CBSE
X CLASS

BIOLOGY

TARGET - 500
MATERIAL

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CHAPTER - 5. LIFE PROCESSES

COMPETENCY BASED QUESTIONS

Select and write one most appropriate option out of the four options given for each of the questions.

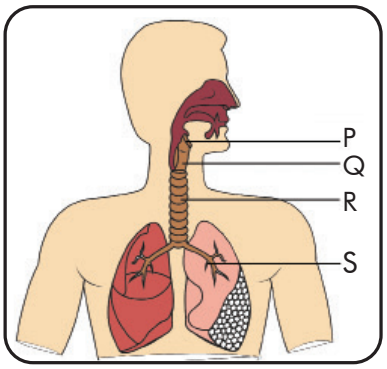
1. Select the correct statement. [ ]

(a) Heterotrophs make their own food.
(b) Heterotrophs utilize solar energy to make food.
(c) Heterotrophs do not make their own food.
(d) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates.

2. Which of the following statements about autotrophs is incorrect? [ ]

(a) They synthesize carbohydrates by using carbon dioxide, water in 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 form the first trophic level of the food chain.

3. Observe the diagram and find out the correct labelling of P, Q, R and S. [ ]



(a) P - Epiglottis, Q - Larynx, R - Trachea, S - Bronchioles
(b) P - Larynx, Q - Epiglottis, R - Bronchioles, S - Trachea
(c) P - Trachea, Q - Epiglottis, R - Larynx, S - Bronchioles
(d) P - Bronchioles , Q - Larynx, R - Trachea, S - Epiglottis

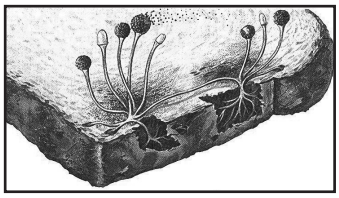
4. Which of the following reactions occur in photosynthesis? [ ]

(a) Carbon dioxide is reduced and water is oxidised
(b) Water is reduced and carbon dioxide is oxidised
(c) Carbon dioxide and water are oxidised
(d) Carbon dioxide and water are reduced

5. A few drops of iodine solution were added to rice water. The solution turned blue-black in colour. This indicates that rice water has : [ ]

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

6. The image shows the bread moulds on a bread. How these fungi obtain nutrition? [ ]



(a) By using nutrients from the bread to prepare their own food.
(b) By allowing other organisms to grow on the bread and then consuming them.
(c) By breaking down the nutrients of bread and then absorbing them.
(d) By eating the bread on which it is growing.

7. Which is the correct sequence of food flow 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

8. Large intestine in man mainly carries out : [ ]

(a) absorption of water (b) assimilation
(c) digestion of fats (d) digestion of carbohydrates

9. Choose the function of enzymes present in the pancreatic juice from the following. [ ]

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

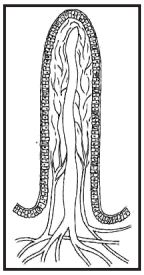
10. Which of the following statements is true about the uptake of water in plants?

(a) It occurs all the time due to diffusion. [ ]
(b) Water enters the roots due to osmosis.
(c) At night when transpiration is low, roots do not take up water.
(d) The movement of water from roots to leaves is bidirectional.

11. Which of the following statements is not correct? [ ]

(a) Deoxygenated blood is poured into right atrium of heart.
(b) Pancreatic juice contains enzymes like trypsin for digestion.
(c) Human kidney has about 1 million neurons.
(d) In xylem, vessels and trachieds are interconnected.

12. The image shows a cross section of small intestine. What will happen if the number of villi increases in the intestine? [ ]

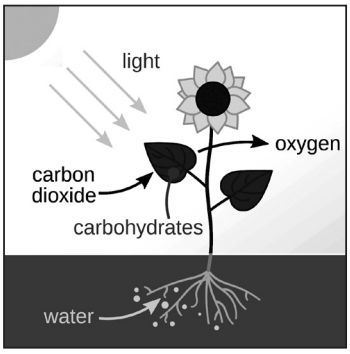


(a) Increase in the absorption of food
(b) Fast elimination of waste from the body
(c) Increase in flow of blood in the small intestine
(d) Fast breakdown of larger food particles into smaller ones

13. Nephron is a unit of filtration in kidneys that filters waste material. It selectively reabsorbs or excretes water with the help of capillaries that surround it. What is the likely benefit of this? [ ]

(a) It makes the process of filtration at Bowman's capsule easier.
(b) It helps to keep the output of urine constant throughout the day.
(c) It helps to uptake and store excess amount of water in the body for later use.
(d) It maintains the concentration of urine based on the amount of water present in the body.

14. The image shows the process of making food by a plant. [ ]



Which statement can be concluded from the image?

(a) Plants absorb CO_2 from air and H_2O from the soil as raw materials and convert them into glucose.
(b) Plants absorb CO_2 from the soil and H_2O from air as raw materials and convert them into glucose.
(c) Plants absorb O_2 from air and glucose from the soil as raw materials and convert them into light energy.
(d) Plants absorb O_2 from air and minerals from the soil as raw materials and convert them into heat energy.

15. The function of sphincter is to : [ ]

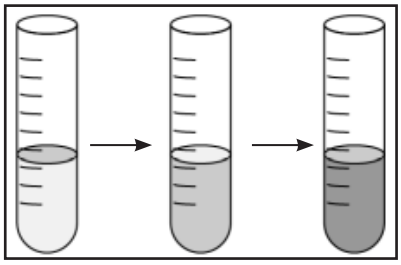
i) prevent materials from moving backward

ii) allow materials to move from one segment to another

iii) regulate the opening of the passage

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

16. A student sets up an experiment to study human respiration using lime water, test tube and a straw. Lime water is colourless in the absence of CO_2 and is milky in its presence. The student fills a freshly prepared limewater in a test tube and blows air through straw into the limewater. It was observed that the solution turns cloudy as shown. [ ]



What can be evaluated from this observation?

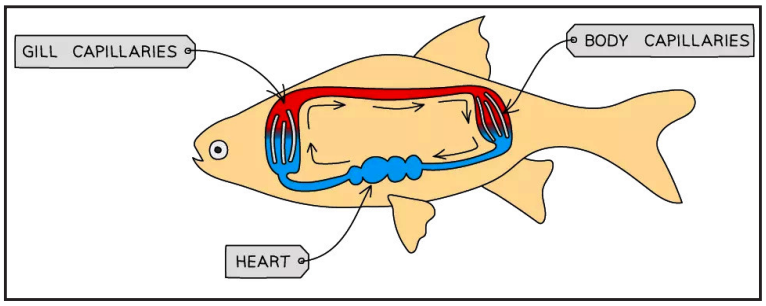
(a) oxygen is exhaled during respiration

(b) glucose is produced during respiration

(c) carbon dioxide is exhaled during respiration

(d) water vapours are produced during respiration

17. The image shows the circulation of blood in fishes. Which option correctly traces the pathway of blood flow in fish body? [ ]



