

**Q.1 A) Find the odd man out**

- 1) Pyruvic acid: All the others are chemical substances formed by the process of fermentation.
- 2) Prostate gland: All others are duct systems in male reproductive system.
- 3) Edible oil: All others are fossil fuels.
- 4) Diabetese: All other diseases involve reduction in the number of blood cells.
- 5) Industrial Revolution: All others do not harm the environment.

**B) Write whether the following statements are True or False.**

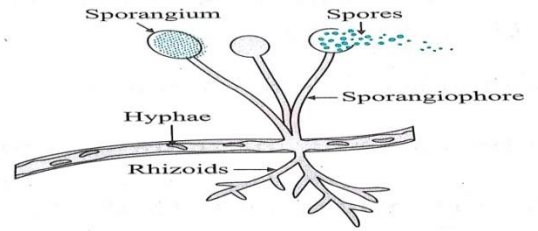
- 1) False.
- 2) True.
- 3) False.
- 4) False.
- 5) False.

**Q.2 Answer the following questions. (Any Five)**

- 1) **Biodiversity:** Biodiversity means the diverse life forms in a habitat. Biodiversity is seen due to variety of life forms and different ecosystems that lodge these organisms. In nature there is biodiversity on the three different levels, viz. genetic diversity, species diversity and ecosystem diversity. This means that there is diversity in the individuals belonging to the same species due to genetic reasons, there is diversity among the different species of organisms and there is also a diversity in the ecosystems that are present in any region.  
Due to development of mankind, the biodiversity is threatened. There are special efforts taken to restore the lost and threatened biodiversity. Some of these are establishing sanctuaries, National Parks, biodiversity hotspots and reserves etc. Certain endangered species are protected by carrying out conservation projects.
- 2) 1) **Heredity:** Heredity is the process by which the biological characters from parental generation are transmitted to the next generation through genes.  
2) **The mechanism of hereditary changes:** Mutation: Sudden change in the parental DNA can cause mutations. This results at the time of meiosis, the crossing over takes place. This creates new recombination of the genetic information. Therefore, the haploid gametes produced carry changed hereditary characters.
- 3) 1) Green energy means eco-friendly form of energy which does not cause environmental problems and are non-exhaustible, perpetual and sustainable.  
2) These sources of energy do not produce toxic gases or other pollutants, therefore they are safe.  
3) Examples of green energy: (i) Hydroelectric energy (ii) Wind energy (iii) Solar energy (iv) Energy obtained biofuels.
- 4) 1) ATP or Adenosine triphosphate is the 'energy currency' of the cell.  
2) Chemical composition of ATP is as follows: it is a triphosphate molecule having adenosine ribonucleoside. The nitrogenous compound-adenine, pentose sugar-ribose and three phosphate groups are present in ATP.  
3) In this energy-rich molecule the energy remains trapped in the bonds by which phosphate groups are attached to each other.  
4) ATP molecules are stored in the cells. As per the need, energy is derived by breaking the phosphate bond of ATP.  
5) During cellular respiration, the oxidation of glucose yields 38 molecules of ATP. Whenever required they are consumed to liberate energy.
- 5) 1) Exercise, yoga and meditation are the ways to reduce mental and physical stress. 2) In yoga various

asanas and pranayama are performed. It also includes good food and discipline of the body and mind. 3) Deep breathing, yogic sleep can help in the building up health. 4) Meditation helps in concentration and brings positivity to the mind. Especially, the students increases the concentration in the studies.

