

Q. 1. (A)

- (i) (B)
- (ii) (C)
- (iii) (A)
- (iv) (B)
- (v) (D).

Q. 1. (B)

- (i) Haemoglobin
- (ii) Tsunami
- (iii) Yeast
- (iv) Acorn worms or Balanoglossus belongs to Hemichordata.
Body parts : Proboscis, collar and trunk.
- (v) Indeterminate – (b) Giant squirrel (Shekhru).

Q. 2. (A)

- (i)** (1) When there is deficiency of oxygen in the surrounding, the aerobic respiration is not possible.
(2) In such case, to survive, higher plants switch over to anaerobic respiration.
(3) In some animal tissues in case of oxygen deficiency cells perform anaerobic respiration.
- (ii)** (1) When a single huge tree is felled, many living organisms which are dependent on it, are exterminated.
(2) Many insects, fungi, birds, etc. lose their habitat.
(3) Trees take up carbon dioxide from the atmosphere and release oxygen.
These natural cycles are also hindered due to loss of trees.
(4) Due to trees there is shade, cooler atmosphere and increase in the rainfall.
When such trees are destroyed all the components in the ecosystem are destroyed too.
- (iii)** (1) Outdoor games give good physical exercise. These games give many physical benefits.
(2) It improves personal discipline, interaction with fellow players and create sense of unity.
(3) Through play by driving away the loneliness, mental stress and depression is reduced.
(4) The person becomes more social.
(5) Therefore, it is said that the importance of outdoor games is unparalleled.

9. 2. (B)

(i) Biodiversity can be conserved by the following ways :

- (1) Protection of the rare species of plants and animals.
- (2) Creating habitats for the animals and plants by establishing National Parks and Sanctuaries.
- (3) Declaration of bioserves, the areas which are protected through conservation.
- (4) Conservation projects for protecting special species.
- (5) Conservation of all flora and fauna.
- (6) Strict observance of the acts and rules.
- (7) Use of traditional knowledge and maintaining record of traditional knowledge.

(Note : For 2 marks, write any 4 measures)

(ii)

| | | |
|-----------------------------|---------------------------------|---------------------------------|
| <u>Human hand</u> | | <u>Cat's/Bull's foreleg</u> |
| | Anatomical evidences | |
| <u>Flipper of Whale</u> | | <u>Patagium of Bat</u> |

- (iii) (1) Edible vaccines are those which are given as a food by incorporating them into the foodstuff.
- (2) Such edible vaccines are produced through biotechnology.
- (3) Transgenic potatoes are produced with the help of biotechnology which contain vaccine that act against bacteria like *Vibrio cholerae*, *Escherichia coli*.
- (4) If raw potatoes are consumed, then the immunity is generated against cholera and the diseases caused by *E. coli*.
- (iv) (1) I am from phylum Cnidaria or Coelenterata
- (2) Starfish, I am from phylum Echinodermata
- (v) (1) Endangered species : Lion tailed monkey
- (2) Rare species : Red panda
- (3) Vulnerable species : Tiger
- (4) Indeterminate species : Shekhru

9. 3.

(i) (1) Mucor : Spore formation

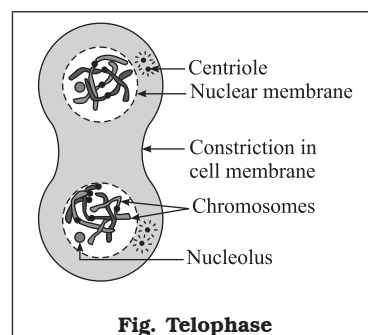
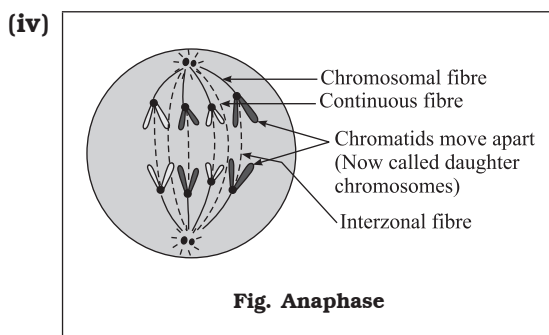
(2) Bryophyllum : Vegetative propagation with the help of buds present on the leaf margin.