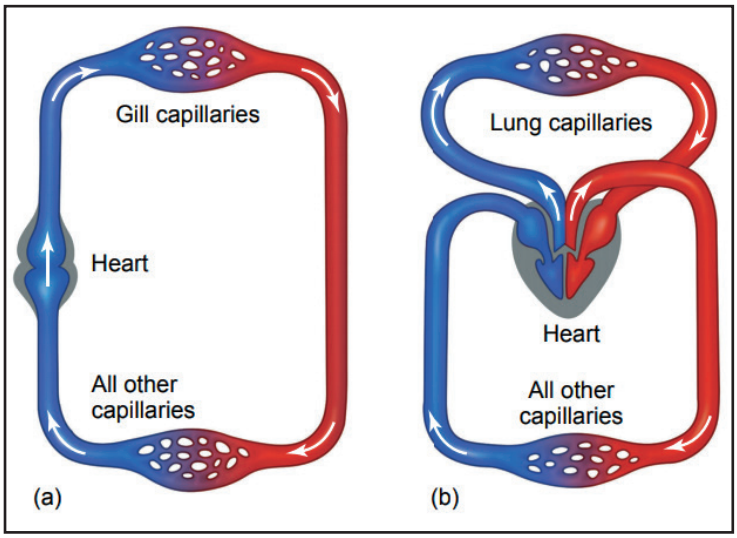
(a) Gill capillaries → oxygenated blood → heart → body cells → deoxygenated blood → gills

(b) Gill capillaries → oxygenated blood → body cells → deoxygenated blood → heart → gills

(c) Capillaries → heart → oxygenated blood → body cells → deoxygenated blood → heart → gills

(d) Gill capillaries → oxygenated blood → heart → body cells → deoxygenated blood → heart → gills

18. The image shows the circulation of blood in fishes and humans. How is the circulations of blood in fish different from that in humans ? [ ]

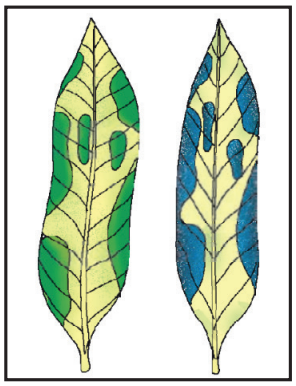


(a) The heart in fish is bigger in size.
(b) The flow of blood in fish is unidirectional.
(c) The blood goes through heart only once in fishes.
(d) The heart of fish has more chambers compared to that of a human.

19. Which of the following is the correct statement regarding bile ? [ ]

(a) It is secreted by bile duct and stored in liver.
(b) It is secreted by gall bladder and stored in liver.
(c) It is secreted by liver and stored in bile duct.
(d) It is secreted by liver and stored in gall bladder.

20. The figure given here is for performing an experiment on photosynthesis. What do you conclude from this experiment ? [ ]



(a) Chlorophyll is necessary for the manufacture of starch.
(b) Water is necessary for the manufacture of starch.
(c) Carbon dioxide is necessary for the manufacture of starch.
(d) Light is necessary for the manufacture of starch.

ASSERTION & REASONING TYPE

These consist of two statements – Assertion (A) and the Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true.

21. **Assertion (A) :** The general requirement for energy and materials is common in all organisms, but it is fulfilled in different ways. [ ]

Reason (R) : Some organisms use simple food material obtained from inorganic sources in the form of carbon dioxide and water.

22. **Assertion (A) :** The alimentary canal is basically a long tube extending from the mouth to the anus. [ ]

Reason (R) : Various regions of alimentary canal are specialised to perform different functions.

23. **Assertion (A) :** Animals have evolved different organs for the uptake of oxygen from the environment and for getting rid of the carbon dioxide produced. [ ]

Reason (R) : Terrestrial animals can breathe the oxygen in the atmosphere, but animals that live in water need to use the oxygen dissolved in water.

24. **Assertion (A) :** Haemoglobin is present in the red blood corpuscles. [ ]

Reason (R) : In human beings the haemoglobin has a very high affinity for oxygen.

25. **Assertion (A) :** Material like sucrose is transferred into phloem tissue using energy from ATP. [ ]

Reason (R) : The translocation in phloem is achieved by utilising energy.

26. **Assertion (A) :** Oxygen itself can be thought of as a waste product generated during photosynthesis. [ ]

Reason (R) : Plants can get rid of excess water by transpiration.

27. **Assertion (A) :** Mitochondria help in respiration.

Reason (R) : Mitochondria have enzymes for dark reaction. **[ ]**

28. **Assertion (A) :** Blood pressure is the pressure exerted by blood on the walls of blood vessels.
Reason (R) : It is measured by sphygmomanometer. **[ ]**

29. **Assertion (A) :** Lymph, also known as tissue fluid and is colourless.
Reason (R) : Lymph lacks erythrocytes. **[ ]**

30. **Assertion (A) :** Carbon dioxide is mostly transported in the dissolved form in our blood. [ ]
Reason (R) : Carbon dioxide is more soluble in water.

SOURCE / CASE BASED QUESTIONS

CASE - 1

A potted plant was taken in order to prove a factor necessary for photosynthesis. The potted plant was kept in the dark for 24 hours. One of the leaves was covered with black paper in the centre. The potted plant was then placed in sunlight for a few hours.

i. What aspect of photosynthesis is being tested?

ii. Why do we boil leaf in water during the starch test ?

iii. What is the balanced chemical equation to represent the process of photosynthesis? Mention the raw materials for photosynthesis.

OR

Why is the experimental leaf covered with black paper ?

CASE - 2

Respiration is a biochemical process which involves exchange of respiratory gases and stepwise oxidation of food to liberate energy. Respiration is of two types : (i) Aerobic - Oxygen is used for respiration. (ii) Anaerobic - Food is oxidised without using oxygen. Breathing is a physical process of inhalation of oxygen and exhalation of carbon dioxide.

i. What is the end product of aerobic respiration?

ii. Write the overall reaction for aerobic respiration.

iii. What is meant by breathing ? Write the steps of it.

OR

Give any two differences between anaerobic and aerobic respiration.

CASE - 3

The heart is a pumping organ that receives blood from the veins and pumps it into the arteries. It is situated in the thoracic cavity which lies above the diaphragm between the two lungs. It is enclosed in a double walled membraneous sac.

i. Name the double walled membranous sac that encloses the heart.

ii. What is the function of valves in the heart?

iii. The left ventricle of the heart has a thicker wall than the right ventricle. Explain.

OR

Give two differences between auricles and ventricles.

CASE - 4

Excretion is the biological process involved in the removal of toxic wastes from the body of an organism. Osmoregulation is the process of regulating the concentration and osmotic pressure of blood by regulating the water content of blood plasma.

In plants, photosynthetic and respiratory wastes like O_2 and CO_2 are expelled out through stomata. Excess of water is eliminated by the process of transpiration. Several plant products like resins, tannins, alkaloids like morphine, etc., are also plant wastes excreted out by plants.

i. How excretion occurs in unicellular organisms ?

ii. What is osmoregulation ?

iii. What are the various functions performed by human kidneys?

OR

What are the methods used by plants to get rid of excretory products?

CHAPTER - 6. CONTROL AND COORDINATION

COMPETENCY BASED QUESTIONS

Select and write one most appropriate option out of the four options given for each of the questions.

