AL HUDA SCIENCE ACADEMY

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Guess Paper of Biology
Class 9th

اللہ سب کو سچ کہنے کی ہمت عطا فرمائیں۔آمین

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Short Questions No. 2

1. Define the branch of Biology "Genetics".
2. Which branch of Biology involves the study of the development of organisms from fertilization to birth or hatching?
3. Differentiate between morphology and physiology.
4. Define the branch of Biology "Anatomy".
5. Define the branch of Biology "Palaeontology".
6. Define the branch of Biology "Marine Biology".
7. Define the branch of Biology "Pathology".
8. What do you know about genetics?
9. Differentiate between pathology and pharmacology.
10. What is marine biology?
11. Difference between zoology and botany.
12. What are Fossils? Also write the age of the oldest Fossil.
13. How does Allah say in the Quran about the development of animals including human beings?
14. Define scientific method. Write down the steps involved in the scientific method.
15. Differentiate between qualitative and quantitative observations.
16. Write down the characteristics of a hypothesis.
17. Define deduction.
18. Differentiate between experimental group and control group.
19. Difference between theory and principle.
20. Write down two key benefits of biodiversity.
21. Define biodiversity. Also write the bases of measuring diversity.
22. What is the importance of Biodiversity?
23. How does Biodiversity maintain the ecosystem?
24. When and why is International Biodiversity Day celebrated?
25. What are the aims of classification?
26. Write down two advantages of classification.
27. Define classification and biodiversity.

28. Define taxonomy and systematics.
29. What are the bases of classification of biodiversity?
30. What are the seven taxonomic ranks used in the Linnaean system?
31. What are taxonomic ranks? Who devised them?
32. Write down the taxonomic rank of Human.
33. Define species.
34. Define Taxa or Taxonomic rank. Who introduced it?
35. Define the following: i) Phylum ii) Class
36. Define the following: i) Genus ii) Species
37. What are the basic differences between archaea and bacteria?
38. Write some features of organisms of domain Archaea.
39. Write some characteristics of organisms of domain Bacteria.
40. Differentiate between domain Bacteria and domain Eukarya.
41. Differentiate between kingdom Animalia and kingdom Plantae.
42. What are the bases of classification of life into domains?
43. Describe the three-domain system of classification.
44. Which kingdom includes organisms that are multicellular and heterotrophic, and lack cell walls?
45. Enlist the distinguishing characteristics of fungi.
46. List the three domains that encompass all living organisms.
47. Write a note on kingdom Fungi.
48. Write a note on kingdom Protista.
49. Write features of Kingdom Protista.
50. Write characteristics of Kingdom Fungi.
51. What type of organism is kingdom Plantae?
52. Why can't we classify viruses in any kingdom?
53. Write a short note on prions and viroids.
54. What are the symptoms of COVID-19?
55. What preventive measures can be taken for COVID-19?

56. How does binomial nomenclature facilitate clear communication about organisms across different languages?
57. Define binomial nomenclature. Also write an example.
58. What is the scientific name for potato and honey bee?
59. What is the significance of binomial nomenclature?
60. Write some rules of binomial nomenclature.
61. Common names have no scientific basis. Explain.
62. Write the scientific name of Onion, Potato and Tomato.
63. What is the scientific name of Honey Bee, Tiger and Human beings?
64. What are the main functions of the cell membrane?
65. What key role does the Golgi apparatus play in eukaryotic cells?
66. How do lysosomes contribute to the cell's functioning?
67. What is the smooth endoplasmic reticulum responsible for?
68. How do the vacuoles in plant cells differ from vacuoles in animal cells?
69. What could happen if lysosomal enzymes stop working properly?
70. Why are the cristae important for cellular respiration?
71. How are chromatin and chromosomes related?
72. Name the chemical compounds that make up: (a) Cell membrane (b) Fungal cell wall (c) Plant cell wall (d) Bacterial cell wall (e) Ribosomes (f) Chromosomes.
73. Differentiate between primary and secondary wall.
74. What are plasmodesmata?
75. Explain the fluid mosaic model.
76. Write down two functions of cytoplasm.
77. Why is DNA called hereditary material?
78. What is chromatin?
79. Differentiate between microtubules and microfilaments.
80. Describe the location of ribosomes and their composition.
81. Differentiate between rough endoplasmic reticulum and smooth endoplasmic reticulum.
82. Define cisternae.

