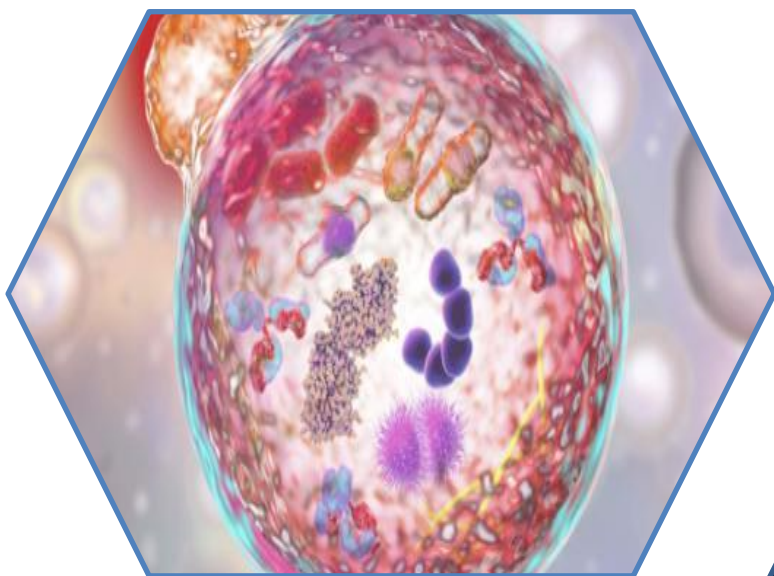


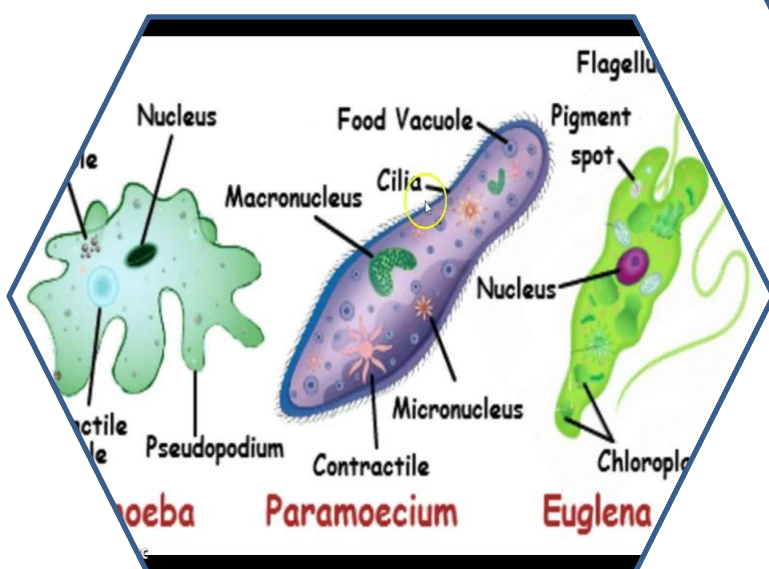


CHAPTER 1

Introduction to Biology



- Exercise Short Answers
- Important Short Answers



- Exercise MCQ's
- Important Additional MCQ's
- Past MDCAT MCQ's

Exercise Short Answers

Q:1 What do you mean by Hypothesis?

Ans: Hypothesis: A statement made on the basis of observation, data, experience and background knowledge of event is called hypothesis. OR

An observer organizes observations into data form and gives a statement as per experience and background knowledge of the event. This statement is the hypothesis.

- Or hypothesis is the statement made by a scientist on the basis of observation or available information.
- It is tentative explanation of observations.
- It is a statement which is to be tested.

Q:2 How does Law differ from theory.

Theory	Law
• A theory is made from hypothesis which has been tested by many experiments. A good theory is predictive and has explanatory power.	• If a theory survives skeptical approach of other scientists and continues to be supported by experimental evidences, it becomes a scientific law.
• It can be disapproved by scientific by scientists after scientists after greater efforts.	• It is virtually irrefutable theory.
• Due to changing nature of life biology is full theories.	• Due to changing nature of life biology has few laws.
• Theory may not remain uniform and constant in science.	• A scientific law is a uniform or constant fact of nature.
• It is more specific than law.	• It is more general than theory.
• It gives answers of simple questions.	• It can afford answers to even more complex questions.
• Example of theory is Cell theory, Lamarck and Darwin theory of natural selection etc.	• Examples of the biological laws are: Hardy-Weinberg Law and Mendel's law of inheritance.

Q:3 What is deduction/deductive reason?

Ans: Deduction/deductive reasoning: The logical consequence of a hypothesis is called a deduction. OR

It involves drawing specific conclusion from some general principle assumption or statements.

- It moves from general to specific.
- A number of deductions can be made to explain the hypothesis.
- **Example:** If all birds have wings, and sparrows are birds, then sparrows have wings.