1. Match the following: [ ]

A)	Thyroxine	(p)	Dwarfism
B)	Growth hormone	(q)	Cretinism
C)	Parathormone	(r)	Pregnancy
D)	Prolactin	(s)	Calcium level
E)	Vasopressin	(t)	Dilute urine
F)	Progesterone	(u)	Mammary gland

(a) A - p; B - q; C - s; D - u; E - t; F - r (b) A - q; B - p; C - s; D - u; E - t; F - r
(c) A - q; B - p; C - s; D - u; E - r; F - t (d) A - q; B - p; C - u; D - s; E - r; F - t

2. Consider the following statements :

(a) Junction between two neurons is called synapse.

(b) Ductless glands manufacture hormones and secrete them directly into the blood stream.

Which of these statement(s) is/are correct ? [ ]

(a) a only (b) b only (c) Both a and b (d) Neither a nor b

3. Co-ordination is achieved through nervous system as well as endocrine system by respective agents like : [ ]

(a) neurotransmitters and proteins (b) neurotransmitters and hormones
(c) neurotransmitters and sugars (d) sugars and hormones

4. There was a cerebellar dysfunction in a patient. Which of the following activities will get disturbed in this patient as a result of this? [ ]

(a) Salivation (b) Hunger control
(c) Posture and balance (d) Regulation of blood pressure

5. On the basis of following features identify the correct phytohormone.

(I) It helps in growth of the stem.

(II) It can cause formation of seedless fruits. [ ]

(a) Cytokinin (b) Gibberellin
(c) Ethylene (d) Auxin

6. A diabetic patient suffers from deficiency of which hormone? [ ]

(a) Thyroxine (b) Testosterone (c) Oestrogen (d) Insulin

7. Which of the following are the parts of neurons? [ ]

(a) Sympathetic and parasympathetic (b) Dendrite, axon and cell body
(c) Cortex, medulla and sheath (d) Brain, spinal cord and vertebral column

8. The secretion of which hormone leads to physical changes in the body when you are 10-12 years of age? [ ]

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

9. The growth of tendrils in pea plants is due to the : [ ]

(a) Effect of sunlight on the tendril cells facing the sun
(b) Effect of gravity on the part of tendril hanging down towards the earth
(c) Rapid cell division and elongation in tendril cells that are away from the support
(d) Rapid cell division and elongation in tendril cells in contact with the support

10. Which of the following are cerebral reflexes ? [ ]

i) A person pulls away his hand on touching a hot object.
ii) A person spits out immediately when a fly enters his mouth while talking.
iii) A person walking barefoot lifts his foot at once on stepping on to a nail.
iv) A person's pupil contracts at once in the presence of bright light.

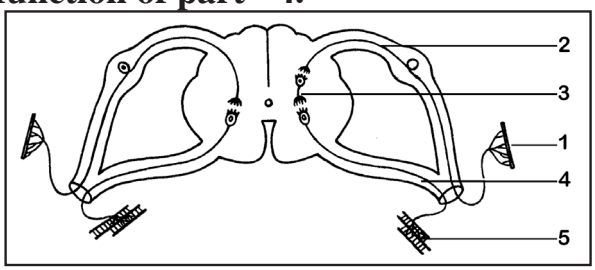
A) i and ii B) ii and iii C) iii and iv D) ii and iv

11. When we touch the leaves of the below given plant, they begin to fold up and droop?

How does the plant communicate the information of touch? [ ]

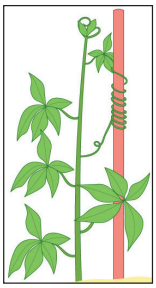
(a) The plant uses electrical signals to transfer information from external environment to cells.
(b) The plant uses electrical- chemical signals to transfer information from cell to cell.
(c) The plant uses electrical- chemical signals to transfer information from tissue to specialized cells.
(d) The plant uses electrical signals to transfer information from cell to specialized tissues.

12. The below given picture is showing structural and functional unit that carries reflexes. Find the function of part - 4. [ ]



(a) Carries reflexes from receptor to relay neuron
(b) Carries reflexes from relay neuron to effector
(c) Receive integrate and interpret the information
(d) Carries reflexes from affector to relay neuron

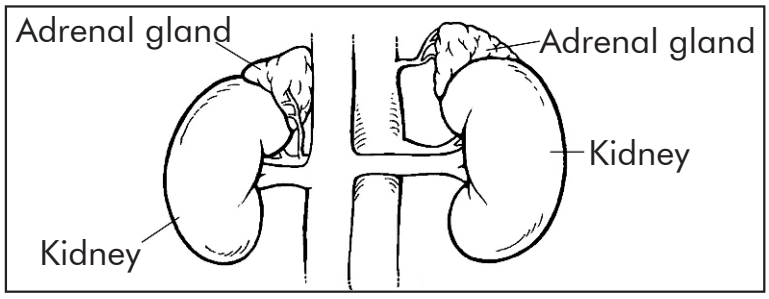
13. Identify the type of plant movement shown below. [ ]



(a) Thigmotropism (b) Chemotropism (c) Thigmonasty (d) Geotropism

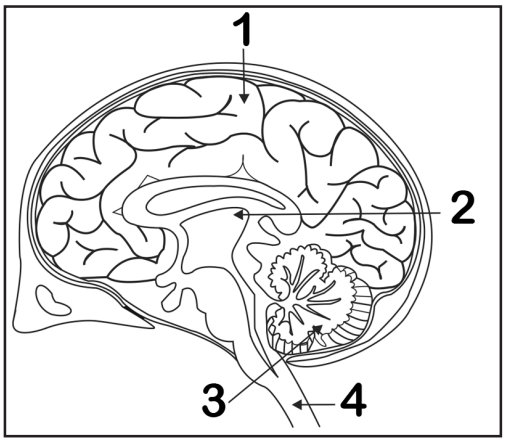
14. A node of Ranvier is a : [ ]
(a) bundle of dendrites
(b) naked portion of a myelinated axon
(c) group of neural cell bodies
(d) knob- like structure at the end of an axon

15. Which of the given statements are true about the given gland? [ ]



(a) Controls the organic and mineral metabolism
(b) Controls the mental and physical development of the body in children
(c) Prepares the body for fight of flight and called as emergency hormone
(d) Both (a) and (b)

16. The following diagram represents the external view of human brain. What happens if part 3 is damaged ? [ ]

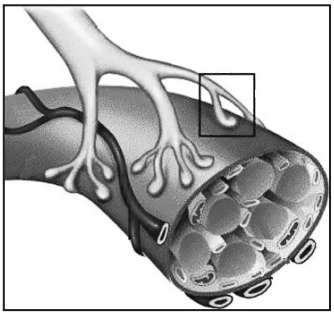


(a) Involuntary actions like blood pressure, salivation, etc., are effected.
(b) Reflex actions are not maintained.
(c) Posture and balance of the body are not maintained.
(d) There is no proper intelligence.

17. Nerve impulse is : [ ]
(a) carried by afferent and efferent branches
(b) not carried by afferent and efferent branches
(c) carried away and brought by efferent branches
(d) brought by afferent and carried by efferent branches

18. Which of the following is commonly known as emergency hormone ? [ ]
(a) Growth hormone (b) Adrenaline (c) Estrogen (d) Thyroxine

19. Which statement(s) is(are) true about given picture ? [ ]



Statement I : Connection between the axon and muscle fibre.
Statement II : Impulses are delivered from neuron to muscle cell.
(a) Statement I is true, Statement II is true
(b) Statement I is false, Statement II is false
(c) Statement I is true, Statement II is false
(d) Statement I is false, Statement II is true

20. 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.

