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STUDENT NAME	
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TIME ALLOWED	
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CLASS	9th
SUBJECT	Biology
TOTAL MARKS	
Paper Type	

Choose the correct answer.

1. The starting point of scientific investigation is.

(A) hypothesis **(B)** theory **(C)** observation **(D)** data

2. Malaria is caused by.

(A) mosquito **(B)** stagnant water **(C)** swamp **(D)** plasmodium

3. Malaria is caused by.

(A) mosquito **(B)** stagnant water **(C)** swamp **(D)** plasmodium

4. You are doing a control experiment which

(A) proceeds slowly enough that a scientist can record the results

(B) may include experimental groups and control groups tested in parallel

(C) is repeated many times to make sure the results are accurate

(D) proceed slowly enough that a scientist can test predictions

5. The study of functions of various organs of an organism is

(A) morphology **(B)** histology **(C)** anatomy **(D)** physiology

6. The study of functions of various organs of an organism is

(A) morphology **(B)** histology **(C)** anatomy **(D)** physiology

7. Histology is the microscopic study of.

(A) tissues **(B)** cells **(C)** fossils **(D)** plants

8. Information that is gathered as a result of an experiment is called.

(A) hypothesis **(B)** data **(C)** theory **(D)** observation

9.
Malaria patient has plasmodium in his blood. What would be the possible explanation if a healthy person who is not having any malaria symptoms shows plasmodium in his blood?

(A) Plasmodium are dead

(B) Plasmodium are in incubation period

(C) Plasmodium are not mature

(D) Plasmodium are inactive

10. The other name of environmental biology is.

(A) ecology **(B)** biotechnology **(C)** microbiology **(D)** cell biology

11.
If a scientist is studying the methods of inserting human insulin gene in bacteria, which branch of biology may this be?

(A) anatomy **(B)** physiology **(C)** biotechnolgy **(D)** pharmacy

12. Which of the following statements best distinguishes hypothesis from theories in science?

(A) theories are hypothesis that have been proven true

(B) theories are based on limited data while hypothesis are based on wide range of data

(C) theories are uncertain while hypothesis are certain

(D) theories are educated guess while hypothesis are widely accepted explanation of natural phenomenon

13. Microbiology is the study of.

(A) fungi **(B)** animals **(C)** plants **(D)** microorganism

14. In which of the following the first letter is capitalized in binomial nomenclature?

(A) genus **(B)** class **(C)** species **(D)** family

15. The common characteristic of viruses, prions and viroids is.

(A) Respiration **(B)** Movement **(C)** Infectious nature **(D)** Excretion

16. Viruses are assigned to the kindgom.

(A) Plantae **(B)** Protista **(C)** Fungi **(D)** Not included in any kingdom

17. Scientific name has advantages of.

(A) same name applied to different organisms

(B) same organisms have different name in different areas

(C) has no scientific basis

(D) has scientific basis and is universally accepted

18. Binomial nomenclature was introduced by.

(A) Aristotle **(B)** Carolus Linnaeus **(C)** Ernest Haeckel **(D)** R.H Whittaker

19. Into which kingdom you place a multicellular land organism that performs photosynthesis.

(A) monera **(B)** protista **(C)** plantae **(D)** animalia

20. Colonial organization is the unique feature of kingdom.

(A) Animalia **(B)** Protista **(C)** Fungi **(D)** Plantae

21. The kingdom to which the algae belongs is.

(A) animalia **(B)** protista **(C)** plantae **(D)** fungi

22. Viruses are not included in any domain or classification as.

(A) they are poorly understood **(B)** they are too large **(C)** they are of various colours **(D)** they are not considered as organism

23. A red blood cell and a plant root hair cell both have.

(A) Cellulose cell wall **(B)** haemoglobin **(C)** Large surface area **(D)** nucleus

24. Phospholipids are required for cell membrane formation are synthesized in.

(A) Mitochondria **(B)** Cytoplasm **(C)** Endoplasmic Reticulum **(D)** Smooth Endoplasmic Reticulum

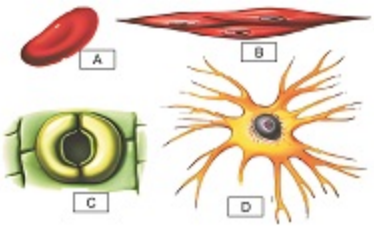
25. Plastids of different types are correctly represented by.

