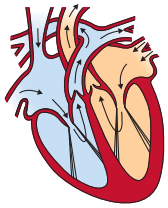


CHAPTER 6
Life Processes

Multiple Choice Questions

1. Which of the following statements about the autotrophs is incorrect?
(a) They synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll
(b) They store carbohydrates in the form of starch
(c) They convert carbon dioxide and water into carbohydrates in the absence of sunlight
(d) They constitute the first trophic level in food chains

2. In which of the following groups of organisms, food material is broken down outside the body and absorbed?
(a) Mushroom, green plants, *Amoeba*
(b) Yeast, mushroom, bread mould
(c) *Paramecium*, *Amoeba*, Cuscuta
(d) Cuscuta, lice, tapeworm

3. Select the correct statement
(a) Heterotrophs do not synthesise their own food
(b) Heterotrophs utilise solar energy for photosynthesis
(c) Heterotrophs synthesise their own food
(d) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates

4. Which is the correct sequence of parts in human alimentary canal?
(a) Mouth → stomach → small intestine → oesophagus → large intestine
(b) Mouth →oesophagus → stomach → large intestine → small intestine
(c) Mouth → stomach → oesophagus → small intestine → large intestine
(d) Mouth → oesophagus → stomach → small intestine → large intestine

5. If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected?

(a) Proteins breaking down into amino acids
(b) Starch breaking down into sugars
(c) Fats breaking down into fatty acids and glycerol
(d) Absorption of vitamins

6. The inner lining of stomach is protected by one of the following from hydrochloric acid. Choose the correct one

(a) Pepsin
(b) Mucus
(c) Salivary amylase
(d) Bile

7. Which part of alimentary canal receives bile from the liver?

(a) Stomach
(b) Small intestine
(c) Large intestine
(d) Oesophagus

8. A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates that rice water contains

(a) complex proteins
(b) simple proteins
(c) fats
(d) starch

9. In which part of the alimentary canal food is finally digested?

(a) Stomach
(b) Mouth cavity
(c) Large intestine
(d) Small intestine

10. Choose the function of the pancreatic juice from the following

(a) trypsin digests proteins and lipase carbohydrates
(b) trypsin digests emulsified fats and lipase proteins
(c) trypsin and lipase digest fats
(d) trypsin digests proteins and lipase emulsified fats

11. When air is blown from mouth into a test-tube containing lime water, the lime water turned milky due to the presence of

(a) oxygen
(b) carbon dioxide
(c) nitrogen
(d) water vapour

12. The correct sequence of anaerobic reactions in yeast is

(a) Glucose $\xrightarrow{\text{cytoplasm}}$ Pyruvate $\xrightarrow{\text{mitochondria}}$ Ethanol + Carbondioxide

(b) Glucose $\xrightarrow{\text{cytoplasm}}$ Pyruvate $\xrightarrow{\text{cytoplasm}}$ Lactic acid

(c) Glucose $\xrightarrow{\text{cytoplasm}}$ Pyruvate $\xrightarrow{\text{mitochondria}}$ Lactic acid

(d) Glucose $\xrightarrow{\text{cytoplasm}}$ Pyruvate $\xrightarrow{\text{cytoplasm}}$ Ethanol + Carbondioxide

13. Which of the following is most appropriate for aerobic respiration?

(a) Glucose $\xrightarrow{\text{mitochondria}}$ Pyruvate $\xrightarrow{\text{cytoplasm}}$ CO_2+H_2O+ Energy

(b) Glucose $\xrightarrow{\text{cytoplasm}}$ Pyruvate $\xrightarrow{\text{mitochondria}}$ CO_2+H_2O+ Energy

(c) Glucose $\xrightarrow{\text{cytoplasm}}$ Pyruvate + Energy $\xrightarrow{\text{mitochondria}}$ CO_2+H_2O

(d) Glucose $\xrightarrow{\text{cytoplasm}}$ Pyruvate + Energy $\xrightarrow{\text{mitochondria}}$ CO_2+H_2O+ Energy

14. Which of the following statement(s) is (are) true about respiration?

(i) During inhalation, ribs move inward and diaphragm is raised

(ii) In the alveoli, exchange of gases takes place i.e., oxygen from alveolar air diffuses into blood and carbon dioxide from blood into alveolar air

(iii) Haemoglobin has greater affinity for carbon dioxide than oxygen

(iv) Alveoli increase surface area for exchange of gases

(a) (i) and (iv) (b) (ii) and (iii)

(c) (i) and (iii) (d) (ii) and (iv)

15. Which is the correct sequence of air passage during inhalation?

(a) Nostrils → larynx → pharynx → trachea → lungs

(b) Nasal passage → trachea → pharynx → larynx → alveoli

(c) larynx → nostrils → pharynx → lungs

(d) Nostrils → pharynx → larynx → trachea → alveoli

16. During respiration exchange of gases take place in

(a) trachea and larynx

(b) alveoli of lungs

(c) alveoli and throat

(d) throat and larynx

17. Which of the following statement (s) is (are) true about heart?

(i) Left atrium receives oxygenated blood from different parts of body while right atrium receives deoxygenated blood from lungs

(ii) Left ventricle pumps oxygenated blood to different body parts while right ventricle pumps deoxygenated blood to lungs

(iii) Left atrium transfers oxygenated blood to right ventricle which sends it to different body parts

(iv) Right atrium receives deoxygenated blood from different parts of the body while left ventricle pumps oxygenated blood to different parts of the body

(a) (i) (b) (ii)

(c) (ii) and (iv) (d) (i) and (iii)

18. What prevents backflow of blood inside the heart during contraction?

(a) Valves in heart

(b) Thick muscular walls of ventricles

(c) Thin walls of atria

(d) All of the above

19. Single circulation i.e., blood flows through the heart only once during one cycle of passage through the body, is exhibited by

(a) Labeo, Chameleon, Salamander

(b) Hippocampus, Exocoetus, Anabas

(c) Hyla, Rana, Draco

(d) Whale, Dolphin, Turtle

20. In which of the following vertebrate group/groups, heart does not pump oxygenated blood to different parts of the body?

(a) Pisces and amphibians

(b) Amphibians and reptiles

(c) Amphibians only

(d) Pisces only

21. Choose the correct statement that describes arteries.

(a) They have thick elastic walls, blood flows under high pressure; collect blood from different organs and bring it back to the heart

(b) They have thin walls with valves inside, blood flows under low pressure and carry blood away from the heart to various organs of the body

(c) They have thick elastic walls, blood flows under low pressure; carry blood from the heart to various organs of the body

(d) They have thick elastic walls without valves inside, blood flows under high pressure and carry blood away from the heart to different parts of the body.