Q:4 Define Vaccination.

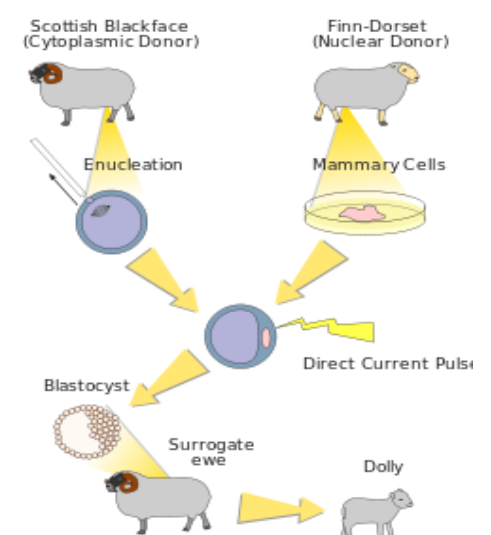
Ans: Vaccination: In vaccination, vaccines (inactive or weakened bacteria or viruses or their toxins) are inoculated to as to stimulate the production of antibodies or lymphocytes. OR

- It is an artificially induced passive immunity.
- Edward Jenner first developed the technique of vaccination in 1796.
- Vaccination is the injection of vaccine to make the people immune from the intending degree of their being exposed to the virus or bacteria at the time of epidemics or in some diseases the individuals are vaccinated in their early life to make them immune to those diseases.
- Many diseases such as polio, whooping cough, measles, mumps etc. can be easily controlled by vaccination or shots.

Q:5 Write a short note on cloning.

Ans: Cloning: Cloning is the production of genetically identical copies of organisms/cells by asexual reproduction.

- Cloning is a technology for achieving eugenic aims.
- A clone is defined as a cell or individual and all its asexually produced offspring.
- All members of a clone are genetically identical except when a mutation occurs.
- Generally no normal animal reproduced naturally by cloning. Several insects and many plants do, in some circumstance whereas few do so regularly.
- In 1997 scientists in Scotland succeeded in cloning a sheep. In this procedure the nucleus from a fertilize egg is removed and a nucleus from a cell of a fully developed individual is inserted in its place. The altered Zygotes is then implemented in a suitable womb where it completes its development. The new individual formed in this way is a genetically identical clone of the individual whose nucleus was used. Thus cloning could make multiple copies of a desired genotype.



Important Short Answers

Q:1 Differentiate between Organ and Organelles.

Organ	Organelles
It is the structure of organisms that is specialized to perform a particular function.	It is the structure within the cells that performs a specific function.
It is normally composed of several tissue types.	It is a sub - cellular structure.
Organ combines to organ systems.	Organelles combine to form cells.
The arrangement of organs speaks of division of labor in the organisms.	The arrangement of organs speaks of division of labor within the cell.
Examples: Heart, stomach, eye etc.	Examples: Mitochondrion, Nucleus, Ribosomes etc.

Q:2 Differentiate between Organ formation in plants and animals.

Organ formation in plants	Organ formation in animals
The level of organization is much less definite in plants than it is in animals.	In animals organ formation is far more complex and defined.
Organs in plants are not part of organ system,	Organs in animals are part of organ systems.
They cannot be assigned with clear cut function.	They can be assigned with clear cut functions.
Examples: Roots, shoots, leaves and flowers etc.	Examples: Heart, brain, stomach, eyes etc.

Q:3 Differentiate between Population and Community.

Population	Community
Population is a group of organisms of one species inhabiting the same area at the same time.	It is the group of organisms of two or more species inhabiting the same area at the same time.
It is simple collections of organisms of one species.	It is dynamic collections of two or more species.
It is lower level of biological organization than community.	It is higher level of biological organization than population. It includes more than one population.
Autecology is the study at population level.	Synecology is study at community level.
Examples are the number of rats in a field of rice, the number of students in a class room.	Example: Birds, rats and other animals in the field of rice.

Q:4 Define theory. Give important features of a good theory.

Ans: Theory:

A theory is a set statement which is found to be true as a result of testing of many hypotheses.

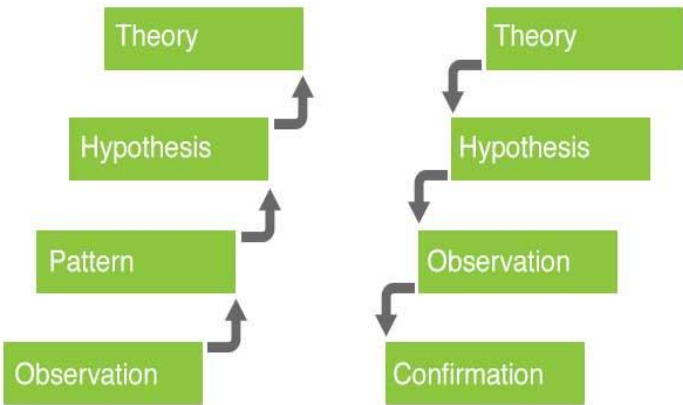
OR

A theory is made from hypothesis which has been tested by many experiments.

