# Solution of Board's Activity Sheet (March 2025)

प्र. क्र.
Q. No.

**1 (A)**

***Note :*** *All the sub-questions in Q. 1 (A) and Q. 1 (B) are compulsory. For MCQ, write only alphabet of the answer.*

(i) (A) ***(1 mark)***

(ii) (A) ***(1 mark)***

(iii) (B) ***(1 mark)***

(iv) (C) ***(1 mark)***

(v) (D) ***(1 mark)***

**1 (B)**

(i) Fertilization ***(1 mark)***

(ii) Interleukin ***(1 mark)***

(iii) True ***(1 mark)***

(iv) Commercial uses of Biotechnology :

(1) Hybrid seeds

(2) Genetically modified crops

(3) Biofertilizers

***(Any two uses : ½ mark each)***

(v) Lungfish. ***(1 mark)***

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Q. No. **2 (A)**

***Note :*** *In this question, students are required to answer any 2 questions out of 3 sub-questions. However, answers to all the scientific reasons are given here for the guidance of the students.*

(i) (1) When there is deficiency of oxygen in the surrounding, the aerobic respiration is not possible. In such case, to survive, higher plants switch over to anaerobic respiration.

(2) In some animal tissues in case of oxygen deficiency cells perform anaerobic respiration.

***(2 correct points : 1 mark each)***

(ii) (1) In males, XY sex chromosomes are present and in females, XX sex chromosomes are present.

(2) At the time of fertilization, if X-chromosome comes from male, the child will be a girl and if Y-chromosome comes from male, the child will be a boy.

Therefore, it is not right to consider the mother responsible, for giving birth to a girl child.

***(2 correct points : 1 mark each)***

(iii) (1) Radioactive and harmful radiations are emitted after fission of nuclei occurs.

(2) There is a problem of disposal of nuclear waste.

(3) Very fatal accidents can happen in nuclear power plant which emits very harmful radiations.

Hence, the energy generated from nuclear fuels is not environment friendly.

***(Any 2 correct points : 1 mark each)***

प्र. क्र.
Q. No. **2 (B)**

***Note :*** *In this question, students are required to answer any 3 questions out of 5 sub-questions. However, answers to all 5 questions are given here for the guidance of the students.*

(i) Grass → Grasshopper → Frog → Snake → Eagle → Decomposer

***(4 correct components : ½ mark each)***

(ii)

| Class Pisces | Class Reptiles |
|---|---|
| 1. These are aquatic animals living in marine and fresh water. | 1. These are mainly terrestrial animal. |
| 2. Respiration occurs with the help of gills. | 2. Respiration occurs with the help of lungs. |

***(2 correct points of differentiation : 1 mark each)***

(iii) The disaster shown in the pictures is overflowing due to heavy rain.

Effects of this disaster are as follows :

(1) Due to overflowing, bridges and roads are affected.

(2) It causes loss of human life and property.

***(2 correct effects : 1 mark each)***

(iv) Methods to reduce stress are as follows :

(1) Photography (2) Reading (3) Cooking (4) Drawing

(5) Sculpturing (6) Rangoli (7) Laughter club

(8) Outdoor games, etc.

***(Any 4 correct methods : ½ mark each)***

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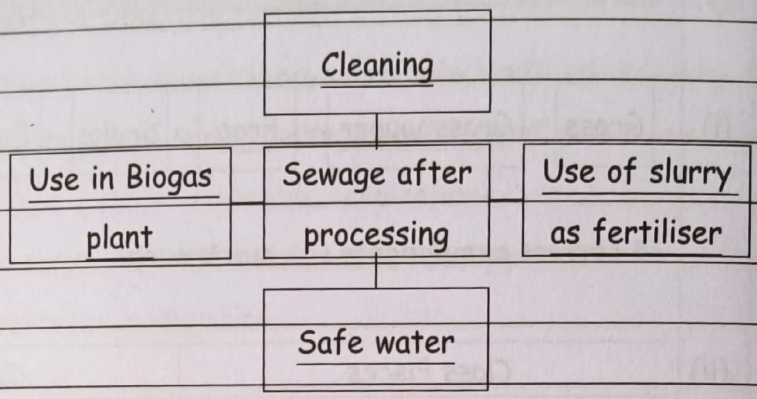
Q. No. 2 (B)

(v)




***(Each block ½ mark)***

प्र. क्र.
Q. No. 3

**Note :** *In this question, students are required to answer any 5 questions out of 8 sub-questions. However, answers to all the questions are given here for the guidance of the students.*

(i) (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 :

(i) Sudden change in the parental DNA can cause mutation. This results into changes in the hereditary characters. Some mutations may be minor but some may be considerable.