22. The filtration units of kidneys are called

(a) ureter
(b) urethra
(c) neurons
(d) nephrons

23. Oxygen liberated during photosynthesis comes from

(a) water
(b) chlorophyll
(c) carbon dioxide
(d) glucose

24. The blood leaving the tissues becomes richer in

(a) carbon dioxide
(b) water
(c) heamoglobin
(d) oxygen

25. Which of the following is an incorrect statement?

(a) Organisms grow with time
(b) Organisms must repair and maintain their structure
(c) Movement of molecules does not take place among cells
(d) Energy is essential for life processes

26. The internal (cellular) energy reserve in autotrophs is

(a) glycogen
(b) protein
(c) starch
(d) fatty acid

27. Which of the following equations is the summary of photosynthesis?

(a) $6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$

(b) $6CO_2 + H_2O + \text{Sunlight} \rightarrow C_6H_{12}O_6 + O_2 + 6H_2O$

(c) $6CO_2 + 12H_2O + \text{Chlorophyll} + \text{Sunlight} \rightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$

(d) $6CO_2 + 12H_2O + \text{Chlorophyll} + \text{Sunlight} \rightarrow C_6H_{12}O_6 + 6CO_2 + 6H_2O$

28. Choose the event that does not occur in photosynthesis

(a) Absorption of light energy by chlorophyll
(b) Reduction of carbon dioxide to carbohydrates
(c) Oxidation of carbon to carbon dioxide
(d) Conversion of light energy to chemical energy

29. The opening and closing of the stomatal pore depends upon

(a) oxygen
(b) temperature
(c) water in guard cells
(d) concentration of CO_2 in stomata

30. Choose the forms in which most plants absorb nitrogen

(i) Proteins
(ii) Nitrates and Nitrites
(iii) Urea
(iv) Atmospheric nitrogen

(a) (i) and (ii) (b) (ii) and (iii)
(c) (iii) and (iv) (d) (i) and (iv)

31. Which is the first enzyme to mix with food in the digestive tract?

(a) Pepsin
(b) Cellulase
(c) Amylase
(d) Trypsin

32. Which of the following statement(s) is (are) correct?

(i) Pyruvate can be converted into ethanol and carbon dioxide by yeast
(ii) Fermentation takes place in aerobic bacteria
(iii) Fermentation takes place in mitochondria
(iv) Fermentation is a form of anaerobic respiration

(a) (i) and (iii) (b) (ii) and (iv)
(c) (i) and (iv) (d) (ii) and (iii)

33. Lack of oxygen in muscles often leads to cramps among cricketers. This results due to

(a) conversion of pyruvate to ethanol
(b) conversion of pyruvate to glucose
(c) non conversion of glucose to pyruvate
(d) conversion of pyruvate to lactic acid

34. Choose the correct path of urine in our body

(a) kidney → ureter → urethra → urinary bladder
(b) kidney → urinary bladder → urethra → ureter
(c) kidney → ureters → urinary bladder → urethra
(d) urinary bladder → kidney → ureter → urethra

35. During deficiency of oxygen in tissues of human beings, pyruvic acid is converted into lactic acid in the

(a) cytoplasm
(b) chloroplast
(c) mitochondria
(d) golgi body

Short Answer Questions

36. Name the following

(a) The process in plants that links light energy with chemical energy
(b) Organisms that can prepare their own food
(c) The cell organelle where photosynthesis occurs
(d) Cells that surround a stomatal pore
(e) Organisms that cannot prepare their own food
(f) An enzyme secreted from gastric glands in stomach that acts on proteins.

37. "All plants give out oxygen during day and carbon dioxide during night". Do you agree with this statement? Give reason.

38. How do the guard cells regulate opening and closing of stomatal pores?

39. Two green plants are kept separately in oxygen free containers, one in the dark and the other in continuous light. Which one will live longer? Give reasons.

40. If a plant is releasing carbon dioxide and taking in oxygen during the day, does it mean that there is no photosynthesis occurring? Justify your answer.

41. Why do fishes die when taken out of water?

42. Differentiate between an autotroph and a heterotroph.

43. Is 'nutrition' a necessity for an organism? Discuss.

44. What would happen if green plants disappear from earth?

45. Leaves of a healthy potted plant were coated with vaseline. Will this plant remain healthy for long? Give reasons for your answer.

46. How does aerobic respiration differ from anaerobic respiration?

47. Match the words of Column (A) with that of Column (B)

Column (A)	Column (B)
(a) Phloem	(i) Excretion
(b) Nephron	(ii) Translocation of food
(c) Veins	(iii) Clotting of blood
(d) Platelets	(iv) Deoxygenated blood

48. Differentiate between an artery and a vein.

49. What are the adaptations of leaf for photosynthesis?

50. Why is small intestine in herbivores longer than in carnivores?

51. What will happen if mucus is not secreted by the gastric glands?

52. What is the significance of emulsification of fats?

53. What causes movement of food inside the alimentary canal?

54. Why does absorption of digested food occur mainly in the small intestine?

55. Match Group (A) with Group (B)

Group (A)	Group (B)
(a) Autotrophic nutrition	(i) Leech
(b) Heterotrophic nutrition	(ii) Paramecium
(c) Parasitic nutrition	(iii) Deer
(d) Digestion in food vacuoles	(iv) Green plant

56. Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms?

57. Why is blood circulation in human heart called double circulation?

58. What is the advantage of having four chambered heart?

59. Mention the major events during photosynthesis

60. In each of the following situations what happens to the rate of photosynthesis?

(a) Cloudy days

(b) No rainfall in the area

(c) Good manuring in the area

(d) Stomata get blocked due to dust

61. Name the energy currency in the living organisms. When and where is it produced?

62. What is common for cuscuta, ticks and leeches?

63. Explain the role of mouth in digestion of food.

64. What are the functions of gastric glands present in the wall of the stomach?

65. Match the terms in Column (A) with those in Column (B)

Column (A)	Group (B)
(a) Trypsin	(i) Pancreas
(b) Amylase	(ii) Liver
(c) Bile	(iii) Gastric glands
(d) Pepsin	(iv) Saliva

66. Name the correct substrates for the following enzymes

(a) Trypsin (b) Amylase
(c) Pepsin (d) Lipase

67. Why do veins have thin walls as compared to arteries?

68. What will happen if platelets were absent in the blood?

69. Plants have low energy needs as compared to animals. Explain.

70. Why and how does water enter continuously into the root xylem?

71. Why is transpiration important for plants?

72. How do leaves of plants help in excretion?

Long Answer Questions

73. Explain the process of nutrition in *Amoeba*.

74. Describe the alimentary canal of man.

75. Explain the process of breathing in man.

76. Explain the importance of soil for plant growth.

77. Draw the diagram of alimentary canal of man and label the following parts.

Mouth, Oesophagus, Stomach, Intestine

78. How do carbohydrates, proteins and fats get digested in human beings?

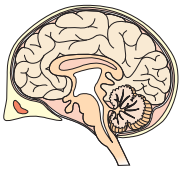
79. Explain the mechanism of photosynthesis.