ASSERTION & REASONING TYPE

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(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is true, but Reason (R) is false.
(d) Assertion (A) is false, but Reason (R) is true.

21. Assertion (A) : Nerves from all over the body meet in a bundle in the spinal cord on their way to the brain. [ ]
Reason (R) : Reflex arcs are formed in spinal cord itself, although the information input also goes on to reach the brain.

22. Assertion (A) : Spinal cord is made up of nerves which supply information to think about. [ ]
Reason (R) : Thinking involves more complex mechanisms and neural connections .

23. Assertion (A) : Vertebral column protects the spinal cord. [ ]
Reason (R) : The brain is contained in a fluid-filled balloon which provides further shock absorption.

24. Assertion (A) : Different plant hormones help to coordinate growth, development and responses to the environment. [ ]
Reason (R) : They are synthesised at places away from where they act and simply diffuse to the area of action.

25. Assertion (A) : Pancreas is essential for the maintenance of glucose level in the blood. [ ]
Reason (R) : Insulin is released by the specialised group of cell located on it.

26. Assertion (A) : The name 'master gland of body' is given to the pituitary gland.
Reason (R) : Hypothalamus controls the master gland. [ ]

27. **Assertion (A) :** Living organisms must use systems providing control and coordination.
Reason (R) : Multicellular organisms have specialised tissues for the purpose of control and coordination. [ ]

28. **Assertion (A) :** Animals can react to stimuli in different ways.
Reason (R) : All animals have a nervous system and an endocrine system involving hormones. [ ]

29. **Assertion (A) :** A receptor is a specialized group of cells in a sense organ that perceive a particular type of stimulus.
Reason (R) : Different sense organs have different receptors for detecting stimuli. [ ]

30. **Assertion (A) :** Feedback mechanism regulates the action of the hormones.
Reason (R) : Hormones produced in one part of an organism move to another part to achieve the desired effect. [ ]

SOURCE / CASE BASED QUESTIONS

CASE - 1

Apical dominance is higher plants is due to balance between auxins and cytokinins. Auxin promotes apical dominance while cytokinins reverse the auxin activity. Bending of stem towards sunlight in plants is due to unequal distribution of auxin. Auxin hormone synthesised by meristematic cells at shoot tip, moves from the tip of stem and concentrate more on the side not receiving light or shady side. Due to presence of more auxin hormone, the shady side of stem grow faster than the side receiving light. As a result, stem bend towards the direction of light.

i. What is apical dominance ?

ii. What causes apical dominance in higher plants?

iii. What is the difference between functioning of auxin and cytokinins?

OR

What causes bending of stem towards sunlight in plants? Where auxin hormone is synthesised in plants?

CASE - 2

Ravi saw an advertisement about iodised salt while watching TV. In the advertisement it was stated that one should take only iodised salt. He also remembered that the doctor has advised his elder sister to eat iodised salt when she had developed swollen neck. His teacher has also taught them about various animal hormones.

i. What are hormones ?

ii. What are endocrine glands ? Give examples.

iii. Name the disease from which Ravi's sister suffered. Why has the doctor advised her to eat iodised salt ?

OR

Name an endocrine gland that secretes a hormone called insulin. Why are some diabetes patients treated by giving insulin injections?

CHAPTER - 7. HOW DO ORGANISMS REPRODUCE ?

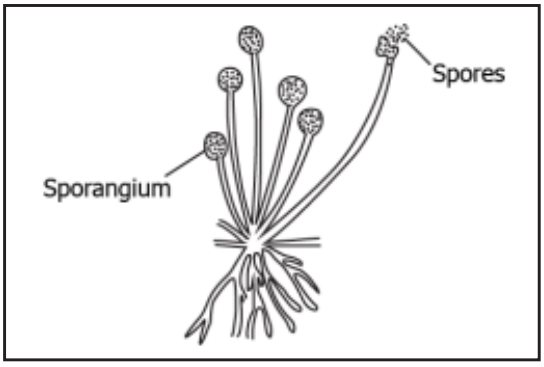
COMPETENCY BASED QUESTIONS

Select and write one most appropriate option out of the four options given for each of the questions.

1. The table below lists the organs/parts of human reproductive system and their functions. Identify the row containing incorrect information. [ ]

	Part/ Organ of Reproductive system	Function
(a)	Prostate gland and seminal vesicles	Production of fluid to provide a medium for sperms.
(b)	Testis	Secretes the hormone that regulates formation of sperms.
(c)	Uterus	Provides nutrition from mother's blood to embryo.
(d)	Fallopian tube	Carries egg from ovaries to the womb

2. The image shows the formation of spores in *Rhizopus*. [ ]



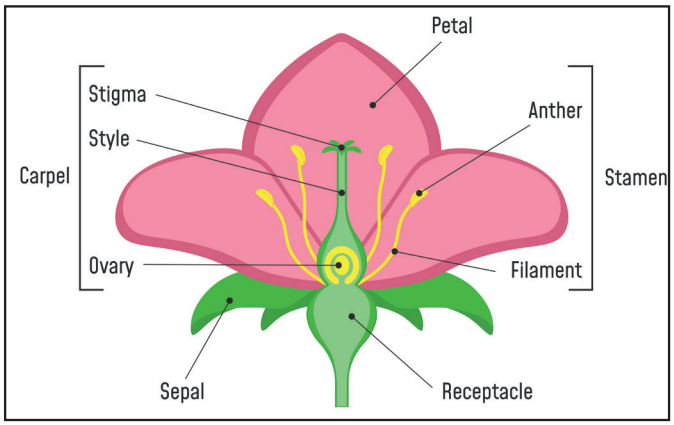
How spores develop into *Rhizopus*?

(a) Spores divide and grow into new individual
(b) Spores combine with other spores and grow
(c) Spores enlarge in size for the growth of new individual
(d) Spores land on other organisms and increase with their growth in size

3. In snails individuals can begin life as male and depending on environmental conditions they can become female as they grow. This is because: [ ]

(a) Male snails have dominant genetic makeup.
(b) Female snails have dominant genetic makeup.
(c) Expression of sex chromosomes can change in a snail's life time.
(d) Sex is not genetically determined in snails.

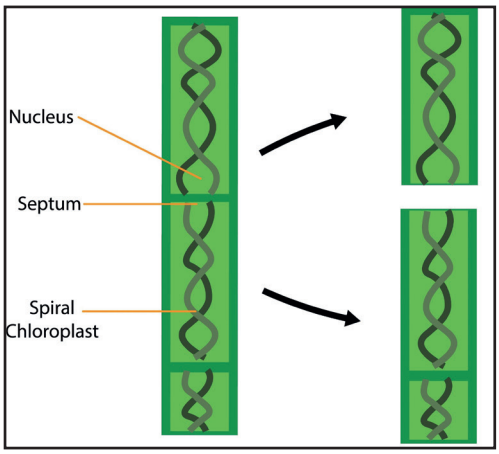
4. The image shows the different parts of a flower. [ ]



Which part of the pistil is responsible for receiving pollen from stamen in order to perform reproduction?

(a) anther (b) ovary (c) petal (d) stigma

5. The image shows the division in Spirogyra. [ ]



What can be concluded about the Spirogyra from this division?