(ii) At the time of meiosis, the crossing over takes place between homologous chromosomes. This creates new recombination of the genetic information. Therefore, the haploid gametes produced carry hereditary characters that are different from those of the parents.

***(Correct definition : 1 mark; 2 correct points of mechanism : 1 mark each)***

(ii) Four stages of mitosis are as follows :

(1) Prophase (2) Metaphase (3) Anaphase (4) Telophase

Explanation :

(1) Prophase : During prophase, condensation of chromosomes starts. The thin and thread like chromosomes start thickening. They are seen with their pair of sister chromatids. In animal cells the centrioles are seen to duplicate and move to opposite poles of the cell. Nuclear membrane and nucleolus disappear.

(2) Metaphase : Chromosomes complete their condensation and each one is seen with its sister chromatids. The chromosomes are seen in equatorial plane of the cell. The spindle fibres are formed from polar region, where centrioles are present and they attach themselves to the centromere of each chromosome. Nuclear membrane now disappears completely.

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(3) Anaphase : The centromeres of the chromosomes now divide forming two daughter chromosomes. The spindle fibres pull apart the chromosomes from equatorial region to the opposite poles. Chromosomes moving to the poles appear like bunch of bananas. One set of chromosomes reach each pole by the end of the anaphase.

(4) Telophase : Telophase is reverse of events that occurred in prophase. The thickened chromosomes decondense. They again assume the thin and thread like appearance. Nuclear membrane and nucleolus appear again. The spindle fibres are completely lost. The cell looks as if it has two nuclei in one cytoplasm.

***(4 stages of mitosis : 1 mark; Explanation of any two stages : 1 mark each)***

(iii) There are different methods of asexual reproduction in different unicellular animals.

(1) Binary fission : The process in which the parent cell divides to form two similar daughter cells is called binary fission. Prokaryotes (bacteria), Profists (Amoeba, Paramoecium, Euglena) and eukaryotic cell-organelle like mitochondria and chloroplasts perform binary fission.

(2) Multiple fission : During unfavourable conditions when there is lack of food, multiple fission is shown by amoeba. Amoeba forms protective covering around plasma membrane and becomes encysted. Inside the cyst, amoeba undergoes repeated nuclear division, which is followed by cytoplasmic divisions. Many amoebulae are formed which remain dormant inside the cyst. When favourable conditions reappear, they come out by breaking the cyst.

(3) Budding in yeast : Yeast is unicellular fungus that perform budding. The parent cell produces two daughter nuclei by mitotic division.

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This results in a small bulge (bud) on the surface of parent cell. One daughter nucleus enters the bud. After sufficient growth, it separates from the parent cell and starts to live independently as a daughter yeast cell.

***(3 types of asexual reproduction with examples : 1 mark each)***

(iv) (1) The fuel used in the thermal power plant is coal. Coal contains chemical energy. Upon burning it releases heat energy. This heat is used for generation of electricity in the thermal power plants.

(2) Problems associated with power generations by thermal power plant :

(a) Air pollution : Due to burning of coal, there is emission of carbon dioxide, carbon monoxide, sulphur dioxide and nitrogen dioxide gases. These are harmful and toxic to health.

(b) Soot particles emitted during combustion can cause severe respiratory problems such as asthma.

(c) The coal reserves in the world are limited. They will be finished in next few hundred years and will not be replenished later. The scarcity of coal would result in energy crisis.

***(Correct fuel : 1 mark; Any two problems : 1 mark each)***

(v) Characteristics of phylum-Mollusca :

(1) Body of these animals is soft and slimy.

(2) These animals are aquatic or terrestrial.

(3) These animals are unisexual.

(4) This is second largest phylum in animal kingdom.

***(Any three characteristics : 1 mark each)***

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(vi) (1) Constituents of acid rain are sulfur dioxide ($SO_2$) and nitrogen dioxide ($NO_2$).