80. Explain the three pathways of breakdown in living organisms.

81. Describe the flow of blood through the heart of human beings.

82. Describe the process of urine formation in kidneys.

CHAPTER 7



Control and Coordination

Multiple Choice Questions

1. Which of the following statements is correct about receptors?

(a) Gustatory receptors detect taste while olfactory receptors detect smell
(b) Both gustatory and olfactory receptors detect smell
(c) Auditory receptors detect smell and olfactory receptors detect taste
(d) Olfactory receptors detect taste and gustatory receptors smell

2. Electrical impulse travels in a neuron from

(a) Dendrite → axon → axonal end → cell body
(b) Cell body → dendrite → axon → axonal end
(c) Dendrite → cell body → axon → axonal end
(d) Axonal end → axon → cell body → dendrite

3. In a synapse, chemical signal is transmitted from

(a) dendritic end of one neuron to axonal end of another neuron
(b) axon to cell body of the same neuron
(c) cell body to axonal end of the same neuron
(d) axonal end of one neuron to dendritic end of another neuron

4. In a neuron, conversion of electrical signal to a chemical signal occurs at / in

(a) cell body
(b) axonal end
(c) dendritic end
(d) axon

5. Which is the correct sequence of the components of a reflex arc?

(a) Receptors→ Muscles→ Sensory neuron→ Motor neuron→ Spinal cord
(b) Receptors→ Motor neuron → Spinal cord → Sensory neuron → Muscle
(c) Receptors → Spinal cord → Sensory neuron → Motor neuron → Muscle
(d) Receptors → Sensory neuron → Spinal cord → Motor neuron → Muscle

6. Which of the following statements are true?

(i) Sudden action in response to something in the environment is called reflex action

(ii) Sensory neurons carry signals from spinal cord to muscles

(iii) Motor neurons carry signals from receptors to spinal cord

(iv) The path through which signals are transmitted from a receptor to a muscle or a gland is called reflex arc

(a) (i) and (ii) (b) (i) and (iii)
(c) (i) and (iv) (d) (i) , (ii) and (iii)

7. Which of the following statements are true about the brain?

(i) The main thinking part of brain is hind brain

(ii) Centres of hearing, smell, memory, sight etc are located in fore brain.

(iii) Involuntary actions like salivation, vomiting, blood pressure are controlled by the medulla in the hind brain

(iv) Cerebellum does not control posture and balance of the body

(a) (i) and (ii) (b) (i), (ii) and (iii)
(c) (ii) and (iii) (d) (iii) and (iv)

8. Posture and balance of the body is controlled by

(a) cerebrum
(b) cerebellum
(c) medulla
(d) pons

9. Spinal cord originates from

(a) cerebrum
(b) medulla
(c) pons
(d) cerebellum

10. The movement of shoot towards light is

(a) geotropism
(b) hydrotropism
(c) chemotropism
(d) phototropism

11. The main function of abscisic acid in plants is to

(a) increase the length of cells
(b) promote cell division
(c) inhibit growth
(d) promote growth of stem

12. Which of the following is not associated with growth of plant?

(a) Auxin
(b) Gibberellins
(c) Cytokinins
(d) Abscisic acid

13. Iodine is necessary for the synthesis of which hormone?

(a) Adrenaline
(b) Thyroxin
(c) Auxin
(d) Insulin

14. Choose the incorrect statement about insulin

(a) It is produced from pancreas
(b) It regulates growth and development of the body
(c) It regulates blood sugar level
(d) Insufficient secretion of insulin will cause diabetes

15. Select the mis-matched pair

(a) Adrenaline : Pituitary gland
(b) Testosterone: Testes
(c) Estrogen : Ovary
(d) Thyroxin : Thyroid gland

16. The shape of guard cells changes due to change in the

(a) protein composition of cells
(b) temperature of cells
(c) amount of water in cells
(d) position of nucleus in the cells

17. The growth of tendril in pea plants is due to

(a) effect of light
(b) effect of gravity
(c) rapid cell divisions in tendrillar cells that are away from the support
(d) rapid cell divisions in tendrillar cells in contact with the support

18. The growth of pollen tubes towards ovules is due to

(a) hydrotropism
(b) chemotropism
(c) geotropism
(d) phototropism

19. The movement of sunflower in accordance with the path of sun is due to

(a) phototropism
(b) geotropism
(c) chemotropism
(d) hydrotropism

20. The substance that triggers the fall of mature leaves and fruits from plants is due to

(a) auxin
(b) gibberellin
(c) abscisic acid
(d) cytokinin

21. Which of the following statements about transmission of nerve impulse is incorrect?

(a) Nerve impulse travels from dendritic end towards axonal end
(b) At the dendritic end electrical impulses bring about the release of some chemicals which generate an electrical impulse at the axonal end of another neuron
(c) The chemicals released from the axonal end of one neuron cross the synapse and generate a similar electrical impulse in a dendrite of another neuron
(d) A neuron transmits electrical impulses not only to another neuron but also to muscle and gland cells

22. Involuntary actions in the body are controlled by

(a) medulla in fore brain
(b) medulla in mid brain
(c) medulla in hind brain
(d) medulla in spinal cord

23. Which of the following is not an involuntary action?

(a) Vomiting
(b) Salivation
(c) Heart beat
(d) Chewing

24. When a person is suffering from severe cold, he or she cannot

(a) differentiate the taste of an apple from that of an ice cream
(b) differentiate the smell of a perfume from that of an *agarbatti*
(c) differentiate red light from green light
(d) differentiate a hot object from a cold object