(A)		**(B)**		**(C)**		**(D)**	
Photosynthetic	Pigmente	Photosynthetic	Pigmer	Photosynthetic	Pigmen	Photosynthetic	Pigment
Chloroplasts	Leucoplas	Chloroplasts	Chloroplas Leucoplas	Leucoplasts and Chloroplasts	Chloroplast Leucoplast	Chloroplasts	Chloroplast Chloroplast

26.
Cytoskeleton is an important component of eukaryotic cells. Which of the following statement correctly describes cytoskeleton?

(A) All the cytoskeletal structures are made up on same protein **(B)** There is no contractile protein in any cytoskeletal component **(C)** Cytoskeleton provides mechanical support and has role in cell division **(D)** The entire cytoskeleton is present around the cell membrane

27.
The diagram show cells from different types of tissues (not drawn on scale). Which type of cell contracts when it is stimulated?



(A) A **(B)** B **(C)** C **(D)** D

28. What are the functions of mitochondria?

(A) lipid synthesis **(B)** protein synthesis **(C)** photosynthesis **(D)** cellular respiration

29. The shape of normal red blood cells is.

(A) Oval **(B)** Crescent **(C)** Biconvex **(D)** Biconcave

30. Substance and energy required for the replication of DNA is accumulated in the cell during:

(A) G_1 **(B)** G2 **(C)** S phase **(D)** M phase

31. Chromosomal number of Fruit fly is 8. The gametes of fruits contain.

(A) 2 chromosomes **(B)** 4 chromosomes **(C)** 8 chromosomes **(D)** 16 chromosomes

32. Crossing over results in genetic recombination. It occurs between.

(A) Two chromatids of the same chromosome

(B) Two chromatids of any two non-homologous chromosomes

(C) Two chromatids of opposite gameter

(D) Two chromatids of homologous chromosomes

33. The longest phase of meiosis is.

(A) Interphase I **(B)** Prophase I **(C)** Interphase II **(D)** Prophase II

34. During cell division spindle fibres attach a chromosome at.

(A) Centromere **(B)** Telomere **(C)** Upper arm of chromosome **(D)** Lower arm of chromosome

35. What causes the number of chromosomes to reduce to half when a cell divides by meiosis?

(A) replication of DNA during interphase I

(B) separation of homologous chromosomes during meiosis I

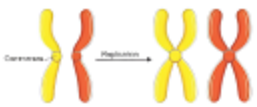
(C) separation of sister chromatids of all the chromosomes during meiosis I

(D) crossing over during meiosis I

36. The spindle apparatus of plants differs from that of animals is not having.

(A) microtubules **(B)** equator of spindle **(C)** centrioles **(D)** centromere

37.

Diagram shows replication of chromosomes.  What is the total number of chromosomes in this diagram?

(A) 2 **(B)** 3 **(C)** 4 **(D)** 6

38. A bivalent consists of.

(A) Two chromatids and one centromere

(B) Four chromatids and two centrometres

(C) Four chromatids and four centromeres

(D) Two chromatids and two centromere

39. All of the following events takes place both in mitosis and meiosis except.

(A) Condensation of chromatin to form chromosomes

(B) Formation of spindle apparatus

(C) Nuclear envelop and nucleolus disappear

(D) Chromosomes pair for crossing over

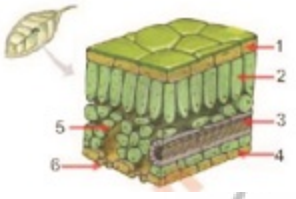
40.
Some students of SSC observed a thin cross section from root tip of onion plant under the microscope. They found dividing cells at different stages of their life cycle. One of the students found a cell at late prophase and counted 28 chromosomes in it. The number of chromosomes in daughter cells should be.