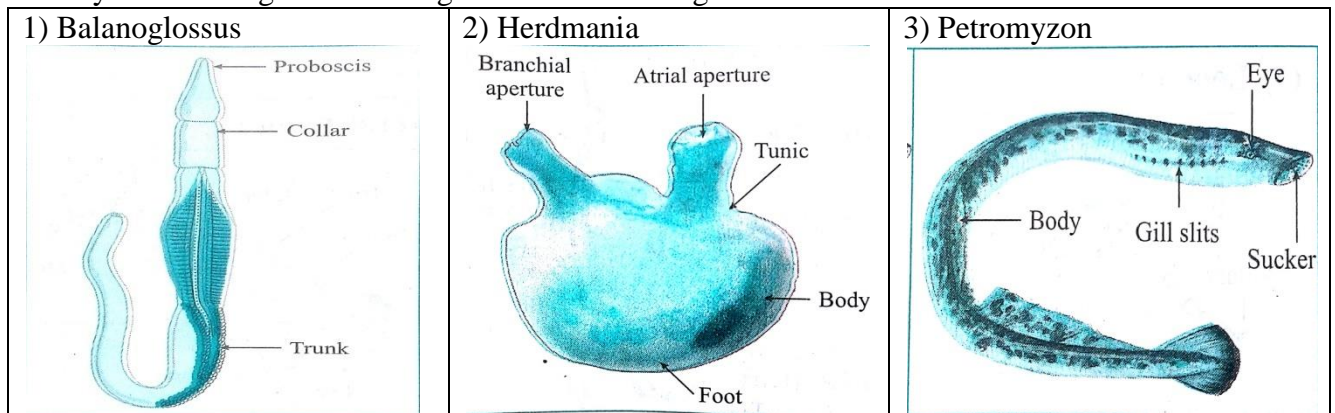
- 6) 1) Mucor reproduces asexually by spore formation. 2) It has filamentous body that possess sporangia. 3) When the spores are formed, the sporangia burst. The spores are released which settle down at suitable places. 4) They germinate in moist and warm place forming a new fungal colony.



- 7) Objectives of disaster management: 1) To save human life from disasters. To help them for moving away from the place of disasters by rapid action. 2) To supply essential commodities to the affected people. This helps to reduce the gravity of disaster. People are given grains, water and clothes and other basic necessities under this objective. 3) To bring back the conditions of affected people to normalcy. 4) To rehabilitate the affected and displaced victims. 5) To think and execute the protective measures in order to develop capability to face the disasters in future.

**Q.3 Answer the following questions. (Any Five)**

- 1) i) A T G C A A T T  
 ii) U A C G U U A A  
 iii) RNA polymerase takes part in the process of transcription.
- 2) The science of heredity is useful in the following ways: i) For diagnosis of hereditary disorders. ii) For treatment of hereditary disorders. iii) For prevention of hereditary disorders. iv) For production of hybrid varieties of animals and plants. v) For using microbes in the industrial processes.
- 3) Identify the animal given in the figure and label the figure:



- 4) Prophase I: Prophase I of meiosis is much longer phase of the meiosis. It is subdivided into 5 substages, namely leptotene zygotene, pachytene, diplotene, and diakinesis.
- (1) Leptotene: Initially the chromosomes start condensation and they become compact during leptotene.
- (2) Zygotene: In zygotene, homologous chromosomes start pairing. This pairing is called synapsis. The structure called synaptonemal complex develops to hold chromosomes in place during this pairing. In each chromosomes chromatid arm divides and forms structure called bivalent or tetrad.
- (3) Pachytene: During pachytene stage, crossing over of non-sister chromatids of homologous chromosomes takes place. Genetic recombination is produced due to such exchange. The homologous chromosomes still remain paired together at the sites of crossing over.
- (4) Diplotene: During diplotene, synaptonemal complex dissolves and the homologous chromosomes of the bivalents separate except at the point of crossing over. Thus, it looks like X-shaped structures called the chiasmata.
- (5) Diakinesis: The last phase of prophase is for termination of chiasmata. The spindle fibres originate, and the cross-over homologous chromosomes are now separated. The nucleolus disappears, and the nuclear envelope breaks down.