25. What is the correct direction of flow of electrical impulses?

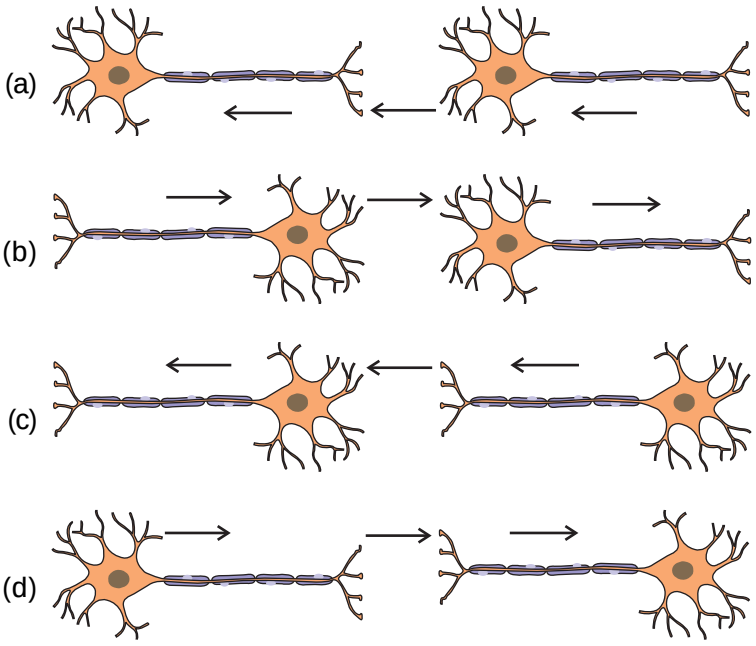


Fig. 7.1

26. Which statement is not true about thyroxin?

(a) Iron is essential for the synthesis of thyroxin
(b) It regulates carbohydrates, protein and fat metabolism in the body
(c) Thyroid gland requires iodine to synthesise thyroxin
(d) Thyroxin is also called thyroid hormone

27. Dwarfism results due to

(a) Excess secretion of thyroxin
(b) Less secretion of growth hormone
(c) Less secretion of adrenaline
(d) Excess secretion of growth hormone

28. Dramatic changes of body features associated with puberty are mainly because of secretion of

(a) oestrogen from testes and testosterone from ovary
(b) estrogen from adrenal gland and testosterone from pituitary gland
(c) testosterone from testes and estrogen from ovary
(d) testosterone from thyroid gland and estrogen from pituitary gland

29. A doctor advised a person to take an injection of insulin because

(a) his blood pressure was low
(b) his heart was beating slowly
(c) he was suffering from goitre
(d) his sugar level in blood was high

30. The hormone which increases the fertility in males is called

(a) oestrogen
(b) testosterone
(c) insulin
(d) growth hormone

31. Which of the following endocrine glands is unpaired?

(a) Adrenal
(b) Testes
(c) Pituitary
(d) Ovary

32. Junction between two neurons is called

(a) cell junction
(b) neuro muscular junction
(c) neural joint
(d) synapse

33. In humans, the life processes are controlled and regulated by

(a) reproductive and endocrine systems
(b) respiratory and nervous systems
(c) endocrine and digestive systems
(d) nervous and endocrine systems

Short Answer Questions

34. Label the parts (a), (b), (c) and (d) and show the direction of flow of electrical signals in Figure 7.2.

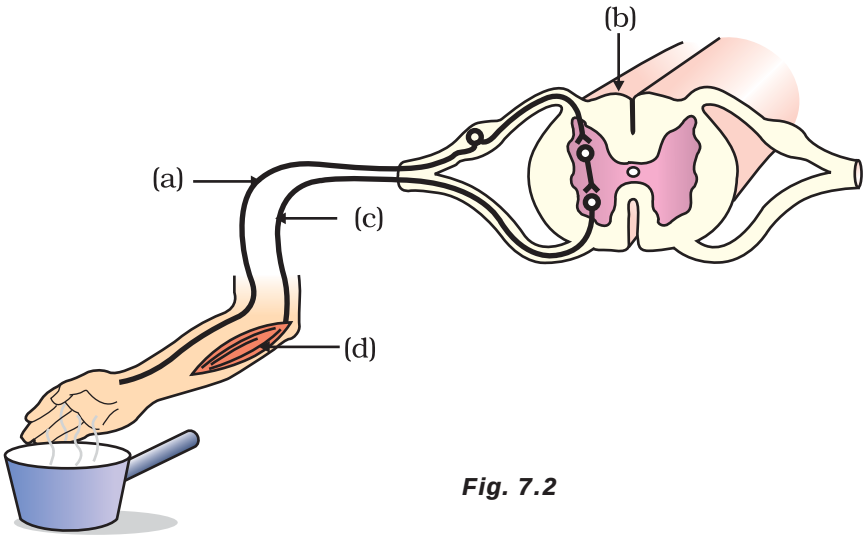


Fig. 7.2

35. Name the plant hormones responsible for the following

(a) elongation of cells
(b) growth of stem
(c) promotion of cell division
(d) falling of senescent leaves.

36. Label the endocrine glands in Figure 7.3.

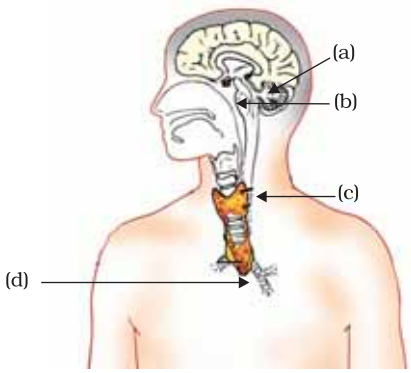


Fig. 7.3

37. In Figure 7.4 (a), (b) and (c), which appears more accurate and why?

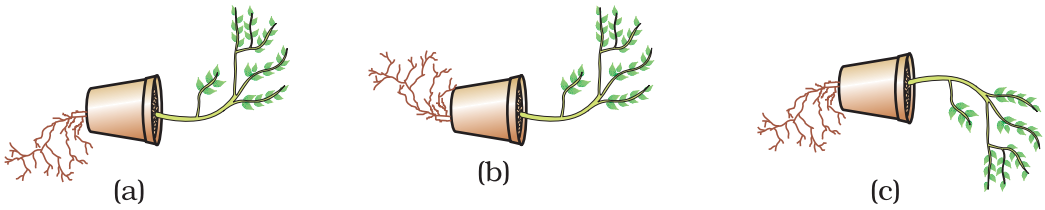


Fig. 7.4

38. Label the parts of a neuron in Figure 7.5.

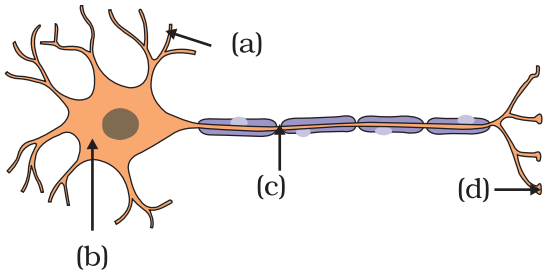


Fig. 7.5

39. Match the terms of Column (A) with those of Column (B)

Column (A)	Column (B)
(a) Olfactory receptors	(i) Tongue
(b) Thermo receptors (temperature receptors)	(ii) Eye
(c) Gustatoreceptors	(iii) Nose
(d) Photoreceptors	(iv) Skin

40. What is a tropic movement? Explain with an example.

41. What will happen if intake of iodine in our diet is low?

42. What happens at the synapse between two neurons?

43. Answer the following :

(a) Which hormone is responsible for the changes noticed in females at puberty?