(a) It is a multicellular organism gives rise to two new equal sized individuals.
(b) It is a unicellular organism that gives rise to two new equal sized individuals.
(c) It is a unicellular organism that breaks into pieces that grows into new individuals.
(d) It is a multicellular organism that breaks into pieces that grows into new individuals.

6. Why are the testes located outside the abdominal cavity in scrotum? [ ]

(a) because sperm formation requires more spaces.
(b) because sperm formation requires a lower temperature.
(c) because sperm formation requires a higher temperature.
(d) None of the above.

7. Identify the Sexually Transmitted Diseases caused by bacteria. [ ]

(a) Gonorrhoea & Syphilis (b) HIV - AIDS (c) Hepatitis (d) Malaria

8. Find the incorrect statement from the following. [ ]

(a) All plants reproduce by either sexual or asexual reproduction.
(b) Reproduction in a plant results in the formation of a new plant.
(c) A zygote is formed during the process of fertilisation.
(d) In sexual reproduction, the offspring of a plant is identical to one of the parents only.

9. Identify the function of Semen. [ ]

i) Keep the sperms alive by providing nutrients
ii) Provides medium for the movement of sperms
iii) Helps in the production of sperms

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

10. 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

11. Why do flowering plants show double fertilisation? [ ]

(a) To produce the endosperm which contains food and ensures that the seed germinates successfully
(b) To protect the seeds
(c) To ensure the survival of the diploid zygote.
(d) To ensure that the ovary will not develop if double fertilisation does not take place.

12. Identify correct sequence about the menstrual cycle? [ ]

W - The ovum dies 24 hours after ovulation.
X - The uterus wall thickens with blood vessels.
Y - The uterus wall breaks down.
Z - The ovary discharges an ovum.

(a) W, Y, X, Z (b) X, Z, W, Y (c) Y, W, Z, X (d) Z, X, Y, W

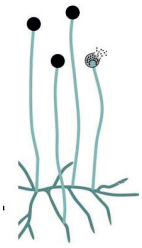
13. IUCD is for : [ ]

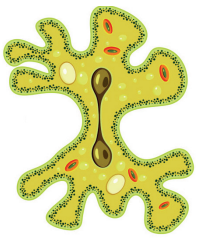
(a) Vegetative propagation (b) Contraception
(c) Increasing fertility (d) Avoiding miscarriage

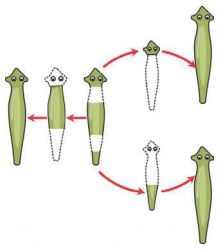
14. The number of chromosomes in both parents and off springs of a particular species remains constant because: [ ]

(a) Chromosomes get doubled after zygote formation
(b) Chromosomes get doubled after gamete formation
(c) Chromosomes get halved during gamete formation
(d) Chromosomes get halved after gamete formation

15. Which of the following figure illustrates the asexual reproduction in Yeast ? [ ]

(a) 

(b) 

(c) 

(d) 

16. Match the following : [ ]

i.	Vasa efferentia	a)	seminal ducts
ii.	Epididymis	b)	present in testis
iii.	Vasa deferentia	c)	collects sperms from tubules
iv.	Seminiferous tubules	d)	present in ovaries
v.	Urethra	e)	store the sperms temporarily
		f)	expels sperms out of the body

(a) i - c, ii - a, iii - f, iv - b, v - d (b) i - f, ii - b, iii - a, iv - e, v - c
(c) i - d, ii - c, iii - a, iv - f, v - e (d) i - c, ii - e, iii - a, iv - b, v - f

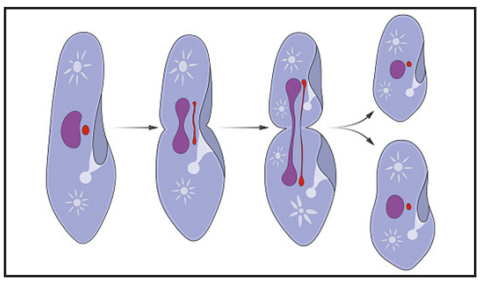
17. What is the surgical method of contraception in female and male respectively? [ ]

(a) Tubectomy and Vasectomy (b) Vasectomy and Copper-T
(c) Tubectomy and Copper-T (d) IUD and oral pills

18. Which of these is not the function of the seminal vesicles present in human males? [ ]

(a) To covert the sperms in a fluid medium. (b) To provide nutrition.
(c) To make their transport easier. (d) To make them sticky.

19. Identify the type of cell division taking place [ ]



(a) Longitudinal cell division in *Spirogyra*
(b) Transversal cell division in *Paramecium*
(c) Longitudinal cell division in *Paramecium*
(d) Transversal cell division in *Amoeba*

20. Offspring formed by asexual reproduction are genetically identical to the: [ ]

(a) Grandparents (b) Siblings (c) Parent (d) both parents

ASSERTION & REASONING TYPE

These consist of two statements – Assertion (A) and the Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

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(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true.

21. Assertion (A) : The zygote develops into a new individual in sexual reproduction.
Reason (R) : In asexual reproduction, new generations are created from a single individual. [ ]

22. Assertion (A) : Regeneration happens when an organism regrows certain parts or limbs which is lost due to predation. [ ]
Reason (R) : Lizard regrowing its tail is an example of regeneration.

23. Assertion (A) : Spore formation is a type of reproduction by formation of small outgrowth called bud.
Reason (R) : *Rhizopus* reproduces by spore formation [ ]

24. Assertion (A) : Stamen is the male reproductive part and it produces pollen grains.
Reason (R) : Pistil is present in the centre of the flower and is the female reproductive part. [ ]

25. Assertion (A) : Contraceptives are methods to prevent unwanted pergnancies.
Reason (R) : Unwanted pregnancies can only be prevented by using oral contraceptives. [ ]

26. Assertion (A) : Pollination and fertilization in flowers produce fruits and seeds.
Reason (R) : After fertilization the ovary becomes fruit and ovule becomes seed. [ ]

27. Assertion (A) : In internal fertilization male and female gametes fuse inside the female body
Reason (R) : In all fishes fertilization takes place internally. [ ]

28. **Assertion (A) :** After fertilisation the zygote divides several times to form an embryo with in the ovule.
Reason (R) : The ovule develops a tough coat and is gradually converted in to a seed. **[ ]**

29. **Assertion (A) :** Warts is a sexually transmitted disease.
Reason (R) : Warts are caused by bacteria. **[ ]**

30. **Assertion (A) :** Internal fertilisation occurs in mammals and birds. **[ ]**
Reason (R) : External fertilisation occurs in reptiles, amphibians and fishes.

SOURCE / CASE BASED QUESTIONS

CASE - 1

Grafting is the method of obtaining a superior quality plant from two different plants by taking the root system of one plant and the shoot system of another. The plant whose root system is taken is called stock while the plant whose shoot system is taken is called scion.

i. What is meant by grafting ?
ii. Give examples for the plants that propagate through grafting.
iii. Different between stock and scion.

OR

Write the advantages of grafting.

CASE - 2

The growing size of the human population is a cause of concern for all people. The rate of birth and death in a given population will determine its size. The process of sexual maturation for reproduction is gradual and takes place while general body growth is still going on. Some degree of sexual maturation does not necessarily mean that the mind or body is ready for sexual acts or for having and bringing up children. Various contraceptive devices are being used by human beings to control the size of population.

i. List two common signs of sexual maturation in boys and girls.
ii. What is the result of reckless female foeticide?
iii. Why is the growth of human population a cause concern ?