(3) Paramecium : Transverse binary fission.

| (ii) | Aves | Mammalia |
|------|--|--|
| | <p>(1) Aves are totally adapted for the aerial mode of life.</p> <p>(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.</p> <p>(3) Digits have scales and claws.</p> <p>(4) The exoskeleton is in the form of feathers.</p> <p>(5) Jaws are modified into a beak.</p> <p>(6) Birds are oviparous. The eggs hatch into nestlings.</p> <p>(7) The incubation of eggs and feeding of nestlings is done by both parents.</p> <p>Examples : Crow, Sparrow, Peacock, Parrot, Pigeon, Duck, Penguin, etc.</p> | <p>(1) Mammals are adapted for terrestrial life.</p> <p>(2) 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.</p> <p>(3) Digits have nails or hoofs. Few have claws.</p> <p>(4) The exoskeleton is in the form of fur, hair, wool, etc.</p> <p>(5) Jaws have teeth and they surround the mouth.</p> <p>(6) Mammals are viviparous. They give birth to live young ones. (Exception : Platypus)</p> <p>(7) Parental care is shown only by mother, who feeds the babies with milk from mammary glands.</p> <p>Examples : Cat, Dog, Tiger, Lion, Elephant, Human, Kangaroo, Dolphin, Bat, etc.</p> |

(Note : Any 3 points of distinction are expected.)

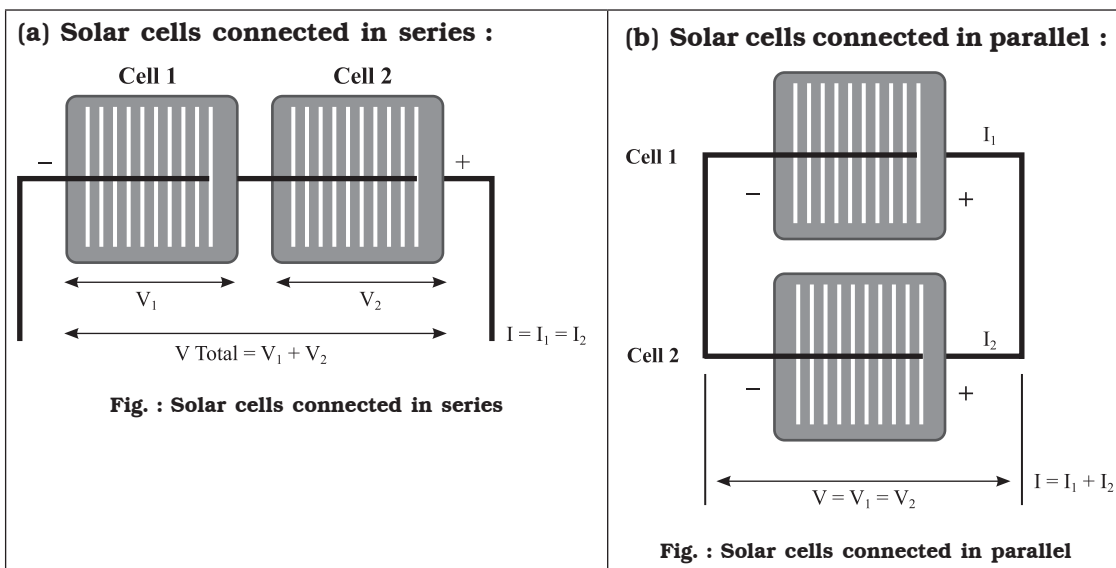
- (iii) (1) Disaster : The disaster shown is gas leakage. Primary action : First and foremost, the windows and the doors will be opened immediately. We shall call the gas agency customer care department for help. The lights and the electrical equipment will not be turned off to avoid the accidents.
- (2) Disaster : The disaster shown is heavy rains. Primary action : If the warning of the heavy rains is broadcast then people staying in low lying areas should be taken to the safe places. Schools and colleges are kept closed. If such students or young children or sick persons are stranded anywhere, they should be helped to reach their destinations before the rain starts.