(b) Dwarfism results due to deficiency of which hormone?

(c) Blood sugar level rises due to deficiency of which hormone?

(d) Iodine is necessary for the synthesis of which hormone?

44. Answer the following :

(a) Name the endocrine gland associated with brain?

(b) Which gland secretes digestive enzymes as well as hormones?

(c) Name the endocrine gland associated with kidneys?

(d) Which endocrine gland is present in males but not in females?

Long Answer Questions

45. Draw the structure of a neuron and explain its function.

46. What are the major parts of the brain? Mention the functions of different parts.

47. What constitutes the central and peripheral nervous systems? How are the components of central nervous system protected?

48. Mention one function for each of these hormones :

(a) Thyroxin

(b) Insulin

(c) Adrenaline

(d) Growth hormone

(e) Testosterone.

49. Name various plant hormones. Also give their physiological effects on plant growth and development.

50. What are reflex actions? Give two examples. Explain a reflex arc.

51. "Nervous and hormonal systems together perform the function of control and coordination in human beings." Justify the statement.

52. How does chemical coordination take place in animals?

53. Why is the flow of signals in a synapse from axonal end of one neuron to dendritic end of another neuron but not the reverse?

CHAPTER 8

How do Organisms Reproduce?

Multiple Choice Questions

1. In the list of organisms given below, those that reproduce by the asexual method are

(i) banana
(ii) dog
(iii) yeast
(iv) Amoeba

(a) (ii) and (iv) (b) (i), (iii) and (iv)
(c) (i) and (iv) (d) (ii), (iii) and (iv)

2. In a flower, the parts that produce male and female gametes (germ cells) are

(a) stamen and anther
(b) filament and stigma
(c) anther and ovary
(d) stamen and style

3. Which of the following is the correct sequence of events of sexual reproduction in a flower?

(a) pollination, fertilisation, seedling, embryo
(b) seedling, embryo, fertilisation, pollination
(c) pollination, fertilisation, embryo, seedling
(d) embryo, seedling, pollination, fertilisation

4. Offspring formed by asexual method of reproduction have greater similarity among themselves because

(i) asexual reproduction involves only one parent
(ii) asexual reproduction does not involve gametes
(iii) asexual reproduction occurs before sexual reproduction
(iv) asexual reproduction occurs after sexual reproduction

(a) (i) and (ii) (b) (i) and (iii)
(c) (ii) and (iv) (d) (iii) and (iv)

5. Characters transmitted from parents to offspring are present in

(a) cytoplasm
(b) ribosome
(c) golgi bodies
(d) genes

6. Characters that are transmitted from parents to offspring during reproduction show

(a) only similarities with parents
(b) only variations with parents
(c) both similarities and variations with parents
(d) neither similarities nor variations

7. A feature of reproduction that is common to *Amoeba*, *Spirogyra* and Yeast is that

(a) they reproduce asexually
(b) they are all unicellular
(c) they reproduce only sexually
(d) they are all multicellular

8. In *Spirogyra*, asexual reproduction takes place by

(a) breaking up of filaments into smaller bits
(b) division of a cell into two cells
(c) division of a cell into many cells
(d) formation of young cells from older cells.

9. The ability of a cell to divide into several cells during reproduction in *Plasmodium* is called

(a) budding
(b) reduction division
(c) binary fission
(d) multiple fission

10. The correct sequence of reproductive stages seen in flowering plants is

(a) gametes, zygote, embryo, seedling
(b) zygote, gametes, embryo, seedling
(c) seedling, embryo, zygote, gametes
(d) gametes, embryo, zygote, seedling

11. The number of chromosomes in parents and offsprings of a particular species remains constant due to

(a) doubling of chromosomes after zygote formation
(b) halving of chromosomes during gamete formation
(c) doubling of chromosomes after gamete formation
(d) halving of chromosomes after gamete formation

12. In *Rhizopus*, tubular thread-like structures bearing sporangia at their tips are called

(a) filaments
(b) hyphae
(c) rhizoids
(d) roots

13. Vegetative propagation refers to formation of new plants from

(a) stem, roots and flowers
(b) stem, roots and leaves
(c) stem, flowers and fruits
(d) stem, leaves and flowers

14. Factors responsible for the rapid spread of bread mould on slices of bread are

(i) large number of spores
(ii) availability of moisture and nutrients in bread
(iii) presence of tubular branched hyphae
(iv) formation of round shaped sporangia

(a) (i) and (iii) (b) (ii) and iv)
(c) (i) and (ii) (d) (iii) and (iv)

15. Length of pollen tube depends on the distance between

(a) pollen grain and upper surface of stigma
(b) pollen grain on upper surface of stigma and ovule
(c) pollen grain in anther and upper surface of stigma
(d) upper surface of stigma and lower part of style

16. Which of the following statements are true for flowers?

(i) Flowers are always bisexual
(ii) They are the sexual reproductive organs
(iii) They are produced in all groups of plants
(iv) After fertilisation they give rise to fruits

(a) (i) and (iv) (b) (ii) and (iii)
(c) (i) and (iii) (d) (ii) and (iv)

17. Which among the following statements are true for unisexual flowers?

(i) They possess both stamen and pistil
(ii) They possess either stamen or pistil
(iii) They exhibit cross pollination
(iv) Unisexual flowers possessing only stamens cannot produce fruits

(a) (i) and (iv) (b) (ii), (iii) and (iv)
(c) (iii) and (iv) (d) (i), (iii) and (iv)

18. Which among the following statements are true for sexual reproduction in flowering plants?

(i) It requires two types of gametes
(ii) Fertilisation is a compulsory event
(iii) It always results in formation of zygote
(iv) Offspring formed are clones

(a) (i) and (iv) (b) (i), (ii) and (iv)
(c) (i), (ii) and (iii) (d) (i), (ii) and (iv)