OR

Write two factors that determine the size of a population.

CHAPTER - 8. HEREDITY

COMPETENCY BASED QUESTIONS

Select and write one most appropriate option out of the four options given for each of the questions.

1. In human beings, the sex of the child depends on whether : [ ]

(a) The paternal chromosome is X (for girls) or Y (for boys)
(b) The paternal chromosome is Y (for girls) or X (for boys)
(c) The maternal chromosome is X (for girls) or Y (for boys)
(d) The maternal chromosome is Y (for girls) or X (for boys)

2. Match the following: [ ]

(A) Genetic changes	(p) Darwin
(B) Law of Independent assortment	(q) 9 : 3 : 3 : 1
(C) Natural selection	(r) DNA copying
(D) Dihybrid ratio	(s) Mendel

(a) (a) - (r); (B) - (s); (C) - (p); (D) - (q)
(b) (a) - (s); (B) - (r); (C) - (p); (D) - (q)
(c) (a) - (s); (B) - (r); (C) - (q); (D) - (p)
(d) (a) - (r); (B) - (p); (C) - (s); (D) - (q)

3. Which of the following carry hereditary characters to the off spring in the organism? [ ]

(a) Ribosome (b) Chromosome (c) Mitochondria (d) Lysosome

4. Which one of the following cannot be explained on the basis of Mendel's law of dominance? [ ]

(a) Alleles do not show any blending and both the characters recover as such in F2 generation
(b) Factors occur in pairs
(c) The discrete unit controlling a particular character is called factor
(d) Out of one pair of factors one is dominant and the other recessive

5. A pea plant with purple flowers is heterozygous for flower colour. Its genotype is Pp. The P and p alleles in the pea plant's cells are located: [ ]

(a) next to each other on the same chromosome.
(b) at the same location on homologous chromosomes.
(c) on the X and Y chromosomes.
(d) some distance apart on the same chromosome.

6. The human body with XY pair of chromosomes is called : [ ]
(a) male (b) hybrid (c) female (d) dihybrid

7. What is the genotypic ratio formed in the progeny of genetic cross between black furred and white furred rabbits ? [ ]
(a) 2 : 1 : 1 (b) 1 : 1 : 1 (c) 1 : 2 : 1 (d) 1 : 2 : 2

8. Which of the following may be used to obtain F2 generation ? [ ]
(a) Allowing flowers on a parent plant to be self-pollinated
(b) Allowing flowers on an F1 plant to be self-pollinated
(c) Cross- pollinating an F1 plant with a parent plant
(d) Cross-pollinating two parent plants

9. A homozygous dominant guinea pig with black fur is crossed with a homozygous guinea pig with white fur. The F1 generation is crossed with itself. What percentage of F2 generation is expected to show white fur coat? [ ]
(a) 25% (b) 50% (c) 75% (d) 100%

10. In cattle, having horns is a recessive trait (h) to not having horns (H). When cattle with horns are crossed with cattle that do not have horns, the number of offspring having horns was equal to those not having horns. Which of the following is most likely to be true? [ ]
(a) Both parents are homozygous dominant.
(b) One parent is homozygous dominant.
(c) Both parents are heterozygous.
(d) One parent is heterozygous.

11. The genotype for the height of an organism is Tt. What conclusion may be drawn from this? [ ]
(a) The allele for height has at least two different genes.
(b) There are at least two different alleles for the gene for height.
(c) There are two different genes for height, each having a single allele.
(d) There is one allele for height with two different forms.

12. Identify the correct sentence from the following. [ ]
(a) Genotypic ratio of dihybrid cross is 9 : 3 : 3 : 1
(b) Phenotype ratio of monohybrid cross is 1 : 2 : 1
(c) Genotypic ratio of monohybrid cross is 1 : 2 : 1
(d) Phenotypic ratio of dihybrid cross is 3 : 1

13. "One of the allele is dominant over other". This law is known as : [ ]
(a) law of segregation (b) law of independent assortment
(c) law of dominance (d) law of natural selection

14. A cross was carried out between two individuals heterozygous for two pairs of genes. Assuming segregation and independent assortment, the number of different genotypes and phenotypes obtained respectively would be: [ ]

(a) 4 and 9 (b) 6 and 3 (c) 9 and 4 (d) 11 and 4

15. Which one of the following is not one of the direct conclusions that can be drawn from Mendel's experiment? [ ]

(a) Only one parental trait is expressed

(b) Two copies of each trait is inherited in sexually reproducing organism

(c) For recessive trait to be expressed, both copies should be identical.

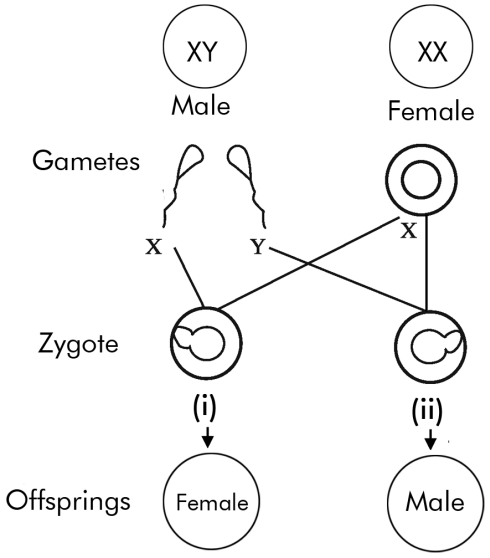
(d) Natural selection can alter frequency of an inherited trait.

16. A plant with red coloured flowers is crossed with a plant having white flowers. The red and white colour of the flower is controlled by a single gene. Red is dominant over white. The F1 progeny is self- pollinated and the flower colour in F2 is observed. Given the above information, what is the expected phenotypic ratio of plants with different flower colours? [ ]

(a) All plants with red flowers (b) Red : white in the ratio of 3 : 1

(c) Pink : white in the ratio of 3 : 1 (d) Red : pink : white in the of ratio of 1 : 2 : 1

17. Find the option that has correct choices for (i) and (ii). [ ]



(a) i - XX; ii - XX (b) i - XX; ii - XY (c) i - XY; ii - XX (d) i - XY; ii - XY

18. 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) sex chromosomes

(c) two different chromosomes (c) any chromosomes

19. In sheep, a dominant allele (B) produces black hair and a recessive allele (b) produces white hair. When you see a black sheep, you would be able to identify: [ ]

(a) its phenotype for hair colour. (b) its genotype for hair colour.

(c) the genotypes for only one of its parents. (d) the genotypes for both of its parents.

20. Appearance of new combination of characters in some progeny of F2 population indicates: [ ]

(a) law of purity of gametes (b) law of independent assortment

(c) law of dominance (d) none of the above

ASSERTION & REASONING TYPE

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(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true.

21. Assertion (A) : Dominant allele is an allele whose phenotype expresses even in the presence of another allele of that gene. [ ]

Reason (R) : A recessive allele is an allele that produces its characteristic phenotype only when its paired allele on the homologous chromosome is identical.

22. Assertion (A) : Traits like eye colour or height are inherited traits. [ ]

Reason (R) : Inherited traits are not transferred from parents to young ones.