- A good theory has explanatory power.
- It may suggest new and different hypothesis.
- A theory should be productive.

Q:5 Differentiate between Deductive and Inductive reasoning.

Deductive reasoning	Inductive reasoning
It involves drawing specific conclusion from some general principle assumptions or statements.	It involves drawing general conclusion from some specific observation or statements.
It moves from general to specific.	It moves from specific to general.
Example: If “all birds have wings” and “sparrows are birds”, then	Example: If “sparrows have wings and are birds” and eagle, parrot,

we conclude that “sparrows have wings”.	hawk and crow are birds”, then we conclude that “all birds have wings”.
Inductive Reasoning vs Deductive Reasoning  <pre>graph TD subgraph Inductive_Reasoning [Inductive Reasoning] direction BT O1[Observation] --> P1[Pattern] P1 --> H1[Hypothesis] H1 --> T1[Theory] end subgraph Deductive_Reasoning [Deductive Reasoning] direction BT T2[Theory] --> H2[Hypothesis] H2 --> O2[Observation] O2 --> C2[Confirmation] end</pre>	

Q:6 How and when a Hypothesis becomes a theory?

Ans: How and when a Hypothesis becomes a theory: A hypothesis becomes a theory when it is tested again and again without ever being falsified and is considered well supported and generally accepted. This may be used the basis of formulating further hypothesis. So there is soon a series of supported by the result of many tests which is then called a theory.

Q:7: Name of the four Eras of Geological Time Chart.

Ans: Four eras of Geological time chart:

- 1) Proterozoic Era
- 2) Palaeozoic Era
- 3) Mesozoic Era
- 4) Caenozoic Era

Q:8: What is integrated disease management?

Ans: Integrated disease management:

It is defined as the control of various diseases by utilizing all the relevant methods with the education and participation of community.

- It is used to control a particular disastrous disease or all the common diseases of a plant or control of dangerous diseases from human society.
- In this program all methods, as and when required, are utilized.
- It requires awareness of the community about the severity of the problem, its causes and remedies.

Q:9 Differentiate between Biome and Biosphere.

Biome	Biosphere
• A large regional community primarily determined by its climate is called biome.	• The part of the earth inhabited by living organisms including both living and non-living components.
• A biome is large distinct regional land ecosystem characterized by certain climatic conditions and particular types of plants.	• The entire biosphere is an ecosystem, a place where organisms interact among themselves and with the physical and chemical environment.
• Example: Grassland, deserts, tropical rain forests, tundra etc.	• Example: Earth (This includes land as well as sea where life found).

Q:10 Give four characteristics of living organism?

Ans: Four characteristics of living organism:

- 1) They are made up of one or more cells.
- 2) They contain genetic program of their characteristics.
- 3) They can acquire and use energy.
- 4) They can carry out and control numerous chemical reactions.

Q:11 What is pasteurization. Give its application.

Ans. Pasteurization: The process to kill microorganisms from milk and milk containing products by the supply of heat is called pasteurization.

- It was developed by Louis Pasteur.
- Heat is supplied (63-64°C for 15 to 20 minutes OR 73-74°C for 1 sec to 1 minute).
- By this techniques food can be stored for long time without damaging its nutritional value.
- The transport of food from one place to another can be made easy.

Prof. Ijaz Ahmed Khan Abbasi (Lecturer Biology PGC)

Q:12 What is meant by phyletic lineage? How new species arise?

Ans: Phyletic lineage:

It is an unbroken series of species arranged in ancestor to descendant sequence with each later species evolved from the former one.

- The life today has come through the phyletic lineage or evolving populations of the organisms living in the remote past.
- Due to evolutionary process, the new species are formed and this causes increase in biodiversity.

Q:13 What is hydroponic culture technique. What are its advantages and applications?

Ans: Hydroponic culture techniques:

In this technique the plants are grown in aeriated water to which nutrient mineral salt are added.

- It is actually the science of growing terrestrial plants in an aerated solution.
- Hydroponic forming is not feasible yet.

Advantages:

- This technique is used to check whether certain nutrient is essential for plant or not because it is impossible to conduct experiments on nutrients requirements of plants by growing them in soil.
- Astronauts may use it for growing vegetables in space.

Q:14 Differentiate between Biological control and Bioremediation.