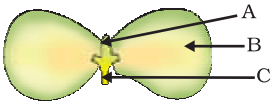


Fig. 8.1

19. In Figure 8.1, the parts A, B and C are sequentially

(a) cotyledon, plumule and radicle
(b) plumule, radicle and cotyledon
(c) plumule, cotyledon and radicle
(d) radicle, cotyledon and plumule

20. Offspring formed as a result of sexual reproduction exhibit more variations because

(a) sexual reproduction is a lengthy process
(b) genetic material comes from two parents of the same species
(c) genetic material comes from two parents of different species
(d) genetic material comes from many parents

21. Reproduction is essential for living organisms in order to

(a) keep the individual organism alive
(b) fulfill their energy requirement
(c) maintain growth
(d) continue the species generation after generation

22. During adolescence, several changes occur in the human body. Mark one change associated with sexual maturation in boys

(a) loss of milk teeth
(b) increase in height
(c) cracking of voice
(d) weight gain

23. In human females, an event that reflects onset of reproductive phase is

(a) growth of body
(b) changes in hair pattern
(c) change in voice
(d) menstruation

24. In human males, the testes lie in the scrotum, because it helps in the

(a) process of mating
(b) formation of sperm
(c) easy transfer of gametes
(d) all the above

25. Which among the following is not the function of testes at puberty?

(i) formation of germ cells
(ii) secretion of testosterone
(iii) development of placenta
(iv) secretion of estrogen

(a) (i) and (ii) (b) (ii) and (iii)
(c) (iii) and (iv) (d) (i) and (iv)

26. The correct sequence of organs in the male reproductive system for transport of sperms is

(a) testis → vasdeferens → urethra
(b) testis → ureter → urethra
(c) testis → urethra → ureter
(d) testis → vasdeferens → ureter

27. Which among the following diseases is not sexually transmitted?

(a) Syphillis
(b) Hepatitis
(c) HIV - AIDS
(d) Gonorrhoea

Short Answer Questions

28. In a bisexual flower inspite of the young stamens being removed artificially, the flower produces fruit. Provide a suitable explanation for the above situation.

29. Can you consider cell division as a type of reproduction in unicellular organism? Give one reason.

30. What is a clone? Why do offsprings formed by asexual reproduction exhibit remarkable similarity?

31. Explain how, offspring and parents of organisms reproducing sexually have the same number of chromosomes?

32. Colonies of yeast fail to multiply in water, but multiply in sugar solution. Give one reason for this.

33. Why does bread mould grow profusely on a moist slice of bread rather than on a dry slice of bread?

34. Give two reasons for the appearance of variations among the progeny formed by sexual reproduction.

35. Would a *Planaria* cut vertically into two halves regenerate into two individuals? Complete Figure 8.2 D and E by indicating the regenerated regions.

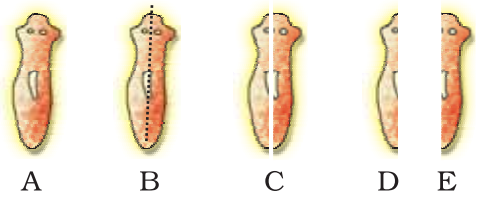


Fig. 8.2

36. From the internet, gather information about the chromosome numbers of five animals and five plants. Correlate the number with the size of organism and answer the following questions.

(a) Do larger organisms have more number of chromosomes/cells?

(b) Can organism with fewer chromosomes reproduce more easily than organisms with more number of chromosomes?

(c) More the number of chromosomes/cells greater is the DNA content. Justify.

37. In tobacco plant, the male gametes have twenty four chromosomes.

What is the number of chromosomes in the female gamete?

What is the number of chromosomes in the zygote?

38. Why cannot fertilisation take place in flowers if pollination does not occur?

39. Is the chromosome number of zygote, embryonal cells and adult of a particular organism always constant? How is the constancy maintained in these three stages?

40. Where is the zygote located in the flower after fertilization?

41. Reproduction is linked to stability of population of a species. Justify the statement.

42. How are general growth and sexual maturation different from each other?

43. Trace the path of sperm during ejaculation and mention the gland and their functions associated with the male reproductive system.

44. What changes are observed in the uterus if fertilisation does not occur?

45. What changes are observed in the uterus subsequent to implantation of young embryo?

46. What are the benefits of using mechanical barriers during sexual act?

47. In the given Figure 8.3 label the parts and mention their functions

(a) Production of egg
(b) Site of fertilisation
(c) Site of implantation
(d) Entry of the sperms

Fig. 8.3

48. What would be the ratio of chromosome number between an egg and its zygote? How is the sperm genetically different from the egg?

Long Answer Questions

49. Why are budding, fragmentation and regeneration all considered as asexual types of reproduction? With neat diagrams explain the process of regeneration in *Planaria.*

50. Write two points of difference between asexual and sexual types of reproduction. Describe why variations are observed in the offspring formed by sexual reproduction.

51. Distinguish between pollination and fertilisation. Mention the site and product of fertilisation in a flower.
Draw a neat, labelled diagram of a pistil showing pollen tube growth and its entry into the ovule.

52. Distinguish between a gamete and zygote. Explain their roles in sexual reproduction.

53. Draw the diagram of a flower and label the four whorls. Write the names of gamete producing organs in the flower.

54. What is placenta? Mention its role during pregnancy?

55. What are various ways to avoid pregnancy? Elaborate any one method.

56. How does fertilisation take place? Fertilisation occurs once in a month. Comment.

57. Reproduction is essentially a phenomenon that is not for survival of an individual but for the stability of a species. Justify.

58. Describe sexually transmitted diseases and mention the ways to prevent them.

CHAPTER 9

Heredity and Evolution

Multiple Choice Questions

1. Exchange of genetic material takes place in

(a) vegetative reproduction
(b) asexual reproduction
(c) sexual reproduction
(d) budding

2. Two pink coloured flowers on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of the cross will be

(a) double fertilisation
(b) self pollination
(c) cross fertilisation
(d) no fertilisation

3. A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because

(a) tallness is the dominant trait
(b) shortness is the dominant trait
(c) tallness is the recessive trait
(d) height of pea plant is not governed by gene 'T' or 't'

4. Which of the following statement is incorrect?

(a) For every hormone there is a gene.
(b) For every protein there is a gene.
(c) For production of every enzyme there is a gene.
(d) For every molecule of fat there is a gene

5. If a round, green seeded pea plant (RR yy) is crossed with wrinkled, yellow seeded pea plant, (rr YY) the seeds produced in F_1 generation are

(a) round and yellow
(b) round and green
(c) wrinkled and green
(d) wrinkled and yellow