23. Assertion (A) : Mutation is sudden change in the genetic material. [ ]

Reason (R) : Variation is useful for the survival of species overtime.

24. Assertion (A) : Chromosomes are known as hereditary units. [ ]

Reason (R) : The chromosomes are capable of self-reproduction and maintaining morphological and physiological properties through successive generations.

25. Assertion (A) : The principle of segregation given by Mendel is the principle of purity of gametes. [ ]

Reason (R) : Gametes are pure for a character.

26. **Assertion (A) :** Inheritance from previous generation provides both a common basic design, and subtle changes in it, for the next generation.
Reason (R) : The number of successful variations are maximised by the process of sexual reproduction. [ ]

27. **Assertion (A) :** In humans, height is a trait which shows variation.
Reason (R) : The rules of heredity determine the process by which traits and characteristics are reliably inherited. [ ]

28. **Assertion (A) :** Variations arising during the process of reproduction can be inherited.
Reason (R) : During reproduction, offspring inherit one set of chromosomes from each parent. [ ]

29. **Assertion (A) :** The rules of heredity determined the process by which traits and characteristics are inherited.
Reason (R) : Selection of variants by environmental factors forms the basis for evolutionary processes. [ ]

30. **Assertion (A) :** Mendel's experiments on pea plants laid the foundation for the understanding of heredity.
Reason (R) : Mendel rules for inheritance of such traits in human beings are related to the fact that both the father and the mother contribute practically equal amounts of genetic material to the child. [ ]

SOURCE / CASE BASED QUESTIONS

CASE - 1

Mendel blended his knowledge of Science and Mathematics to keep the count of the individuals exhibiting a particular trait in each generation. He observed a number of contrasting visible characters controlled in pea plants in a field. He conducted many experiments to arrive at the laws of inheritance.

i. What are Mendel's laws of inheritance ?

ii. What happens when pea plants showing two different characteristics rather than just one, are bred with each other?

iii. Why did Mendel choose to study pea plants ?

OR

What are the contrasting characters of pea plants studied by Mendel ?

CASE - 2

In some animals,the temperature at which fertilized eggs are kept determines whether the animal developing in the egg will be male or female. In other animals,such as snails,individuals can change sex,that is sex is not genetically determined .In human beings, sex of individuals is largely genetically determined. All chromosomes in human beings are not paired. We have 22 pairs and one pair of sex chromosomes which is odd and not always a perfect pair.

i. In which animals sex is not genetically determined but depends on certain environmental factors?

ii. Which environmental factors determine the sex of an individual?

iii. In which animal sex is genetically determined ? Which chromosomes responsible for sex determination ?

OR

Differentiate between autosomes and allosomes.

CHAPTER - 13. OUR ENVIRONMENT

COMPETENCY BASED QUESTIONS

Select and write one most appropriate option out of the four options given for each of the questions.

1. The action of which among the following is crucial to the formation of ozone?
(a) humans (b) sunlight (c) carbon dioxide (d) chlorofluorocarbons

2. Disposable plastic plates should not be used because : [ ]
(a) they are made of light weight materials
(b) they are made of toxic materials
(c) they are made of biodegradable materials
(d) they are made of non - biodegradable materials

3. Consider the following statements : [ ]
(A) Waste are of two types, biodegradable and non-biodegradable.
(B) Blue-green algae are producers.
(C) Biodegradable wastes should be separated and kept in blue colour bins for garbage collectors.
Which of these statement(s) is/are correct ?
(a) A and B (b) B and C (c) A, B and C (d) None of these

4. This is an inverted pyramid : [ ]
(a) Pyramid of number in a grassland (b) Pyramid of energy in pond system
(c) Pyramid of biomass in a grassland (d) Pyramid of biomass in pond ecosystem

5. Which of the following actions may not affect the environment in worse?
(a) Plastic bags buried inside the earth. [ ]
(b) Planting of trees
(c) Excessive use of non-biodegradable pesticides
(d) Burning of plastic bags.

6. Which statement shows the interaction of an abiotic component with a biotic component in an ecosystem? [ ]
(a) A grasshopper feeding on a leaf
(b) Rainwater running down into the lake
(c) An earthworm making a burrow in the soil
(d) A mouse fighting with another mouse for food

7. Which of the following belong to same trophic level? [ ]
(a) Cockroach and spider (b) Lizard and spider
(c) Hawk and spider (d) Lizard and hawk.

8. 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.

9. The manufacturing of Chlorofluorocarbon free refrigerators is mandatory throughout the world. How does this help prevent ozone depletion? [ ]

(a) This will help convert oxygen molecules into ozone.
(b) This will help convert the CFCs into ozone molecules.
(c) This will reduce the production of CFCs from oxygen molecules.
(d) This will reduce the release of CFCs that reacts with ozone molecules.

10. First link in any food chain is usually green plants. Which of the following statements gives the correct explanation about the above statement? [ ]

(a) Only green plants have the capacity to synthesize food using sunlight.
(b) There are more herbivores than carnivores in a food chain.
(c) Green plants are the only ones fixed at one place in the soil and do not show any kind of movements.
(d) Green plants are widely distributed.

11. Which of the following does not exist in a balanced ecosystem? [ ]

(a) Interconnected food chains.
(b) Interdependence among living organisms and the environment.
(c) Animals dependent on plants but plants are not dependent on animals.
(d) Communities made up of different populations of organisms.

12. Which of the following are environment-friendly practices? [ ]

(a) Carrying cloth bags to put purchases in while shopping.
(b) Switching off unnecessary lights and fans.
(c) Walking to school instead of getting your mother to drop you on her scooter.
(d) All of the above

13. Study the following food chain.

Flower → Caterpillar → Frog → Snake → Owl

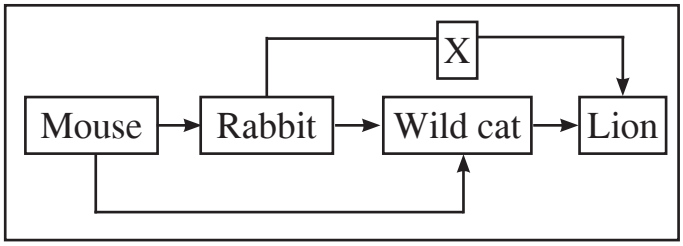
If all the owls are removed from this food chain then which of the following options is correct? [ ]

(a) Number of caterpillars will increase greatly.
(b) Population of frogs will decrease apparently.
(c) Population of snakes will increase greatly.
(d) All the above

14. Which of the following belongs to a group of biotic component of the environment? [ ]

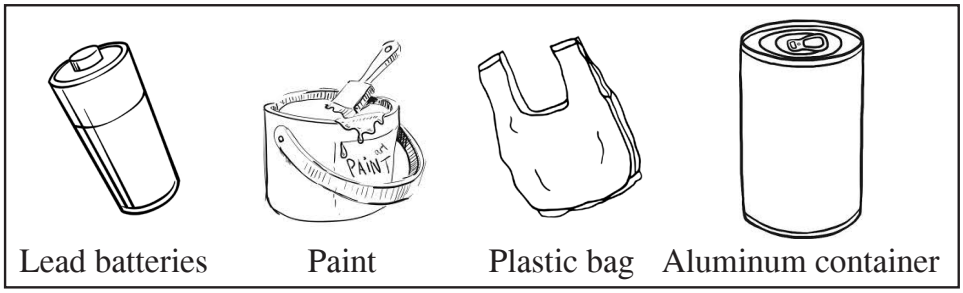
(a) Tree, water, soil, animals
(b) Soil, animals, plants, sea
(c) Animal, plants, microorganisms
(d) Microorganisms, plants, soil, water