83. What are lysosomes? Write its two functions.
84. Describe the structure of the inner membrane of chloroplasts.
85. Differentiate between chromoplast and leucoplast.
86. Write down the location and structure of centrioles.
87. Differentiate between cilia and flagella.
88. What is a chloroplast?
89. What do you know about the nucleus?
90. When and how was the first cell discovered?
91. What is the middle lamella? Write its structure.
92. Define Cristae and Matrix.
93. What are plastids? Name their types.
94. What are chromoplasts? Write their function.
95. What are Leucoplasts? Where are they located?
96. Define Turgor pressure and Turgor.
97. What are centrioles?
98. Write the functions of centrioles.
99. Write down the role of mesophyll cells.
100. What are muscle cells and write their function.
101. Write the role of skeletal muscles.
102. Differentiate between axons and dendrites.
103. Describe the role of neurons.
104. Write down the significance of liver cells.
105. Write the importance of Epidermis.
106. Differentiate between Dendrites and Axon.
107. What are hepatocytes? Write their importance.
108. What is meant by division of labour within cells?
109. How would you define a stem cell?
110. Define stem cells. Write their importance.

Short Questions No. 3

1. Enlist the events that occur during the G1 phase of interphase.
2. What is the main purpose of the S phase in the cell cycle?
3. Define cell cycle. Write its phases.
4. What do you know about the S phase?
5. Define G2 phase.
6. Differentiate between Interphase and Division phase.
7. During which phase of mitosis do sister chromatids separate?
8. What is the role of spindle fibers in mitosis?
9. How is cytokinesis in an animal cell different from a plant cell?
10. What are the key events of anaphase in mitosis?
11. How is mitosis related to the process of regeneration?
12. Define mitosis.
13. Differentiate between karyokinesis and cytokinesis.
14. How is the mitotic spindle formed?
15. Write a note on cytokinesis in an animal cell.
16. Write down the significance of mitosis.
17. Describe the errors of mitosis.
18. What do you know about tumors?
19. Can you distinguish between chromatin and chromosome?
20. Differentiate between benign and malignant tumors. Why does it occur?
21. Define phragmoplast.
22. How does crossing over contribute to genetic variation in meiosis?
23. What are sister chromatids, and when do they separate in meiosis?
24. What is meant by diploid and haploid cells?
25. Define Crossing over.
26. What is chiasmata?
27. Write down the significance of meiosis.
28. How does meiosis bring genetic diversity?

29. What do you know about disjunction and non-disjunction?
30. Can you distinguish between Mitosis and Meiosis?
31. Enlist the levels of organization from cells to organ systems.
32. What do you know about the atom and molecule level of organization?
33. Differentiate between cell and organelle.
34. Define organ. Give examples.
35. Explain "The interaction of various organ systems brings emergent properties."
36. What is an organ system? Give examples.
37. What is the tissue level? Give one example.
38. Differentiate between unicellular organisms and multicellular organisms.
39. What is the function of the palisade mesophyll in the leaf?
40. Differentiate between the following: (i) Tissue and Organ (ii) Root system and Shoot system (iii) Epidermal and Mesophyll tissue (iv) Palisade and Spongy mesophyll.
41. Write any two functions of roots.
42. What are the functions of the root system?
43. What are the functions of the shoot system?
44. What is the function of the lungs in humans?
45. What is the function of xylem in plants?
46. What does the vascular tissue in a plant do?
47. Define transpiration.
48. Differentiate between Xylem and Phloem.
49. What are the major roles of the epithelial tissue present in the stomach?
50. How do smooth muscles contribute to the stomach's function?
51. What are the functions of the liver and kidneys in humans?
52. What is the function of the pancreas?
53. Write down the location and function of connective tissue in the stomach.
54. Write a note on the skeletal system of humans.
55. What is the function of the respiratory system?
56. Differentiate between the nervous system and blood circulatory system.