- (v)** (1) Fossils : Fossils offer palaeontological evidence for the evolutionary process. Due to some natural calamities the organisms get buried during ancient times. The impressions and remnants of such organisms remain preserved underground. The hot lava also traps some organisms or their impressions. All such formations form fossils.
- (2) Importance of fossils : Study of fossils help the researcher to understand the characteristics of the organisms that existed in the past. In this way, study of fossils unfold the evolutionary secrets.
- (3) Finding the age of fossil : Carbon dating method helps in finding out exact age of the fossil. According to the structure of earth's crust the fossils are obtained at specific depths. The oldest ones are obtained at the depth while the relatively recent ones occupy the upper surface.
- (vi)** (1) IVF means In Vitro Fertilization (IVF).
- (2) This is the technique in the modern medical field where childless couples can be blessed by their own child.
- (3) IVF technique is used for childless couples who are faced with problems such as less sperm count, obstacles in oviduct, etc.
- (4) The IVF technique is done by removing the oocyte from the mother and artificially fertilizing by the sperms collected from father. This fertilization is done in a test-tube. Thus it is also called test tube baby. The embryo formed is implanted in uterus of real mother or a surrogate mother at appropriate time.
- (vii)** (1) All the basic needs like food, clothing and shelter should be satisfied.
- (2) There should be good opportunities for education and employment.
- (3) There should be good transport facilities.
- (4) There should be good playgrounds and gardens.
- (5) Criminals should be punished and the social safety should be enhanced.
- (6) Political conditions and views of ruling party should be helpful for the public.
- (viii)** (1) Fruits are perishable food stuff. They are spoilt soon if not consumed immediately. Hence for storage and usage for a long term, their preservation is absolutely essential.
- (2) For year-long use of the fruits they are dried, salted, packed in air tight containers, used for preparing jams and jellies or condensed into pulps or syrups. Beverages, pickles, sauce, and various other products made from the fruits are largely used by us.
- (3) The preserved products also fetch financial benefits.
- (4) In national and international markets, Indian fruits like mangoes are in great demand. We can get foreign currency through exports of fruits and fruit products.
- (5) The local horticulturists get good benefit from their orchards.
- (6) Processed fruit products also give vitamins and minerals that help in maintaining good health. Thus fruit processing is important for human life.

- Q. 4. (i)** (1) Sulphuric acid present in acid rain causes metal erosion of statues, bridges and buildings.
- (2) Bacterial species such as *Acidophilum* sps. and *Acidobacillus ferrooxidans* use sulphuric acid as source of energy.
- (3) These bacteria control soil pollution which is caused due to acid rain.
- (4) Uranium salts are water soluble salts produced in nuclear power plants and in the process of electrolysis.
- (5) *Geobacter* bacteria prevent uranium salts from mixing with groundwater by converting them into insoluble salts.

(ii) (1)



(2) (a) Advantages :

- (i) While generating the power through solar radiations, no fuel is burnt.
- (ii) Solar energy generation thus does not create any type of pollution. The technology can be completely utilized in regions with abundant sunlight.
- (iii) Solar energy is eco-friendly, green energy.

(b) Limitations :

- (i) Sunlight is available only during day time. Thus solar cells can generate power only during day.
- (ii) In rainy season and in cloudy conditions, solar power generation suffers.
- (iii) The power present in the solar cells is DC while most of the domestic equipments work on AC.