. See on page No. 87
60. Explain the Lock and Key Model of enzyme action.
Ans. See on page No. 83
61. Differentiate between competitive and non-competitive inhibition.
Ans. See on page No. 86
62. Define optimum temperature of the enzymes?
Ans. See on page No. 83
63. How does enzyme concentration affect the rate of a reaction?
Ans. See on page No. 84
64. Give an example of a competitive inhibitor.
Ans. See on page No. 84
65. How do organisms obtain energy for life processes?
Ans. See on page No. 91
66. Write the importance of oxidation-reduction reactions.
Ans. See on page No. 96
67. What role does ATP play in metabolic reactions?
Ans. See on page No. 92
68. Write down the word equation for photosynthesis.
Ans. See on page No. 97
69. What is the significance of the electron transport chain in photosynthesis?
Ans. See on page No. 93
70. What happens during the process of glycolysis?
Ans. See on page No. 94
71. State the main purpose of cellular respiration?
Ans. See on page No. 97
72. What is the role of ATP in the body?
Ans. See on page No. 94
73. List ways in which respiratory energy is used in the body.
Ans. See on page No. 98
74. What are nutrients? Name their types.
Ans. See on page No. 103
75. Define macronutrients and micronutrients and give examples.
Ans. See on page No. 110
76. What is the function of phosphorus in plants?
Ans. See on page No. 103
77. Define transpiration and its types.
Ans. See on page No. 110
78. How does the pericycle contribute to water transport in the root?
Ans. See on page No. 104
79. How do the plants of rubber and keekar excrete their wastes?
Ans. See on page No. 111
80. Where are most stomata located in leaves?
Ans. See on page No. 105
81. What factors facilitate water movement from roots to leaves?
Ans. See on page No. 105
82. What processes occur in phloem at source end?
Ans. See on page No. 106
83. What is sexual reproduction?
Ans. See on page No. 116
84. Write a short note on spore formation in fungi.
Ans. See on page No. 122
85. What is the role of endospores in bacterial reproduction?
Ans. See on page No. 117
86. State how potatoes reproduce through tubers.
Ans. See on page No. 123
87. What are cuttings in vegetative propagation?
Ans. See on page No. 118
88. What are the advantages of vegetative propagation?
Ans. See on page No. 118
89. How does a pollen grain develop into a male gametophyte?
Ans. See on page No. 119
90. What is parthenocarpy in plants?
Ans. See on page No. 120
91. What is artificial propagation?
Ans. See on page No. 118
92. How is biostatistics used in public health?
Ans. See on page No. 129
93. What is the median of a data set?
Ans. See on page No. 135
94. What is the role of biostatistics in analyzing biological data?
Ans. See on page No. 130
95. What does the height of a bar in a bar chart represent?
Ans. See on page No. 136
96. Define mean.
Ans. See on page No. 131
97. Define biostatistics
Ans. See on page No. 135
98. How median is calculated?
Ans. See on page No. 132
99. What do bars in a bar chart represent?
Ans. See on page No. 133
100. What type of data is suitable for a bar chart?
Ans. See on page No. 133