15. What would be the "X" in the given food chain ? [ ]



(a) Primary Consumers
(b) Tertiary Consumers
(c) Producers
(d) Secondary Consumers

16. Which type of waste is represented by following figure ? [ ]

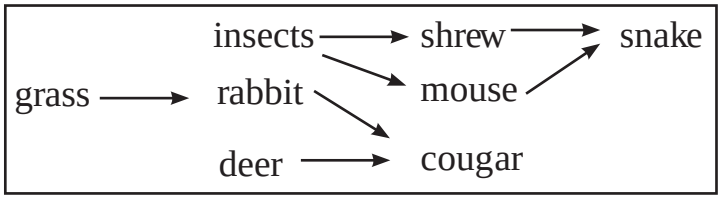


(a) Non-biodegradable
(b) Bio-degradable
(c) Both a and b
(d) None

17. Which of the following is incorrectly matched? [ ]

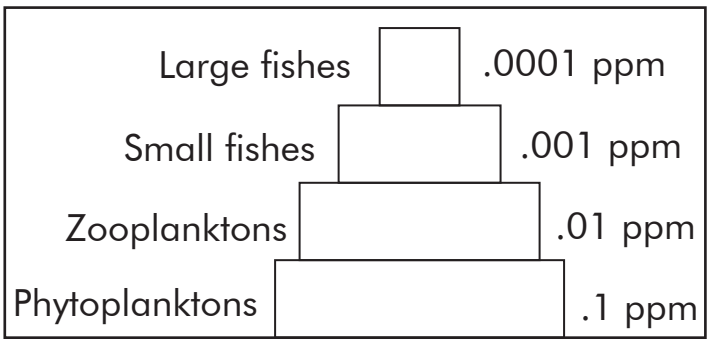
(a) Aquarium - An artificial ecosystem.
(b) Parasite - Organism which lives in or on another organism.
(c) Phytoplankton - Microscopic aquatic animals.
(d) Ecology - Study of interactions among organisms and their environment.

18. In the simple terrestrial food web diagram, which of these is a secondary consumer? [ ]



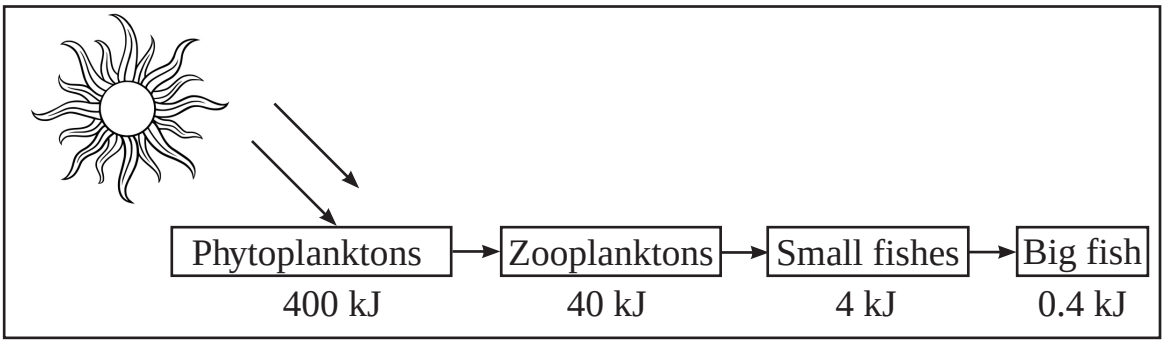
(a) insect (b) deer (c) rabbit (d) mouse

19. Carefully observe the diagram given below and identify the phenomenon depicted in it. [ ]



(a) Bioaccumulation (b) Biomagnification
(c) Both (a) and (b) (d) None

20. What is depicted in the following schematic representation ? [ ]



(a)10% law of energy. (b) 100% law of energy.
(c) 1% law of energy. (d) 1000% law of energy.

ASSERTION & REASONING TYPE

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(c) Assertion (A) is true, but Reason (R) is false.
(d) Assertion (A) is false, but Reason (R) is true.

21. Assertion (A) : Ozone is both beneficial and damaging. [ ]
Reason (R) : Ozone at the higher levels of the atmosphere is a product of UV radiation acting on oxygen molecule.

22. **Assertion (A) :** Garden is an artificial ecosystem.
Reason (R) : Biotic and abiotic components of garden are maintained by humans. [ ]

23. **Assertion (A) :** Biotic components of ecosystem continuously require energy to carry on life process . [ ]
Reason (R) : Abiotic components are the non- living factors of the ecosystem

24. **Assertion (A) :** In a food chain, members of successive higher levels are fewer in number.
Reason (R) : Number of organisms at any trophic level depends upon the availability of organisms which serve as food at the lower level. [ ]

25. **Assertion (A) :** Using jute bags while shopping is more environment friendly as compared to polythene bags.
Reason (R) : Jute is biodegradable whereas polythene bag is non-biodegradable. [ ]

26. **Assertion (A) :** Chemicals and toxins accumulate more and more as we move up the food chain.
Reason (R) : Anything that gets into biological tissue, that is not normally there, has the potential to accumulate and magnify. [ ]

27. **Assertion (A) :** Biomagnification is caused due to the accumulation of biodegradable substances in organisms at each successive trophic level.
Reason (R) : Biomagnification leads to the accumulation of maximum chemicals in small fishes [ ]

28. **Assertion (A) :** The green plants in a terrestrial ecosystem capture about 1% of the energy of sunlight that falls on their leaves and convert it into food energy.
Reason (R) : An average of 10% of the food eaten is turned into its own body and made available for the next level of consumers. [ ]

29. **Assertion (A) :** Substances that are broken down by biological processes are said to be biodegradable.
Reason (R) : Substances that are not broken down in this manner are said to be non-biodegradable. [ ]

30. **Assertion (A) :** Man is a herbivore.
Reason (R) : Omnivores eat both plant food and meat of animals. [ ]

SOURCE / CASE BASED QUESTIONS

CASE - 1

Industrialization and rise in demand of consumer goods have created a major problem in the form of wastes/garbage accumulation and its disposal especially in urban areas. The disposal of waste should be done in a scientific way. There are different methods of waste disposal. The method to be used depends on the nature of the waste.

i. What is the biggest problem in waste management?

ii. How can we solve the problem of waste disposal?

iii. How can cities improve waste management?

OR

What are the effects of urban and industrial waste?

CASE - 2

Biosphere is a global ecosystem composed of living organisms and abiotic factors from which they derive energy and nutrients. And ecosystem is defined as structural and functional unit of the biosphere comprising of living and non-living environment that interact by means of food chains and chemical cycles resulting in energy flow, biotic diversity and material cycling to form a stable, self-supporting system

i. Why is biosphere considered as global ecosystem ?

ii. What is structural and functional unit of biosphere?

iii. What are the resources found in biosphere?

OR

What is biosphere ? What are its two major components?