57. What does epithelial tissue do in animals?
58. Which organ system provides structural support for the body?
59. What is the main function of the digestive system?
60. How does the body respond when the temperature rises above 37°C?
61. What system helps regulate body temperature?
62. How does the muscular system help in maintaining body posture?
63. What is homeostasis, and why is it important for organisms?
64. Define homeostasis.
65. Describe the importance of homeostasis.
66. How is the increase in blood glucose level controlled in the body?
67. How is the increased oxygen requirement fulfilled during hard exercise?
68. Write down the role of the skeletal and muscular system in homeostasis.
69. Why is homeostasis important for the body?
70. What is studied in biochemistry?
71. Describe the main functions of carbohydrates.
72. Describe the important functions of proteins.
73. Describe the important functions of lipids.
74. Explain the important functions of DNA.
75. Define Metabolism. Also write its types.
76. Differentiate between anabolism and catabolism.
77. How do the three groups of carbohydrates differ in taste?
78. Name two common monosaccharides and two disaccharides.
79. Give an example of a storage Polysaccharide in plants.
80. What is the primary function of carbohydrates in cells?
81. Define monosaccharides.
82. What is the general formula for carbohydrates?
83. Compare the energy level of carbohydrates, proteins and lipids.
84. Write the general characteristics of monosaccharides.
85. What are Cellulose and Chitin?

86. Define carbohydrates and write its types.
87. Write down the sources of carbohydrates.
88. Define amino acid and draw its structure.
89. What is the role of proteins in enzymes?
90. What is the function of antibodies?
91. What are the different plant sources of proteins?
92. Write the difference between essential and non-essential amino acids.
93. Draw the general structure of amino acids Glycine and Alanine.
94. What is hemoglobin? Write its function in blood.
95. What are the basic components of lipids? Draw their structures.
96. How are unsaturated fatty acids different from saturated fatty acids?
97. Why are lipids insoluble in water?
98. Differentiate between glycerol and fatty acids.
99. Write the animal sources of lipids.
100. Write the botanical sources of lipids.
101. Write the general structure of fats and oils.
102. Differentiate between fats and oils.
103. What are the types of RNA? Write their functions.
104. Briefly describe the function of DNA.
105. What is the sugar in DNA called?
106. What are the types of RNA?
107. What is transcription in the context of genetics?
108. Define gene.
109. Differentiate between transcription and translation.
110. Define transcription and translation.
111. Write a short note on budding in yeast.
112. Write a short note on spore formation in fungi.
113. Describe how vegetative propagation occurs through runners.
114. State how potatoes reproduce through tubers.

115. Define reproduction and write its example.

116. Differentiate between sexual and asexual reproduction.

117. What is binary fission? How do bacteria reproduce asexually by binary fission?

118. What is budding? Give examples of organisms which reproduce asexually by budding.

119. What is the difference between spores and sporangia?

120. What is meant by vegetative propagation in plants?

121. Write down the three methods of vegetative propagation.

122. What are bulbs? How do plants reproduce vegetatively by bulbs?

123. What are corms? How do they help in reproduction?

124. What is a rhizome? Give an example.

125. What is a stolon? How do they help in reproduction?

126. Differentiate between spore and endospore.

127. Describe the advantages and disadvantages of vegetative propagation.

128. Differentiate between: (i) Asexual and Sexual reproduction (ii) Binary fission in bacteria and amoeba (iii) Stolon and Rhizome (iv) Bulb and Corm (v) Cutting and Grafting (vi) Male and Female gametophytes (vii) Calyx and Corolla (viii) Stamen and Carpel.