(2) Effects of acid rain :

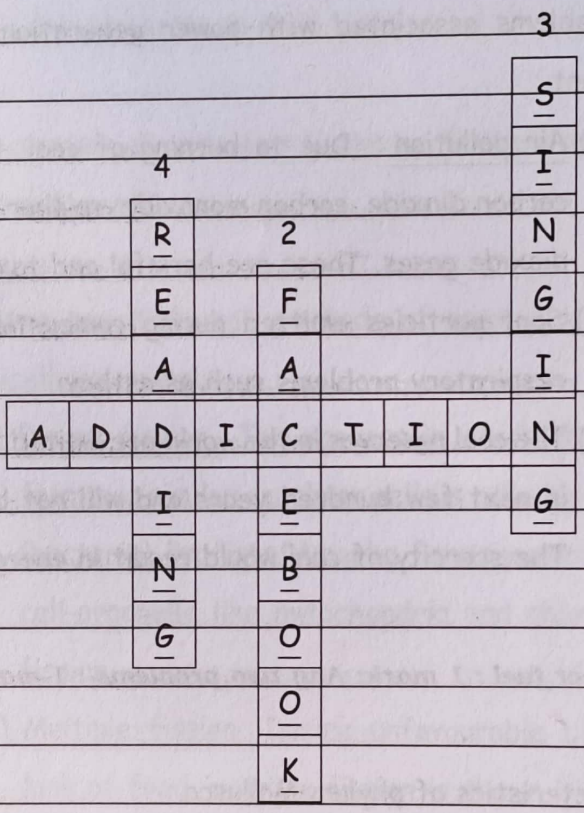
(i) Erosion of metal statues and bridges occurs due to acid rain.

(ii) Erosion of historical monuments occurs due to acid rain.

(iii) It also causes soil pollution.

***(Two correct constituents : ½ mark each; Any two correct effects : 1 mark each)***

(vii)




***(Three correct words. 1 mark each)***

(viii) Disaster : Flood

(1) Reasons for floods : Floods are often caused by heavy rainfall, rapid snow melt or tsunami in coastal areas.

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(2) Effects of flood :

(a) Loss of human life and property occurs.

(b) The fields get waterlogged.

(c) Spreads waterborne diseases.

(3) Remedial measures :

(a) In preventive measures, planting trees to prevent soil erosion, construction of dams to control, river water flow can be done.

(b) In post-flood measures, providing relief by giving food, medical help to victims of flood, repairing roads, bridges, preventing the spread of diseases through clean drinking water and hygiene awareness can be done.

***(Correct example of disaster : 1 mark; Any 1 effect : 1 mark and Any 1 Remedial measure : 1 mark)***

***(Note :** Students are expected to write the answer based on their own experience.)*

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Q. No. 4

**Note :** *In this question, students are required to answer any 1 question out of 2 sub-questions. However, answers to both questions are given here for the guidance of the students.*

(i) Biodiversity : It is the richness of living organisms in nature due to presence of varieties of organisms, ecosystems and genetic variation within a species.

Steps to conserve biodiversity :

(1) Protection of the rare species of organisms.

(2) Creating habitats for the animals and plants by establishing National Parks and Sanctuaries.

(3) Declaration of bioreserves, the areas which are protected through conservation.

(4) Conservation of all plants and animals.

(5) Strict observance of the acts and rules.

(6) Use of traditional knowledge and maintaining record of traditional knowledge.

***(Correct definition : 1 mark; Any 4 correct steps to conserve biodiversity : 1 mark each)***

(ii) Stem cells : The special cells having pluripotency and ability to divide and differentiate into new cells are called Stem cells. They are present in multicellular living beings.

Uses of stem cells :

(1) Stem cells are used for regenerative therapy.

(2) In case of diseased conditions like diabetes, myocardial infarction, Alzheimer's disease, Parkinson's disease, etc. Stem cells can be used to replace the damaged or functionless cells.

(3) In conditions such as anaemia, thalassaemia, leukaemia, etc. there is always the need of newer blood cells. Here, stem cells can be used to restore the number of blood cells.

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(4) In techniques of organ transplantation, stem cells can be used and they can help in the transplantation of new organs such as kidney and liver. The defective organs can be replaced by those that are produced with the help of stem cells and transplanted.

***(Correct definition : 1 mark; Any 4 uses of stem cells : 1 mark each)***