Biological control	Bioremediation
• The process in which living organisms are used to control harmful organism by competing or killing it is called biological control. OR • It is the control of living organisms by other living organisms.	• The detoxification of harmful chemicals by means of living organisms is called bioremediation. OR • It is removal or degradation of non-living materials by living organisms.
• It is used to increase food production control of pests/ insects.	• It is used to lessen population.
• Examples: 1. Control of Aphids by Wasp. 2. Some bacteria are used as bio-pesticides.	• Examples: 1. Removal of heavy metals by Algae. 2. Fungi degrade a diverse range of persistent or toxic environmental pollutants.

Q:15 Differentiate between Hybridization and Cloning.

Hybridization	Cloning
• Hybridization is a method of sexual reproduction.	• Cloning is method of asexual reproduction.
• Hybrid animals are sterile.	• Cloned animals are fertile.
• Hybrid organisms contain DNA from male and female parents.	• Cloned organisms contain DNA from only one type of parent.
• Hybridization gives rise to genetically different organisms from its parents known as hybrid.	• Cloning gives rise to an identical copy of parent organism known as a clone.
• Hybrid has superior characters over its parents (improved hybrid vigor).	• Clones are 100 % identical to their parents.

Q:16 Differentiate between Hypothesis and Theory.

Hypothesis	Theory
• A tentative explanation of observations is called hypothesis.	• A series of hypothesis supported by the results of many tests from theory.
• Hypothesis is not experimentally tested and proven.	• Theory is experimentally tested and proven.
• It is derived from data collected during observations.	• It is derived from experimentally tested hypothesis.
• It is based upon projections or possibilities.	• Theory is certain and can give rise to new hypothesis.

Prof. Ijaz Ahmed Khan Abbasi (Lecturer Biology PGC)

Q:17 Define fossil. Also give significance of study of fossil.

Ans: Fossil: The remains or impression of a prehistoric plant or animal embedded in rock and preserved in petrified form.

Significance of fossil:

- Fossil showed that at various organisms dominated this planet during various periods of geological time chart.
- Study of fossils allows biologists to place organisms in a time sequence.
- We can find age of organisms and place them according to sequence.

Q: 18 Differentiate between Anatomy and Morphology.

Anatomy	Morphology
• The study of internal gross structure is called anatomy.	• The study of form, appearance and external structure is called morphology.
• Anatomy is subdivision of morphology.	• However, morphology is a branch of biology.
• It is concerned about the cellular and tissue level composition of organisms.	• It is concerned with gross size, shape, color of organisms.

Q:19 Differentiate between Marine water biology and Fresh water biology.

Marine water biology	Fresh water biology
• This is the study of marine life.	• This deals with the organism living in fresh water bodies.
• This includes study of life in seas and oceans and physical and chemical characteristics of the sea acting as factors for marine life.	• This includes life in rivers, lakes etc. and physical and chemical parameters of these water bodies.

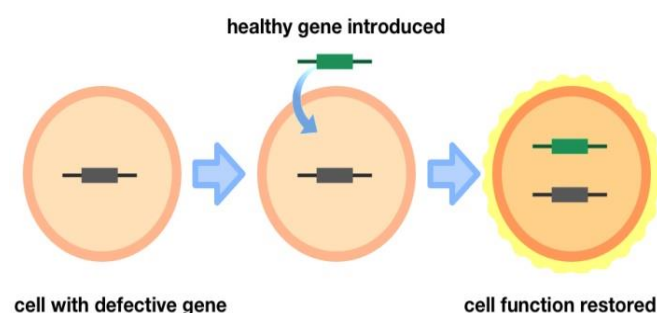
Q: 20 Differentiate between Chemotherapy and Radiotherapy.

Chemotherapy	Radiotherapy
• In chemotherapy certain anticancer chemicals are given to the patients at regular intervals.	• In radiotherapy, the cancerous part is exposed to short wave radiations from radioactive material.
• These chemicals may kill both cancerous as well as normal cells.	• This process is repeated at regular intervals.
• In Pakistan usually chemotherapy is used to control cancer.	• In Pakistan several centers carry out radiotherapy to control cancer.

Q: 21 What is gene therapy.

Ans: Gene Therapy: Gene therapy is the treatment of the defective gene by introducing normal and healthy gene into the body through bone marrow cells.

- It is the insertion of genetic material into human cells for the treatment of a disorder.
- It is a new technique in which defective genes are repaired.
- In gene therapy, the normal genes are first isolated and then are inserted into the patient through bone marrow.



Q:22 Differentiate between Biotechnology and Molecular Biology.

Biotechnology	Molecular Biology
• It deals with the use of living organism, system or processes in manufacturing and service industries.	• This deals with the structure of organisms, the cells and their organelles at molecular level.
• This includes production of Insulin, hormones, transgenic organisms.	• This includes structure and function of the macromolecules (e.g. proteins and nucleic acids) essential to life.