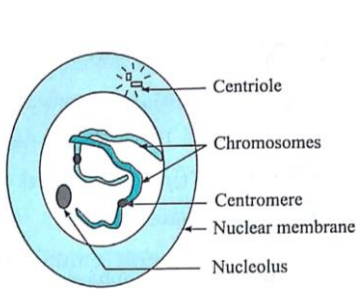


Fig. 2.4 : (a) Leptotene

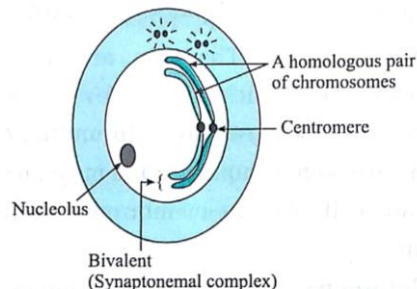


Fig. 2.4 : (b) Zygotene

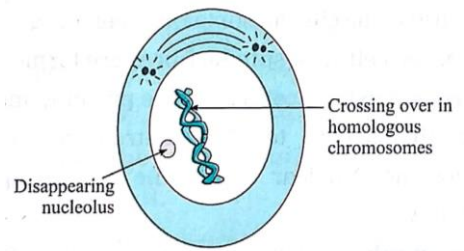


Fig. 2.4 : (c) Pachytene

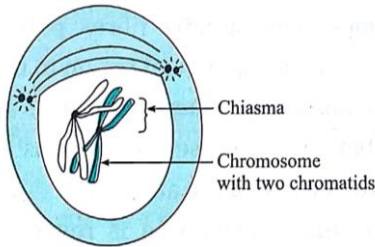


Fig. 2.4 : (d) Diplotene

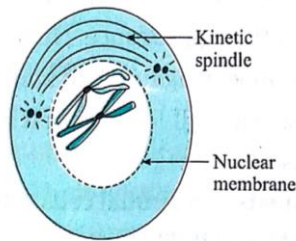


Fig. 2.4 : (e) Diakinesis

- 5) 1) The animals and plants species are endangered majorly due to man-made causes.
- 2) Some natural disasters like earthquakes, climate change, forest fires, drought and cyclones also affect the living organisms due to lack of food and water.
- 3) In man-made causes, hunting and poaching are the main reasons.
- 4) Also animal-human conflicts occur due to invasion of human settlements into the habitats of wild animals.
- 5) Construction of dams, roads, and colonies destroy the habitats of wild life.
- 6) Industrialization, urbanization and population explosion of humans are putting severe pressure on all the existing biodiversity.
- 7) In order to save and protect the biodiversity, many scientists and naturalists come together. A stretch of land is protected by declaring 'sanctuary or a national park by the Government. Even the locals can protect it as a sacred grove.
- 8) Various acts and rules have been formulated to protect the organisms. The violators of such rules are punished accordingly.

6)	Aves	Mammalia
1)	Aves are totally adapted for the aerial mode of life.	Mammals are adapted for terrestrial life.
2)	Body is spindle shaped. Body is divisible into head, neck and trunk. There are two pairs of limbs. The forelimbs are modified to form wings for flight.	Body is not spindle shaped. It is divisible into head, neck, trunk and tail. There are two pairs of limbs. They are adapted for walking or running on the ground.
3)	Digits have scales and claws.	Digits have nails or hoofs. Few have claws.
4)	The exoskeleton in the form of feathers.	The exoskeleton in the form of fur, hair, wool etc.
5)	Jaws are modified into a beak.	Jaws have teeth and they surround the mouth.
6)	Birds are oviparous. The eggs hatch into nestlings.	Mammals are viviparous. They give birth to live young ones. (Exception: Platypus)
7)	The incubation of eggs and feeding of nestlings is done by both parents. Examples: Crow, Sparrow, Peacock, Parrot, Pigeon, Duck, Penguin, etc.	Parental care is shown only by mother, who feeds the babies with milk from mammary glands. Examples: Cat, Dog, Tiger, Lion, Elephant, etc.

- 7) Outdoor games give good physical exercise. These games give many physical benefits. It improves

personal discipline, interaction with fellow players and created sense of unity. Through play by driving away the loneliness, mental stress and depression is reduced. The person becomes more social. Therefore, it is said that the importance of outdoor games is unparalleled.

**Q.4 Answer the following Questions (Any One)**

1)



This symbol tells us to keep our wastes carefully. The garbage should not be thrown anywhere. But it should be properly managed. Waste if managed properly can be a wealth.

This symbol tells us to save electricity. If electricity is carefully used, we can save our natural resources. This message is given through this picture.



Use of bicycle means use of green energy. By riding on a bicycle we save on fuel and use our own muscular energy. It is the best ecofriendly, non polluting vehicle.

This symbol is giving the message that save water. Sustainable use of water is necessary for our future.



Other symbols are:



2)

**Mention the disorders caused by the pictures shown.**

a) Lungs disorder, b) Mental illness, c) Nervous system breakdown.

**How do the following pictures help?**

a) relives stress, b) stress management, c) Positive mindset, improves confidence.

\*This question paper is for practice purpose only.