(A) 14 **(B)** 28 **(C)** 56 **(D)** 07

41. You can observe spongy mesophyll and xylem in the section of leaf. These are part of the same.

(A) cell and organism **(B)** organ and organism **(C)** cell and tissue **(D)** tissue and organ

42.
The diagram shows tissues from section of leaf. Which type of cells will perform photosynthesis?



(A) 1 and 4 **(B)** 2 and 5 **(C)** 2 and 3 **(D)** 3 and 6

43. Which structure is at a different level of organization from the other three?

(A) kidney **(B)** liver **(C)** neuron **(D)** lung

44. What are the functions of xylem and phloem in green plants.

(A)	**(B)**	**(C)**	**(D)**
Xylem	Xylem	Xylem	Xylem
Support and transport of sugars	Transport of sugars	Support and transport of water	transport of water

45. Which of the following statements best describes homestasis?

(A) keeping the body in a fixed and unaltered state

(B) dynamic equilibrium

(C) maintaining a near-constant internal environment

(D) altering the external environment to accommodate the body's needs

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47. Which of the following lists the levels of body organization from smallest to largest?

(A) organism, organ system, organ, tissue, cell

(B) tissue, cell, organ, organ system, organism

(C) organ, organ system, organism, tissue, cell

(D) cell, tissue, organ, organ system, organism

48. Which description of xylem is correct?

(A) a cell used for absorption

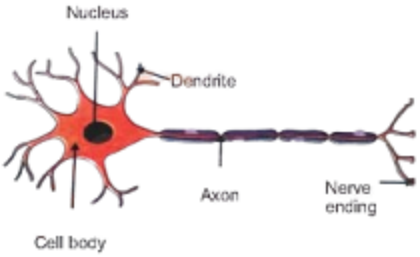
(B) an organ system used for conduction

(C) a tissue used for transport

(D) an organ used for transport

49.

The diagram shows a sample of material taken from an organism.



Which level of organization does the sample show?

(A) cell

(B) organ

(C) organ system

(D) tissue

50. If tissue level is not developed in the level of organization, which next level will not form?

(A) Molecular level

(B) Atomic level

(C) Organ level

(D) Organelle level

51. This statement about Homeostasis is incorrect.

(A) because of this, the fluctuations of the internal environment are of extremely narrow range as compared to that of the external environment

(B) there is one system regulating the homeostatic activities

(C) homeostatic mechanisms keep the internal environment constant despite wide changes in the external environment

(D) homeostasis is necessary for the survival of cells

52. Which structure is not an organ?

(A) artery

(B) flower

(C) spinal cord

(D) xylem

53.

Organisms have the ability to change and modify their internal conditions according to the environment through.

(A) osmoregulation

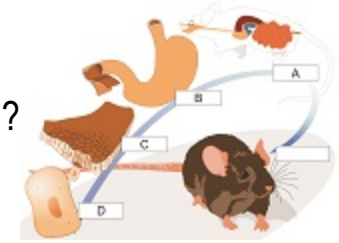
(B) excretion

(C) thermoregulation

(D) all of the above

54.

Following diagram shows level of organization in a rat. Which is the organ level?



(A) A **(B)** B **(C)** C **(D)** D

55. Transcription takes place in the:

(A) Cytoplasm **(B)** Nucleus **(C)** Ribosomes **(D)** Rough Endoplasmic reticulum

56. Which of the following is major bio-element?

(A) sodium **(B)** magnesium **(C)** phosphorous **(D)** iron

57. All the nucleotides of RNA differ from the nucleotides of DNA in having different:

(A) Nitrogen base **(B)** Pentose sugar **(C)** Phosphate group **(D)** carboxylic group