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Q:23 What are Bio-elements and give their propotion in human body.

Ans: Bio-elements: Bio elements are naturally occurring chemical elements that are commonly used in forming the chemical compounds from which the living organisms are made.

- They are found in all organisms.
- Bio elements have special properties which make them suitable as basis for life.

Proportion of bio elements:

Major bio elements	Minor bio elements	Trace bio elements
• Oxygen 65% • Carbon 18% • Hydrogen 10% • Nitrogen 3% • Calcium 2% • Phosphorous 1%	• Potassium 0.35% • Sulphur 0.15% • Chlorine 0.15 % • Sodium 0.15% • Magnesium 0.05% • Iron 0.004%	• Copper • Manganese • Zinc • Iodine

Q:24 What is molecular level in organization level of organism. Differentiate between Micro molecules and Macro molecules.

Ans: Molecular level: In organisms elements usually do not occur in isolated form. The atoms of different elements combine with each other through ionic and covalent bonding to produce compounds. This stable form is called molecules.

Micro molecules	Macro molecules
• A low molecular weight molecule is called micro-molecules.	• A high molecular weight molecule is called macro molecules.
• Examples: CO₂, H₂O	• Examples: Starch, protein etc.

Q:25 Define population with examples and also give its attributes.

Ans: Population: A population is a group of living organisms of the same species located in the same place at the same time.

Examples:

- The number of rats in a field of rice.
- The number of students in your biology class.
- Human population in a city.

Attributes of population are:

- Gene frequency
- Gene flow
- Age distribution
- Population density
- Population pressure

Q:26 How science of biology helping mankind?

Ans: Biology and service of mankind:

The science of biology has been helping mankind in many ways:

- In increasing food production/Agriculture
- In combating disease/Health
- In protecting and conserving environment/ Environment

Exercise MCQ's

❖ Encircle the correct answer from the multiple choices.

1) Which one of the following is a correct sequence in biological methods?

- a) Observation – Hypothesis – Law - Theory
- b) Observations – Hypothesis – Deduction – Testing of deduction
- c) Hypothesis – Observation –Deduction –Testing of deduction
- d) Law –Theory –Deduction –Observation

2) Which one of the following is employed in treatment of cancer?

- a) Antibiotics and vaccination
- b) Radiotherapy and chemotherapy
- c) Chemotherapy and antibodies
- d) All of the above

3) Which one of the following is not a viral disease?

- a) Cow pox
- b) Mumps
- c) Tetanus
- d) Small pox

4) Which one of the following is not related to cloning?

- a) Replacement of the nucleus of zygote, by another nucleus of same organism.
- b) Separation of cells of embryo to form more embryos.
- c) The individuals resulting have similar genetic make-up.
- d) Removal of piece of DNA or gene from the cell and incorporating another gene or piece of DNA in its place.

Answer key:

1	B	2	b	3	c	4	d
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Most important MCQ's

❖ Encircle the correct answer from the multiple choices.

Branches

1. The study of tissues is called:
a) Anatomy b) Histology c) Paleontology d) Physiology
2. The study of parasites is called:
a) Paleontology b) Histology c) Microbiology d) Parasitology
3. The branch of biology that deals with cell functions is called:
a) Histology b) Molecular biology c) Physiology d) Microbiology
4. Use of living organisms, system or processes in manufacturing and service industries is studied by branch is called:
a) Social biology b) Human biology c) Biotechnology d) Marine biology
5. The study of animals in nature is called:
a) Zoogeography b) Geography c) Biodiversity d) Wild life
6. The study of distribution of animals in nature is called:
a) Zoogeography b) Biodiversity c) Geography d) Wildlife
7. The branch of biology deals with the study of social behaviors and communal life of human being is:
a) Human biology b) Molecular biology c) Social biology d) Environmental biology
8. Branch of biology which deals with the structure of organisms, the cells and their organelles at molecular level is:
a) Molecular biology b) Marine biology c) Physiology d) Histology
9. The branch of biology which deals with the study of ancestral history of living organism is called as:
a) Paleontology b) Zoogeography c) Evolution d) Heredity
10. Embryology is the study of:
a) Internal gross structure b) Tissues c) Development d) Fossils
11. The experiments on DNA molecules in chromosomes for knowing the basis of inherited diseases are conducted by:
a) Molecular biologists b) Microbiologists c) Freshwater biologists d) Social biologist
12. Synthetic insulin from pork was formed by which technique:
a) Parasitology b) Social biological techniques c) Biotechnology d) Both a and c
13. The concept that various organisms dominated this planet during various geological time period and thus placing organisms in a time sequence came from the studies by:
a) Environmental biologist b) Paleontologist c) Marine biologist d) Social biologist
14. It is possible to date the rocks by comparing the amount of specific radioactive isotopes they contain. Which of the statement is correct in this respect:
a) Older sediment layers have equal amount of these radioactive isotopes as that of the young ones
b) Older sediment layers have less amount of these radioactive isotopes as that of the young ones
c) Older sediment layers have greater amount of these radioactive isotopes as that of the young ones
d) Older sediment layers did not have these radioactive isotopes