129. What are the disadvantages of vegetative propagation?

130. What is grafting?

131. Write the uses of grafting.

132. Name the four whorls present in a flower and also tell the components of each whorl.

133. Briefly describe the formation of the egg cell and polar nuclei within the embryo sac of a flower.

134. Differentiate between sporophyte generation and gametophyte generation.

135. What is gynoecium?

136. Define calyx.

137. What is Androecium?

138. Write the name of the four whorls present in a flower.

139. Define pollination.

140. Difference between self and cross pollination.

141. What is meant by fertilization?

142. Define double fertilization.

143. Define parthenocarpy.

144. Differentiate between self-pollination and cross-pollination.

145. What is meant by stigma and style?

146. How are seeds and fruits formed?

Short Questions No. 4

1. Define metabolism. Differentiate between catabolism and anabolism.
2. Define lipolysis and cellular respiration.
3. Define an enzyme. What is its role in metabolism?
4. What is the active site of an enzyme? State its importance in enzyme specificity.
5. Why are enzymes called biological catalysts?
6. Define co-factors. Give two examples.
7. What do you mean by saturation of active sites?
8. Write the difference between catalyst and enzyme.
9. Write the difference between intracellular and extracellular enzymes.
10. Describe characteristics of enzymes.
11. Differentiate between intracellular and extracellular enzymes.
12. Differentiate between prosthetic groups and coenzymes.
13. Write down the uses of enzymes in the fermentation industry.
14. Provide an example of a specific enzyme-substrate pair.
15. Describe the lock and key model of enzyme action.
16. What are active sites? Write their function.
17. Who presented the lock and key model?
18. Who proposed the induced fit model?
19. What is the effect of substrate concentration on enzyme activity?
20. What do you mean by optimum temperature and pH?
21. Which protein-digesting enzyme functions in an acidic medium?
22. How does pH affect enzyme activity?

23. Describe the factors that affect the activity of enzymes.
24. Which type of enzyme inhibitors inhibit the enzymes without attaching to the active site?
25. Differentiate between competitive and non-competitive inhibition.
26. What is enzyme inhibition? Write its types.
27. Write the importance of oxidation-reduction reactions.
28. What do ATP and ADP mean? What are the roles of these molecules in cellular metabolism?
29. What do you know about redox reactions?
30. Define Bioenergetics.
31. Write a short note on ATP.
32. What are the subunits of ATP?
33. How do living beings obtain energy and for what purposes do they use it?
34. Why is chlorophyll important for photosynthesis?
35. How is oxygen produced during photosynthesis?
36. Which organisms carry out photosynthesis? Which cell organelle is responsible for the absorption of light for photosynthesis?
37. Define photosynthesis and write its equation.
38. Differentiate between light reaction and dark reaction.
39. What is the role of water during the light reaction?
40. Write a short note on the dark reaction.
41. Define pigments. Give examples.
42. Explain the absorption of sunlight by pigments.
43. Write the equation of: (a) photosynthesis (b) fermentation (c) aerobic respiration.
44. What are NAD and NADP?
45. How is NADPH formed in the light reaction?
46. Define anaerobic and aerobic respiration.
47. What are the end products of anaerobic respiration in animals and yeast?
48. How do muscles respond to oxygen deficiency during intense exercise?
49. Define cellular respiration.
50. Write a short note on aerobic respiration.

51. Write a short note on anaerobic respiration.
52. Differentiate between alcoholic and lactic acid fermentation.
53. Explain the importance of fermentation.
54. What is the Krebs cycle?
55. What is the electron transport chain?
56. Differentiate between aerobic and anaerobic respiration.
57. Differentiate between photosynthesis and respiration.
58. Define aerobic respiration.
59. What is alcoholic fermentation?
60. Define aerobic respiration.
61. Write about the importance of fermentation in daily life.
62. Define macronutrients and micronutrients and give examples.
63. Differentiate between autotrophic and heterotrophic organisms.
64. Define nutrition and nutrients.
65. Describe the role of calcium and magnesium in plant life.
66. Describe the role of iron and molybdenum in plant life.
67. Describe the role of boron and manganese in plant life.
68. Differentiate between pith and cortex.
69. Write down the functions of root hairs.
70. Differentiate between epidermis and endodermis.
71. Define transpiration and its types.
72. Transpiration is the loss of water from plants. Is it a harmful phenomenon? If no, what is its importance?
73. Differentiate between: (i) Xylem and Phloem (ii) Transpiration and Guttation (iii) Hydrophytes and Halophytes (iv) Hydrophytes and Xerophytes (v) Lenticular and Stomatal.
74. What is the effect of temperature on the rate of transpiration?
75. How is transpiration affected by surface area?
76. Define transpirational pull.
77. Name the factors that affect the rate of transpiration.