58. Which of the disaccharide is also called transport sugar?

(A) Sucrose **(B)** Maltose **(C)** Fructose **(D)** Lactose

59. Diameter of DNA is thoroughly uniform and is about:

(A) 34 nm **(B)** 3.4 nm **(C)** 2 nm **(D)** 1.1 nm

60. During translation, sequence of amino acids in the protein is decides on the basis of sequence of nucleotides in:

(A) tRNA **(B)** rRNA **(C)** tDNA **(D)** DNA

61. Peptide bond is formed between two:

(A) Monosaccharides **(B)** Amino acids **(C)** Nucleotides **(D)** Fatty acids

62. Vitamin D belongs to:

(A) Carbohydrates **(B)** Lipids **(C)** Protein **(D)** RNA

63. In aerobic respiration pyruvic acid changes to:

(A) glucose **(B)** fructose **(C)** Acetyl CoA **(D)** Citric acid

64. Change in pH can alter the active site by affecting the:

(A) ionization of amino acids **(B)** Shape of substrate **(C)** ionization of cofactor **(D)** Ionization of coenzyme

65.

Which of these uses oxygen as the final acceptor?

(A) glycolysis **(B)** electron transport chain **(C)** Krebs cycle **(D)** photosynthesis

66. What are the products of light reactions in photosynthesis?

(A) ATP, NADPH and oxygen **(B)** ATP and NADP **(C)** ATP, PGA and oxygen **(D)** PGA and oxygen

67. Which feature helps plants to make most food by the process of photosynthesis?

(A) broad and flat leaves **(B)** spiny leaves **(C)** yellow leaves **(D)** curled leaves

68.
Which of the following processes is used by plants to make oxygen during the process of photosynthesis?

(A) intake of water **(B)** intake of CO_2 **(C)** photolysis of water **(D)** Calvin cycle

69. What is true about cofactors?

(A) break hydrogen bond in proteins **(B)** help facilitate enzyme activity **(C)** increase activation energy **(D)** are composed of proteins

70. Lock and key hypothesis of enzyme action supports that:

(A) active sites are flexible **(B)** active sites are rigid **(C)** active site efficiency increases **(D)** active site can change its shape

71. The mechanism of ATP synthesis is:

(A) phosphorylation **(B)** photosynthesis **(C)** respiration **(D)** glucose

72.
A child left a carton on the lawn for two days. When the carton was picked up, the grass under it had turned yellow. What caused the grass to change colour?

(A) lack of oxygen **(B)** lack of carbon dioxide **(C)** lack of light **(D)** lack of water

73. Glycolysis is the breakdown of:

(A) fructose **(B)** glucose **(C)** lactose **(D)** maltose

74.
The catalytic region on enzyme recognizes and binds the substrate and carries the reaction. This region is called as:

(A) cofactor **(B)** activator **(C)** inhibitor **(D)** active site

75. What drives the translocation of organic solutes in plants?

(A) Differences in sugar concentration

(B) Differences in leaf size

(C) Differences in root structure

(D) Differences in stem length

76. What drives the bulk flow of water to the top of the plant according to the *TACT* theory?

(A) Root pressure

(B) Soil moisture

(C) Solar energy from photosynthesis

(D) Transpiration from the leaves

77.
When the rate of photosynthesis become equal to that rate of respiration in the plant body, which of the following pattern of gaseous exchange occurs between plant and its environment:

(A) Carbon dioxide is absorbed, and oxygen is released

(B) Oxygen is absorbed, and carbon dioxide is released

(C) Both carbon dioxide and oxygen are absorbed

(D) Neither carbon dioxide nor oxygen are absorbed

78. Chlorosis does not occur due to the deficiency of:

(A) Sulphur

(B) magnesium

(C) phosphorus

(D) calcium

79. Most of the uptake of water and minerals from soil takes place through:

(A) epidermal cells

(B) root cap

(C) root

(D) root hair

80. What is a key role of leaves in managing waste in plants?

(A) Storing waste materials

(B) Producing chlorophyll

(C) Absorbing water from the soil

(D) Converting waste into energy

81. The sugar moves through phloem is mostly in the form of:

(A) glucose

(B) sucrose

(C) maltose

(D) lactose

82.
According to the TACT theory, what are the four factors that work together to move water and minerals up a plant?

(A) Temperature, humidity, sunlight, and soil type

(B) Transpiration pull, Adhesion, Cohesion, and Tension

(C) Stomata, Xylem, phloem, and roots

(D) Leaves, stems, roots, and flowers

83. Which category of plants stores a small amount of water and has a thin cuticle?

(A) Hydrophytes

(B) Xerophytes

(C) Mesophytes

(D) Succulents

84.
Which of the following is compact, thickened, vertically growing, underground stem enveloped by thick, succulent (flashy) leaves, serving as reservoir of stored nutrients:

(A) Bulb **(B)** Corm **(C)** Rhizome **(D)** Stem tuber

85. Which of the following modes of asexual reproduction generally occurs during unfavorable conditions?

(A) Binary fission **(B)** Budding **(C)** Spore formation **(D)** Parthenogenesis

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(A) Binary fission **(B)** Budding **(C)** Spore formation **(D)** Parthenogenesis

87. Which of the following part of the plant that's been changed and adapted for the job of reproduction:

(A) flower **(B)** leave **(C)** root **(D)** meristematic tissue

88. Which of the following is the benefit of sexual reproduction?

(A) this is rapid way of reproduction **(B)** this is complex mechanism of reproduction **(C)** it can occur any time in lifecycle **(D)** it contributes genetic variability in successive generations

89. The first cell or tiny piece of the parent plant used in tissue culture is called:

(A) baby plant **(B)** plantlet **(C)** seedling **(D)** explants

90.
If sometimes, the stem cutting does not start growth, then the cut ends must be treated with which of the following special plant hormone to stimulate the growth?

(A) somatotrophin **(B)** Abscissic acid **(C)** auxin **(D)** Ethene

91. Which of the following is incorrect about asexual reproduction?

(A) single parent contributes **(B)** no gamete formation is involved **(C)** off spring are genetically identical **(D)** contributes in evolution of new species

92.
Natural selection is sometimes described as "survival of the fittest." Which of the following most accurately measures as organism's fitness?

(A) its mutation rate **(B)** how many fertile offspring it produces **(C)** its ability to withstand environmental extremes **(D)** how much food it is able to make or obtain

93. Speciation is the evolutionary process by which:

(A) a new population is formed **(B)** a new breed is formed **(C)** a new specie is formed **(D)** a new race is formed

94.

Farmers have bred Neli-Ravi buffalo to produce more milk than older breeds. Which process was used to produce these cattle?

(A) adaptation **(B)** natural selection **(C)** genetic engineering **(D)** selective breeding

95. Natural selection operates to produce changes in:

(A) individuals **(B)** populations **(C)** races **(D)** genes

96.
Organisms produce many more offspring that can possibly survive on the limited amount of resources available to them. The offspring that are most likely to survive are those that:

(A) are born first and grow fastest **(B)** are largest and most aggressive **(C)** have no natural predators **(D)** are best adapted to the environment

97. The smallest biological unit that can evolve over time is:

(A) a specie **(B)** an individual organism **(C)** an ecosystem **(D)** a population

98. Which of the following pairs of structures is least likely to represent homology?

(A) the wings of a bat and the forelimbs of a human **(B)** the haemoglobin of a baboon and that of a gorila **(C)** the brain of a cat and that of a dog **(D)** the wings of a bird and those of an insect

99.
The process of --------- and --------- generate variation, and -------- produces adaptation to the environment.

(A) sexual recombination ---- - natural selection ----- mutation **(B)** genetic drift -----mutation ----- sexual recombination **(C)** mutation ----- sexual recombination ------ natural selection **(D)** mutation ----- natural selection ----- genetic drift

100. A related groups of genera consists of.

(A) a phylum **(B)** a class **(C)** an order **(D)** a family

Write short answers of the following questions.

1 . Define the branch of biology and give at least one significance of studying branch Molecular biology

2 . Define the branch of biology and give at least one significance of studying branch Palaeontology.

3 . Can you distinguish between? Anatomy and Morphology

4 . Can you distinguish between? Biotechnology and Immunology

5 .

Healthy life of a person depends on healthy life choices. How study of biology is going to help you to live a healthy life.