Levels of Biological Organization

15. How many Bio-elements account for 99% of the total mass in a human body?
a) 16 b) 06 c) 10 d) 12
16. What is number of naturally occurring chemical elements?
a) 32 b) 92 c) 150 d) 102
17. Percentage of Hydrogen in human body is:
a) 5% b) 10% c) 15% d) 20%
18. Percentage of Oxygen in human body is:
a) 50% b) 65% c) 70% d) 40%
19. The percentage of Carbon in human body is:
a) 65% b) 10% c) 18% d) 3%
20. The percentage of Phosphors in human body is:
a) 1% b) 2% c) 3% d) 4%
21. The amount of Na by weight in human body is:
a) 0.35% b) 0.25% c) 0.15% d) 0.05%
22. The amount of potassium by weight in human body is:
a) 0.35% b) 0.25% c) 0.15% d) 0.05%
23. The lowest percentage of bio-elements in man among the following, is of:
a) Chlorine b) Sulphur c) Manganese d) Iron
24. Which of the following is trace bio-elements in human body?
a) Hydrogen b) Carbon c) Oxygen d) Iodine
25. Bio-element which account for 18% in human body is:
a) Hydrogen b) Carbon c) Oxygen d) Iodine

a) Potassium –Sulphur –Copper –Sodium
b) Calcium –Zinc –Iodine –Chlorine
c) Copper –Manganese –Zinc –Iodine
d) Carbon –Nitrogen –Iodine –Sulphur

- a) They live in the same ecosystem
- b) They are acted upon by the same environment
- c) They are highly organized and complex made of one or more cells and contain genetic material
- d) Both a and b

a) Simple b) Advance c) Complex d) Highly complex

a) Organ b) Cell c) Tissue d) Organelle

a) Cytoplasm b) Cell c) DNA d) Protoplasm

a) Molecule b) Subatomic particles c) Atoms d) Organelles

a) An organ b) A molecule c) Tissue d) Both a and c

a) Starch b) Protein c) Cellulose d) Glucose

a) Polysaccharide b) Protein c) Hemoglobin d) ATP

[illegible]

a) Skeletal b) Smooth c) Cardiac d) All of above

a) Organ system b) Organelles c) Organ d) Tissue

a) Organ b) Organelles c) Individual d) Molecules

a) Organ b) Organ system c) Organelle d) Whole organisms

a) Respiratory system b) Nervous system c) Endocrine system d) Both b and c

a) Ecosystem b) Population c) Community d) Biosphere

a) Species b) Community c) Population d) Individuals

a) Population density b) Gene frequency c) Gene flow d) Gene structure

a) Community b) Tribe c) Committee d) Colony

a) Community b) Biosphere c) Ecosystem d) Microhabitat

a) Biome b) Biosphere c) Ecosystem d) Community

a) Biosphere b) Population c) Ecosystem d) Species

a) Symbiosis b) Commensalism c) Parasitism d) Predation

a) Specie b) Weather c) Climate d) Predation

a) Population b) Species c) Ecosystem d) Biome

a) Static b) Dynamic c) May be static or dynamic d) None of these

Living world in time, phyletic lineage and biodiversity

a) Proterozoic b) Paleozoic c) Cenozoic d) Mesozoic

a) Population b) Community c) Biodiversity d) Diversity

54. The described species number of living organisms is:

- a) 1.5 Million b) 2.5 Million c) 3.00 Million d) 4.00

55. About how many species of organism are currently known to science?

- a) 2,50,000 b) 2,500,000 c) 25000 d) 2,000,000

56. The number of the species of insects are:

- a) 53.1 % b) 17.6 % c) 19.9% d) 9.4%

57. Fungi,, algae, protozoan and various prokaryotes are:

- a) 17.6 % b) 19.9 % c) 9.4 % d) 9.1 %

Biological Method

58. Statement made by a scientist that may or may not be true is:

- b) Theory b) Scientific law c) Hypothesis d) Statement

59. Tentative explanation of observation is called as:

- a) Hypothesis b) Deduction c) Law d) Theory

60. The reasoning from the general to specific is:

- a) Deductive b) Inductive c) Scientific d) Theoretical

61. Biology is short in laws because of:

- a) Exclusive nature of life b) Less falsification c) Less tentation d) Large population of human

62. Biological sciences have a set methodology and it is based on:

- a) Experimental inquiry b) Esthetic preference c) Philosophical ideas d) Imaginations