6. In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosome is/are

(i) large chromosome
(ii) small chromosome
(iii) Y-chromosome
(iv) X-chromosome

(a) (i) and (ii) (b) (iii) only
(c) (iii) and (iv) (d) (ii) and (iv)

7. The maleness of a child is determined by

(a) the X chromosome in the zygote
(b) the Y chromosome in zygote
(c) the cytoplasm of germ cell which determines the sex
(d) sex is determined by chance

8. A zygote which has an X-chromosome inherited from the father will develop into a

(a) boy
(b) girl
(c) X- chromosome does not determine the sex of a child
(d) either boy or girl

9. Select the incorrect statement

(a) Frequency of certain genes in a population change over several generations resulting in evolution
(b) Reduction in weight of the organism due to starvation is genetically controlled
(c) Low weight parents can have heavy weight progeny
(d) Traits which are not inherited over generations do not cause evolution

10. New species may be formed if

(i) DNA undergoes significant changes in germ cells
(ii) chromosome number changes in the gamete
(iii) there is no change in the genetic material
(iv) mating does not take place

(a) (i) and (ii) (b) (i) and (iii)
(c) (ii), (iii) and (iv) (d) (i), (ii) and (iii)

11. Two pea plants one with round green seeds (RRyy) and another with wrinkled yellow (rrYY) seeds produce F_1 progeny that have round, yellow (RrYy) seeds. When F_1 plants are selfed, the F_2 progeny will have new combination of characters. Choose the new combination from the following

(i) Round, yellow
(ii) Round, green
(iii) Wrinkled, yellow
(iv) Wrinkled, green

(a) (i) and (ii) (b) (i) and (iv)
(c) (ii) and (iii) (d) (i) and (iii)

12. A basket of vegetables contains carrot, potato, radish and tomato. Which of them represent the correct homologous structures?

(a) Carrot and potato
(b) Carrot and tomato
(c) Radish and carrot
(d) Radish and potato

13. Select the correct statement

(a) Tendril of a pea plant and phylloclade of *Opuntia* are homologous
(b) Tendril of a pea plant and phylloclade of *Opuntia* are analogous
(c) Wings of birds and limbs of lizards are analogous
(d) Wings of birds and wings of bat are homologous

14. If the fossil of an organism is found in the deeper layers of earth, then we can predict that

(a) the extinction of organism has occurred recently
(b) the extinction of organism has occurred thousands of years ago
(c) the fossil position in the layers of earth is not related to its time of extinction
(d) time of extinction cannot be determined

15. Which of the following statements is not true with respect to variation?

(a) All variations in a species have equal chance of survival
(b) Change in genetic composition results in variation
(c) Selection of variants by environmental factors forms the basis of evolutionary processes.
(d) Variation is minimum in asexual reproduction

16. A trait in an organism is influenced by

(a) paternal DNA only
(b) maternal DNA only
(c) both maternal and paternal DNA
(d) neither by paternal nor by maternal DNA

17. Select the group which shares maximum number of common characters

(a) two individuals of a species
(b) two species of a genus
(c) two genera of a family
(d) two genera of two families

18. According to the evolutionary theory, formation of a new species is generally due to

(a) sudden creation by nature
(b) accumulation of variations over several generations
(c) clones formed during asexual reproduction
(d) movement of individuals from one habitat to another

19. From the list given below, select the character which can be acquired but not inherited

(a) colour of eye
(b) colour of skin
(c) size of body
(d) nature of hair

20. The two versions of a trait (character) which are brought in by the male and female gametes are situated on

(a) copies of the same chromosome
(b) two different chromosomes
(c) sex chromosomes
(d) any chromosome

21. Select the statements that describe characteristics of genes

(i) genes are specific sequence of bases in a DNA molecule
(ii) a gene does not code for proteins
(iii) in individuals of a given species, a specific gene is located on a particular chromosome
(iv) each chromosome has only one gene

(a) (i) and (ii) (b) (i) and (iii)
(c) (i) and (iv) (d) (ii) and (iv)

22. In peas, a pure tall plant (TT) is crossed with a short plant (tt). The ratio of pure tall plants to short plants in F_2 is

(a) 1 : 3
(b) 3 : 1
(c) 1 : 1
(d) 2 : 1

23. The number of pair (s) of sex chromosomes in the zygote of humans is

(a) one (b) two
(c) three (d) four

24. The theory of evolution of species by natural selection was given by

(a) Mendel (b) Darwin
(c) Morgan (d) Lamarck

25. Some dinosaurs had feathers although they could not fly but birds have feathers that help them to fly. In the context of evolution this means that

(a) reptiles have evolved from birds
(b) there is no evolutionary connection between reptiles and birds
(c) feathers are homologous structures in both the organisms
(d) birds have evolved from reptiles

Short Answer Questions

26. How is the sex of a newborn determined in humans?

27. Do genetic combination of mothers play a significant role in determining the sex of a new born?

28. Mention three important features of fossils which help in the study of evolution.

29. Why do all the gametes formed in human females have an X chromosome?

30. In human beings, the statistical probability of getting either a male or female child is 50 : 50. Give a suitable explanation.

31. A very small population of a species faces a greater threat of extinction than a larger population. Provide a suitable genetic explanation.

32. What are homologous structures? Give an example. Is it necessary that homologous structures always have a common ancestor?

33. Does the occurrence of diversity of animals on earth suggest their diverse ancestry also? Discuss this point in the light of evolution.

34. Give the pair of contrasting traits of the following characters in pea plant and mention which is dominant and recessive

(i) yellow seed (ii) round seed

35. Why did Mendel choose pea plant for his experiments?

36. A woman has only daughters. Analyse the situation genetically and provide a suitable explanation.

Long Answer Questions

37. Does geographical isolation of individuals of a species lead to formation of a new species? Provide a suitable explanation.

38. Bacteria have a simpler body plan when compared with human beings. Does it mean that human beings are more evolved than bacteria? Provide a suitable explanation.

39. All the human races like Africans, Asians, Europeans, Americans and others might have evolved from a common ancestor. Provide a few evidences in support of this view.

40. Differentiate between inherited and acquired characters. Give one example for each type.

41. Give reasons why acquired characters are not inherited.

42. Evolution has exhibited a greater stability of molecular structure when compared with morphological structures. Comment on the statement and justify your opinion.

43. In the following crosses write the characteristics of the progeny

Cross	Progeny
(a) RR YY x RR YY Round, yellow Round, yellow	.....
(b) Rr Yy x Rr Yy Round, yellow Round, yellow	.....
(c) rr yy x rr yy wrinkled, green wrinkled, green	.....
(d) RR YY x rr yy Round, yellow wrinkled green	.....