6 .
Observations are mainly of two types i.e., qualitative and quantitative. Sort the following observation according to these two types. Colour of cat, Height of giraffe, Weight of mango fruits, Body temperature of birds, Volume of blood in humans, Shape of leaves, Climate of desert, Speed of tiger, Song of a bird.

7 . Why it is impossible to eradicate malaria?

8 . Why Ross did not allow the infected mosquitoes to bite a healthy person?

9 .
Hepatitis B virus was found in blood of 10 persons. Only 6 of them were suffering from Hepatitis B disease. Why?

10 . What were the observations for malaria untill19th century?

11 . Write down the observations of A.F.A king about malaria.

12 . Why are the following scientists famous for? (a) Aristotle (b) Carolus Linnaeus (c) Carl Woese

13 . Define Classification.

14 . Define Systematics.

15 . Define Taxa.

16 . What is domain? Name the three domains of life.

17 . Can you differentiate between? Plants and Animals

18 . Compare the two-kingdom, three kingdom and five-kingdom system of classification

19 . Why mule is not regarded as a species.

20 . Why mitochondria are known as powerhouse of the cell?

21 .
Give the modifications of epidermal cells for; (a) Exchange of gases (b) Absorption of water and minerals

22 .
Plasma membrane has two main components according to fluid mosaic model. Which component represents fluid and which component represents mosaic?

23 .
Which cells in animals and plants do not have a nucleus? How do these cells perform their functions without nucleus?

24 . Which organelles are abundant in the salivary gland cell? Explain.

25 .

Following diagram shows a plant cell;  keeping in view the parts labeled 1 to 4, answer the following questions. (a) Give the number indicating the structure which controls the cell activities? (b) Name a biochemical process taking place in part 2. (c) What will happen to cell if part 1 is removed and part 3 is overfilled with water?

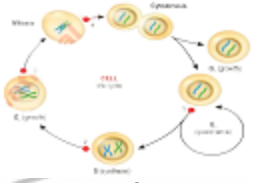
26 . Explain spindle apparatus in detail.

27 . Enlist the events taking place during G_1 phase.

28 . Give differences between meiosis and meiosis II.

29 . What is the difference between cytokinesis of a plant cell and an animal cell?

30 . How haploid organisms produce gametes?

31 .
Cell cycle below shows the formation of two daughter cells, cell A and cell B. Cell A continues in the cell cycle while cell B exits in Go.  What will be the difference in materials they synthesize after the production of cell A and cell B?

32 . Can you differentiate between: Organ and organelle

33 . Can you differentiate between: Xylem and phloem

34 . Can you differentiate between: Nervous and connective tissue

35 . How different tissues from stomach?

36 . Compare ratios of bio-elements.

37 . How biochemistry is important for study of physiology, cell biology and anatomy?

38 . Name structural and energy producing nature of carbohydrates.

39 . How many primary structure of protein is important?

40 . Why enzymes are called biological catalyst?

41 . At what pH pepsin and trypsin enzymes act the best?

42 . Which protein digesting enzyme functions in acidic medium?

43 . Why are enzyme specific and why can't each one speed up many different reactions?

44 .
According to induced fit model, the active site is flexible. Does it mean that any substrate can attach with this flexible active site? If not, then explain

45 . Write the equation of photosynthesis.

46 . Write the equation of aerobic respiration.

47 . Why a part of photosynthesis is called dark reactions?

48 . Why is transpiration called necessary evil?

49 . Why gardeners like to use autumn leaves in their soil?

50 . Write any three osmotic adjustments in hydrophytes

51 . Why plants absorb carbon dioxide and release oxygen during daytime?

52 . Define Transpiration.

53 . Define Micronutrients.

54 . Define Vascular bundle.

55 . Define Adhesion.

56 . Write the difference between Micronutrients and macronutrients.

57 . Write the difference between Monocot root and dicot root.

58 . Write the difference between Translocation and ascent of sap.

59 . Write the difference between pattern of gas exchange in leaves and roots

60 . Define cloning. Which process of plant is supposed to be a cloning?

61 . Explain the structure of embryonic stem.