63. A series of hypothesis supported by the results of many tests is called:

- a) Scientific law b) Theory c) Data d) Deduction

64. Which one is not correct for a productive theory?

- a) It is predictive
b) It has explanatory power
c) It discourages suggestion of different hypotheses
d) None of these

65. Conclusion of Mendel's work latter became a:

- a) Scientific hypothesis b) Theory c) Scientific law d) Productive theory

66. Which of the following is the correct sequence in the biological method?

- a) Observation → hypothesis → law → theory
b) Observation → hypothesis → deduction → testing of deduction
c) Hypothesis → observation → deduction → testing of deduction
d) Law → theory → deduction → observation

Biology in service of mankind

67. Plant having foreign DNA incorporated into their cells are called:

- a) Vascular plants b) Plasmid c) Transamerican plants d) Transgenic plants

68. Techniques which issued to check, whether a certain nutrient is essential for plant is:

- a) Integrated disease management
b) Hydroponic culture technique
c) Cloning
d) Pasteurization

69. The method by which pests are destroyed by using some living organism is called:

- a) Bio-pesticide
b) Biological control
c) Integrated disease management
d) Pasteurization

70. Aphid attacking walnut tree is biologically controlled by:

- a) Wasp b) House fly c) Honey bee d) Mosquito

71. A method in which pests are destroyed by using living organism or natural enemies is called:

- a) Genetic engineering
b) Biological control
c) Integrated disease management
d) Pasteurization

72. Milk and milk products are preserved by:

- a) Pasteurization b) Vaccination c) Immunization d) Cloning

73. HIV virus causes:

- a) Tuberculosis b) Cancer c) AIDS d) Hepatitis

74. Radiotherapy is used for:

- a) Cancer b) AIDS c) Hepatitis d) Malaria

75. A technique has been developed to repair the defective gene is:

- a) Chemotherapy b) Radiotherapy c) Gene Therapy d) None

76. In human gene therapy the normal genes are inserted into the host through:

- a) Blood cells b) Bone marrow cells c) Bone cells d) Muscle cells

77. Which one of the following is employed in treatment of cancer:

- a) Antibiotics and vaccination
- b) Radiotherapy and chemotherapy
- c) Chemotherapy and antibodies
- d) All of these

78. First vaccination techniques was developed by:

- a) Jenner
- b) Koch
- c) Pasteur
- d) Brown

79. Which scientist first developed the technique of vaccination in 1796?

- a) Robert Brown
- b) Edward Jenner
- c) Emil Fischer
- d) Koshland

80. Breeders have developed new and better varieties of food items by using which technique:

- a) Pasteurization
- b) Hydroponic culture technique
- c) Genetic engineering
- d) Biological control techniques

81. Astronauts may use which technique to grow fruits and vegetables:

- a) Tissue culture techniques
- b) Cloning
- c) Pasteurization
- d) Hydroponic culture technique

82. Which statement is incorrect for pasteurization?

- a) It is used to preserve yogurt and milk
- b) It was developed by Louis Pasteur
- c) It involves heating the substance at high temperature for just few sec
- d) It can be used to preserve vegetables and meat

83. Which of the following is not a viral disease?

- a) Cowpox
- b) Mumps
- c) Tetanus
- d) Small pox

84. Which disease can be controlled by vaccination?

- a) Measles
- b) Cancer
- c) Diabetes
- d) Heart attack

85. Which disease has been totally eradicated from the world because of effective vaccination?

- a) Measles
- b) Polio
- c) Small pox
- d) Hepatitis

86. Which of the following statement is incorrect about antibiotics?

- a) They are used against microorganisms
- b) They are always effective against bacteria
- c) They are used in diseases like tuberculosis and pneumonia
- d) They are derived from bacteria only

Protection and Conservation

87. Bioremediations uses one of the followings:

- a) Fungi & Algae
- b) Bacteria
- c) Algae
- d) Fungi

88. In cities, particularly the exhaust from auto mobiles is enormously adding into atmosphere:

- a) Chromium
- b) Nitrogen
- c) Lead
- d) Cyanide

89. Removal or degradation of environmental pollutants or toxic materials by living organisms is called:

- a) Integrated disease management
- b) Hydroponic culture technique
- c) Pasteurization
- d) Bioremediation

Cloning

90. The technology used for achieving eugenic aims:

- a) Gene therapy
- b) Radiotherapy
- c) Chemotherapy
- d) Cloning

91. In 1997, scientists in Scotland succeeded in cloning a:

- a) Sheep
- b) Horse
- c) Goat
- d) Cow

92. The first ever clone was prepared in 1997 in:

- a) England
- b) Ireland
- c) Scotland
- d) Maryland

93. A cell or organism and all its asexually produced offspring constitute a

- a) Clone
- b) Variety
- c) Population
- d) Species

94. Which statement is incorrect for cloning?

- a) The nucleus of a fertilized egg is replaced by the nucleus from the cell of a fully developed individual
- b) Division of a single egg into one or more separate embryos
- c) The individual is the mirror image of the parent organism
- d) It involve methods of sexual reproduction