78. What is guttation? How is it different from dew?
79. How is the transpirational pull important in plants?
80. Define the term Adhesion.
81. Define the term Cohesion.
82. Differentiate between guard cells and epidermal cells.
83. Differentiate between sink and source.
84. Define Endodermis and pericycle.
85. Describe the pressure flow mechanism.
86. What is the pattern of gas exchange between plant and environment at the time of dawn and dusk?
87. Why do plants absorb carbon dioxide and release oxygen during daytime?
88. What do you know about lenticels?
89. How do the plants of rubber and keekar excrete their wastes?
90. Name some waste products of plants.
91. Define excretion.
92. How is homeostasis maintained in plants?
93. Write any three osmotic adjustments in hydrophytes.
94. Define mesophytes. Give their two osmotic adjustments.
95. Write any three osmotic adjustments in halophytes.
96. Define succulent organs.

Long Questions

Question Number 5

1. Describe the classification of Biodiversity and also write its aims and basis.
2. Describe the Linnaean system of classification in detail, stating the seven taxonomic ranks and their relationships.
3. Compare and contrast the domains Archaea and Bacteria, focusing on their key characteristics.
4. Describe the diagnostic characteristics of the four kingdoms within the domain Eukarya.
5. Discuss the challenges of classifying viruses within the traditional three domains of life.

6. Explain the rules and guidelines for suggesting scientific names to organisms.
7. What is Binomial Nomenclature? Explain its significance.
8. Explain the fluid mosaic model of the cell membrane.
9. Describe the structure and functions of the cell wall.
10. Discuss the components of the nucleus.
11. Describe the structure and function of lysosome and endoplasmic reticulum.
12. Describe the formation and function of the Golgi complex.
13. Describe the structure and function of the chloroplast.
14. Write a note on cell specialization.
15. Write a note on Neurons and Red Blood cells.
16. Write a detailed note on Stem Cells.

Question Number 6 *(Biomolecules & Enzymes)*

1. Write a comprehensive note on the structures and roles of the three classes of carbohydrates.
2. Discuss the functions of proteins.
3. What are proteins? Explain how amino acids are the building blocks of protein.
4. What are fatty acids? Explain their types.
5. Describe the basic structure of fats and oils. Explain how lipids play a role in energy storage.
6. What is meant by lipids? Also explain their structure.
7. Explain the sources and functions of lipids in the human body.
8. Explain the double helix structure of DNA, and discuss the base pairing in this structure.
9. What are nucleic acids? Write their structure and types.
10. Describe the characteristics of enzymes.
11. Compare the Lock-and-Key and Induced Fit models of enzyme action.
12. How are enzymes used in industries?
13. Clarify the working mechanisms of enzymes with the help of models.
14. Describe how temperature extremes can inhibit enzyme activity and lead to enzyme denaturation.
15. How does pH affect enzyme activity?

Question Number 7

1. Explain the role of nitrogen and magnesium in plants.
2. Explain the internal structure of the root and describe the uptake of salt and water by the root.
3. Describe the events involved in the opening and closing of stomata.
4. Describe the mechanism of transport of water and salt in plants.
5. Explain the mechanism of food translocation by the Pressure Flow Mechanism.
6. Describe the process of gaseous exchange in plants.
7. How do plants excrete extra water and salts from their bodies?
8. Explain osmotic adjustments in hydrophytes, xerophytes, and halophytes.
9. Explain the process of binary fission in bacteria and describe how it leads to the formation of two daughter bacteria.
10. What do you mean by vegetative propagation? Differentiate among different plant structures modified for vegetative propagation.
11. Describe the ways by which humans can grow new plants by using the vegetative parts of parent plants.
12. Write the advantages and disadvantages of vegetative propagation of plants.
13. Define sporophyte and gametophyte. State their roles in the life cycle of plants.
14. Explain the life cycle of flowering plants, focusing on the alternation between the gametophyte and sporophyte generations.