62 . Explain the role of livestock.

63 . Explain the structure of embryo sac.

64 . Define/ Describe/ Explain briefly Apomixis.

65 . Define/ Describe/ Explain briefly male gametophyte.

66 . Define/ Describe/ Explain briefly budding.

67 . Define/ Describe/ Explain briefly rootstock.

68 . Define/ Describe/ Explain briefly rhizome.

69 . Write the differences between Artificial vegetative propagation and natural vegetative propagation.

70 . Write the differences between Grafting and stem cutting.

71 . Write the differences between Hypogeal and epigeal germination.

72 . Write the differences between bulb and rhizome

73 . Explain the homologous structures in plants.

74 . What is meant by descent with modification?

75 . Define / Describe / Explain briefly evolution.

76 . Define / Describe / Explain briefly speciation.

77 . Define / Describe / Explain briefly artificial selection.

78 . Define / Describe / Explain briefly palaeontology.

79 . Define / Describe / Explain briefly vestigial organs.

80 . Differentiate between natural and artificial selection.

Write detailed answers of the following questions.

1 . How biology is related with other sciences? Show and explain the link.

2 . Explain that science is a collaborative field.

3 .
Give at least ten examples of farming of animals which can improve economy of Pakistan. Describe the products and benefits of each example as well.

4 . How biological method is applied to find the cause of malaria?

5 . What is biodiversity? Write the importance of biodiversity in the natural ecosystem.

6 . What are the main aims and objectives of classification?

7 . What are the diagnostic characteristics of the four kingdoms of domain Eukarya?

8 . Write a brief note on species.

9 . State the complications of classifying viruses.

10 . Explain the structure model of cell membrane and give the roles of cell membrane.

11 . If a cell is rich in SER, list the roles in which this cell will be more efficient.

12 . Give the types of plastids and enlist the role of each type.

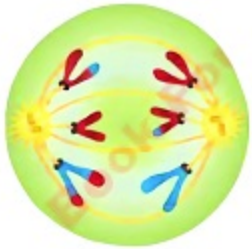
13 . Justify how the cells of leaf have variety of specialized structure and function.

14 . Describe the role of the cell membrane in maintaining equilibrium while exchanging matter?

15 .
If a cell completes meiosis I but meiosis II fails to occur, what type of anomalies will appear in the two daughter cell thus formed?

16 .

A cell is shown in this diagram. Answer following questions after observing it.



(a). Give at least one finding on the basis of which you can identify it animal or plant cell. (b) Identify the stage of cell division the given cell is passing through? (c) Enlist the reasons of your identification.

17 . Justify how the cells of leaf have a variety of specialized structure and function.

18 . Write a detailed note on animal tissues.

19 . Explain the function of different organ system of humans.

20 .
Cells and tissues are adapted to perform their function in the best way. Explain this statement by using example of leaf.

21 . How lipids are important for living organisms?

22 . What are different types of disaccharides? How are they produced? Mentions their sources.

23 . Describe the role of gene in protein synthesis.

24 . Describe the composition of chromatin material.

25 . Define enzyme and describe their characteristics and specifications.

26 .
What happens to enzymes when you increase or decrease? (a) Temperature (b) pH (c) Substrate concentration.

27 . Describe the structure and uses of ATP.

28 . Describe and sketch dark reactions of photosynthesis.

29 . State that nitrogen is important in protein synthesis and magnesium for chlorophyll formation.

30 . Describe how roots take up water and mineral salts by active and passive absorption.

31 . Describe temperature, wind and humidity as factors affecting the rate of transpiration.

32 . Describe the process of gaseous exchange in plants.

33 . Explain osmotic adjustment in plants.

34 . Explain the procedure of plant tissue culture and illustrate your answer with suitable diagram.

35 . Describe any two methods of artificial vegetative propagation in plants.

36 . Describe the methods of natural propagation in plants.

37 .

What is variation? Explain the sources of variation.

38 . Explain the theory of evolution by natural selection with examples.

39 . Describe speciation.

40 . How comparative anatomy proves evolution?