44. Study the following cross and showing self pollination in F_1, fill in the blank and answer the question that follows

Parents	RRYY	x	rryy
	Round, yellow		wrinkled, green
F_1 —	Rr Yy	x	?
	Round, yellow		

45. In question 44, what are the combinations of character in the F_2 progeny? What are their ratios?

46. Give the basic features of the mechanism of inheritance.

47. Give reasons for the appearance of new combinations of characters in the F_2 progeny.

CHAPTER 15

Our Environment

Multiple Choice Questions

1. Which one of the following is an artificial ecosystem?

(a) Pond
(b) Crop field
(c) Lake
(d) Forest

2. In a food chain, the third trophic level is always occupied by

(a) carnivores
(b) herbivores
(c) decomposers
(d) producers

3. An ecosystem includes

(a) all living organisms
(b) non-living objects
(c) both living organisms and non-living objects
(d) sometimes living organisms and sometimes non-living objects

4. In the given food chain, suppose the amount of energy at fourth trophic level is 5 kJ, what will be the energy available at the producer level?

Grass → Grasshopper → Frog → Snake → Hawk

(a) 5 k J
(b) 50 k J
(c) 500 k J
(d) 5000 k J

5. Accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level is known as

(a) eutrophication
(b) pollution
(c) biomagnification
(d) accumulation

6. Depletion of ozone is mainly due to

(a) chlorofluorocarbon compounds
(b) carbon monoxide
(c) methane
(d) pesticides

7. Organisms which synthesise carbohydrates from inorganic compounds using radiant energy are called

(a) decomposers
(b) producers
(c) herbivores
(d) carnivores

8. In an ecosystem, the 10% of energy available for transfer from one trophic level to the next is in the form of

(a) heat energy
(b) light energy
(c) chemical energy
(d) mechanical energy

9. Organisms of a higher trophic level which feed on several types of organisms belonging to a lower trophic level constitute the

(a) food web
(b) ecological pyramid
(c) ecosystem
(d) food chain

10. Flow of energy in an ecosystem is always

(a) unidirectional
(b) bidirectional
(c) multi directional
(d) no specific direction

11. Excessive exposure of humans to U V-rays results in

(i) damage to immune system
(ii) damage to lungs
(iii) skin cancer
(iv) peptic ulcers

(a) (i) and (ii) (b) (ii) and (iv)
(c) (i) and (iii) (d) (iii) and (iv)

12. In the following groups of materials, which group (s) contains only non-biodegradable items?

(i) Wood, paper, leather
(ii) Polythene, detergent, PVC
(iii) Plastic, detergent, grass
(iv) Plastic, bakelite, DDT

(a) (iii) (b) (iv)
(c) (i) and (iii) (d) (ii) and (iv)

13. Which of the following limits the number of trophic levels in a food chain?

(a) Decrease in energy at higher trophic levels
(b) Dufficient food supply
(c) Polluted air
(d) Water

14. Which of the statement is incorrect?

(a) All green plants and blue green algae are producers
(b) Green plants get their food from organic compounds
(c) Producers prepare their own food from inorganic compounds
(d) Plants convert solar energy into chemical energy

15. Which group of organisms are not constituents of a food chain?

(i) Grass, lion, rabbit, wolf
(ii) Plankton, man, fish, grasshopper
(iii) Wolf, grass, snake, tiger
(iv) Frog, snake, eagle, grass, grasshopper

(a) (i) and (iii) (b) (iii) and (iv)
(c) (ii) and (iii) (d) (i) and (iv)

16. The percentage of solar radiation absorbed by all the green plants for the process of photosynthesis is about

(a) 1 %
(b) 5 %
(c) 8 %
(d) 10 %

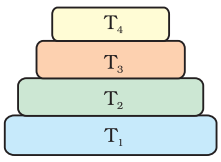


Fig. 15.1

17. In the given Figure 15.1 the various trophic levels are shown in a pyramid. At which trophic level is maximum energy available?

(a) T_4
(b) T_2
(c) T_1
(d) T_3

18. What will happen if deer is missing in the food chain given below?

Grass → Deer → Tiger

(a) The population of tiger increases

(b) The population of grass decreases

(c) Tiger will start eating grass

(d) The population of tiger decreases and the population of grass increases

19. The decomposers in an ecosystem

(a) convert inorganic material, to simpler forms

(b) convert organic material to inorganic forms

(c) convert inorganic materials into organic compounds

(d) do not breakdown organic compounds

20. If a grass hopper is eaten by a frog, then the energy transfer will be from

(a) producer to decomposer

(b) producer to primary consumer

(c) primary consumer to secondary consumer

(d) secondary consumer to primary consumer

21. Disposable plastic plates should not be used because

(a) they are made of materials with light weight

(b) they are made of toxic materials

(c) they are made of biodegradable materials

(d) they are made of non-biodegradable materials

Short Answer Questions

22. Why is improper disposal of waste a curse to environment?

23. Write the common food chain of a pond ecosystem.

24. What are the advantages of cloth bags over plastic bags during shopping?

25. Why are crop fields known as artificial ecosystems?

26. Differentiate between biodegradable and non-biodegradable substances. Cite examples.

27. Suggest one word for each of the following statements / definitions

(a) The physical and biological world where we live in

(b) Each level of food chain where transfer of energy takes place

(c) The physical factors like temperature, rainfall, wind and soil of an ecosystem

(d) Organisms which depend on the producers either directly or indirectly for food

28. Explain the role of decomposers in the environment?

29. Select the mis-matched pair in the following and correct it.

(a) Biomagnification	—	Accumulation of chemicals at the successive trophic levels of a food chain
(b) Ecosystem	—	Biotic components of environment
(c) Aquarium	—	A man-made ecosystem
(d) Parasites	—	Organisms which obtain food from other living organisms

30. We do not clean ponds or lakes, but an aquarium needs to be cleaned. Why?

Long Answer Questions

31. Indicate the flow of energy in an ecosystem. Why is it unidirectional? Justify.

32. What are decomposers? What will be the consequence of their absence in an ecosystem?

33. Suggest any four activities in daily life which are eco-friendly.

34. Give two differences between food chain and food web.

35. Name the wastes which are generated in your house daily. What measures would you take for their disposal?

36. Suggest suitable mechanism (s) for waste management in fertiliser industries.

37. What are the by-products of fertiliser industries? How do they affect the environment?

38. Explain some harmful effects of agricultural practices on the environment.