Answer key:

1	b	2	d	3	c	4	c	5	a	6	a	7	c	8	a	9	c	10	c
11	a	12	c	13	b	14	b	15	b	16	b	17	b	18	b	19	c	20	a
21	c	22	a	23	c	24	d	25	b	26	c	27	c	28	d	29	b	30	d
31	d	32	b	33	d	34	d	35	b	36	b	37	c	38	a	39	a	40	d
41	b	42	c	43	d	44	a	45	a	46	d	47	c	48	a	49	c	50	d
51	b	52	c	53	c	54	b	55	b	56	a	57	c	58	c	59	a	60	a
61	a	62	a	63	b	64	c	65	c	66	b	67	a	68	b	69	b	70	a
71	b	72	a	73	c	74	a	75	c	76	b	77	b	78	a	79	b	80	c
81	d	82	d	83	c	84	a	85	c	86	d	87	c	88	c	89	c	90	d
91	a	92	c	93	a	94	d												

MDCAT MCQ'S

2009

1. Cloning is a form of:

- a) Parthenogenesis b) Sexual Reproduction c) Apomixis d) Asexual Reproduction

2010

2. Cloning is a form of:

- a) Sexual Reproduction b) Vegetative Propagation c) Asexual Reproduction d) Genetic Recombination

3. Group of interbreeding individuals of particular species, sharing common geographical area is called:

- a) Population b) Community c) Community ecology d) Autecology

4. Which of the following is the lowest level of biological organization with respect to others?

- a) Multicellular organisms b) Species c) Biosphere d) Population

5. When an electron pair is shared between two atoms:

- a) Two covalent bonds are formed
b) Single covalent bond is formed
c) Hydrogen bond is formed
d) Ionic bond is formed

2011

6. Which of the following diseases can be prevented through vaccination?

- a) AIDS and Cancer b) Typhoid and Cancer c) Malaria and AIDS d) Measles and Mumps

7. Newly produced cells/individuals which are identical in each other are known as:

- a) Genetically Modified b) Transgenic Bacteria c) Transgenic Animals d) Clones

8. Which of the following is a blood borne disease?

- a) Hepatitis b) Influenza c) Cholera d) Candidiasis

9. The control of pest has traditionally meant regulation by natural enemies, predators, parasites and pathogens. This type of control is known as:

- a) Cultural Control b) Pesticides Control c) Biological Control d) Insecticides Control

2012

10. Population of different species (plants and animals) living in the same habitat form a:

- a) Community b) Biosphere c) Ecosystem d) Microhabitat

11. The part of the body which forms a structural and functional unit and is composed of more than one tissue is called:

- a) Organ b) Organ system c) Organelle d) Whole organism

12. A method in which pests are destroyed by using same living organisms or natural enemies is called:

- a) Pasteurization
b) Biological control
c) Integrated disease management
d) Genetic engineering

13. Chemicals produced by microorganisms which are capable of destroying the growth of microbes are called:

- a) Antigen b) Antiseptics c) Biocidal d) Antibiotics

2013

14. The simplest independent unit of life is known as:

- a) Bacterial colony b) Chloroplast c) Cell d) DNA

15. The plants having foreign DNA incorporated into their cells are called:

- a) Clonal plants b) Biotech plants c) Transgenic plants d) Tissue cultured plants

16. Pasteurization technique is widely used for preservation of:

- a) Water b) Milk products c) Heat d) Vaccines

17. The production of genetically identical copies of organisms by asexual reproduction is called:

- a) Genetic engineering
b) Hydroponic culture technique
c) Integrated disease management
d) Cloning

2014

18. The use of living organisms in industry for the production of useful products is known as:
- a) Parasitology b) Biotechnology c) Biochemistry d) Molecular Biology
19. Plants having foreign DNA incorporated into their cells are called:
- a) Clone plants b) Parthenocarpic plants c) Transgenic plants d) Mutant giants
20. Treatment by using attenuated culture of bacteria is called:
- a) Chemotherapy b) Antisepsis c) Sterilization d) Vaccination

2015

21. Which one of the following edible products is widely pasteurized?
- a) Soft drinks b) Milk c) Mango squash d) Orange Juice

2016

22. _____ is the branch of Biology used for the identification and interpretation of fossils.
- a) Evolution b) Zoogeography c) Paleontology d) Biodiversity

Answer key:

1	d	2	c	3	a	4	a	5	b
6	d	7	a	8	a	9	c	10	a
11	a	12	b	13	d	14	c	15	c
16	b	17	d	18	b	19	c	20	d
21	b	22	c						