

SSC MAHAREVISION

SCIENCE 2



**IMP QUESTIONS
WITH TRICKS**

अब तो मिलेंगे पूरे मार्क्स



Topic	Actual Marks	Marks With Options
1. Heredity and Evolution	3	5
2. Life Processes in Living Organisms Part -1	4	6
3. Life Processes in Living Organisms Part - 2	4	6
4. Environmental management	5	7
5. Towards Green Energy	5	7
6. Animal Classification	4	6
7. Introduction to Microbiology	4	6
8. Cell Biology and Biotechnology	4	6
9. Social health	4	6
10. Disaster Management	3	5

Science new paper pattern 2022

Q.1 (A) Write the Correct alternative: 5 Marks

Q.1 (B) Answer the Following: 5 Marks

Q.2 (A) Give Scientific reasons: (Any Two) 4 Marks

Q.2 (B) Answer the Following: (Any Three) 6 Marks

Q.3 Answer the Following: (Any Five) 15 Marks

Q.4 Answer the Following: (Any One) 5 Marks

Q.2. (A) Give scientific reasons : (Any Two)

[4]

- (1) Oxygen is necessary for complete oxidation of glucose.
 - (i) Glucose can be used by two pathways i.e. aerobic and anaerobic respiration.
 - (ii) Glucose is completely oxidised only in the presence of oxygen and results in the release of energy.
 - (iii) It undergoes three steps to finally reach its fate - glycolysis, Krebs's cycle and electron transport chain reaction.
 - (iv) In anaerobic respiration, glucose undergoes partial oxidation and results in the release of energy which is comparatively less to the energy released during aerobic respiration.

(2) Earthworm is said to be a farmer's friend.

- i. Earthworms loosen the soil by burrowing deep into it, thus they help to aerate the soil.
- ii. This continuous digging of soil also helps the water to reach the roots quickly.
- iii. Earthworms can decompose the organic matter from the soil and convert it into rich manure.
- iv. This helps in increasing the fertility of the soil, which ultimately increases crop production. Thus, earthworm is said to be farmer's friend.

(3) Though tortoise lives on land as well as in water, it cannot be included in class- Amphibia.

- (i) Tortoise belongs to the class reptilia and does not show any characteristic which is similar to the class amphibia except that it can live in both land and water.
- (ii) There are certain characteristics which are common to the amphibians which are not applicable for reptiles.
- (iii) For example, amphibians have moist skin, the neck is absent, external ear is in the form of tympanum
- (iv) Whereas reptiles have dry and scaly skin, neck is present and external ear is absent.
- (v) So, we can say that tortoise is a reptile and not an amphibian based on the above characteristics.

Q.2. (B) Answer the following questions : (Any Three)

[6]

(1) Write advantages of science of heredity.

The advantages of the science of heredity are as follows:

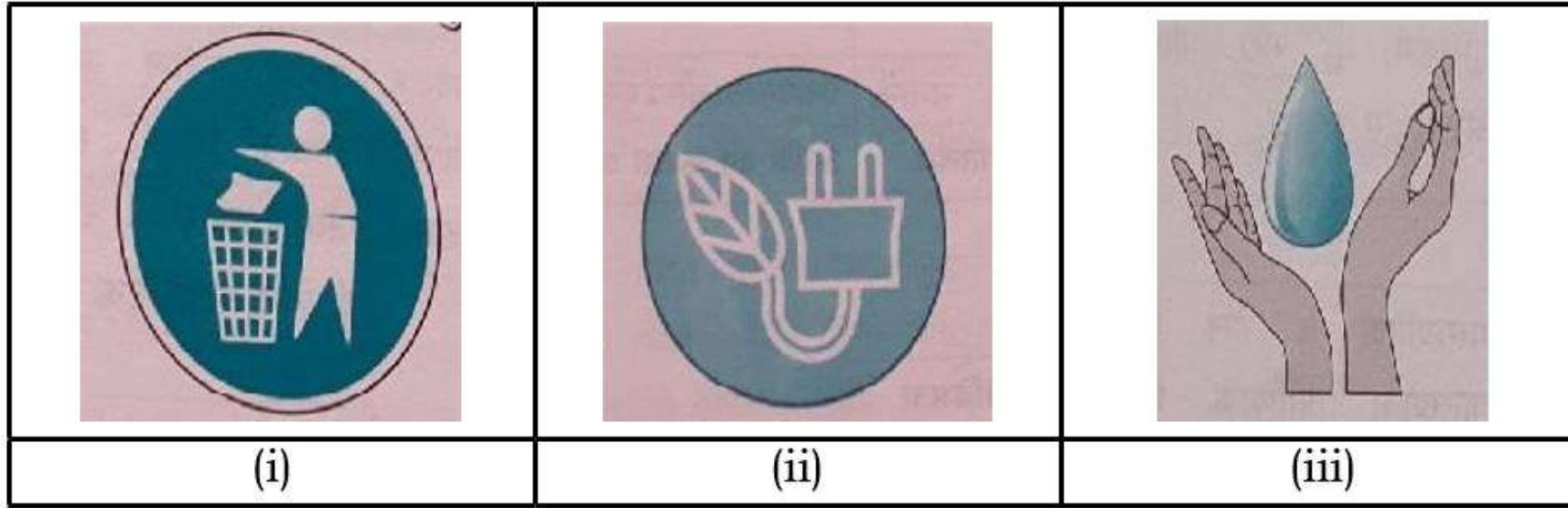
- i. Diagnosis of diseases.
- ii. Treatment and prevention of heredity disorders.
- iii. Production of hybrid varieties of animals and plants.
- iv. Industrial processes in which microbes are used.

(2) What is cellular respiration? State names of its two methods.


Cellular respiration is a type of respiration in which foodstuffs are oxidized for the production of energy.

The two methods of cellular respiration are aerobic and anaerobic respiration.

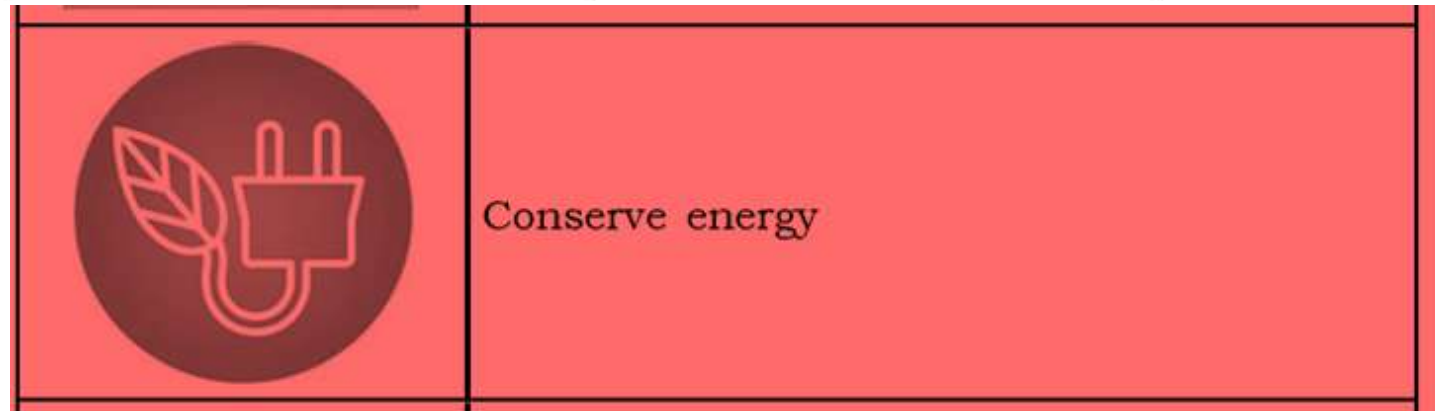
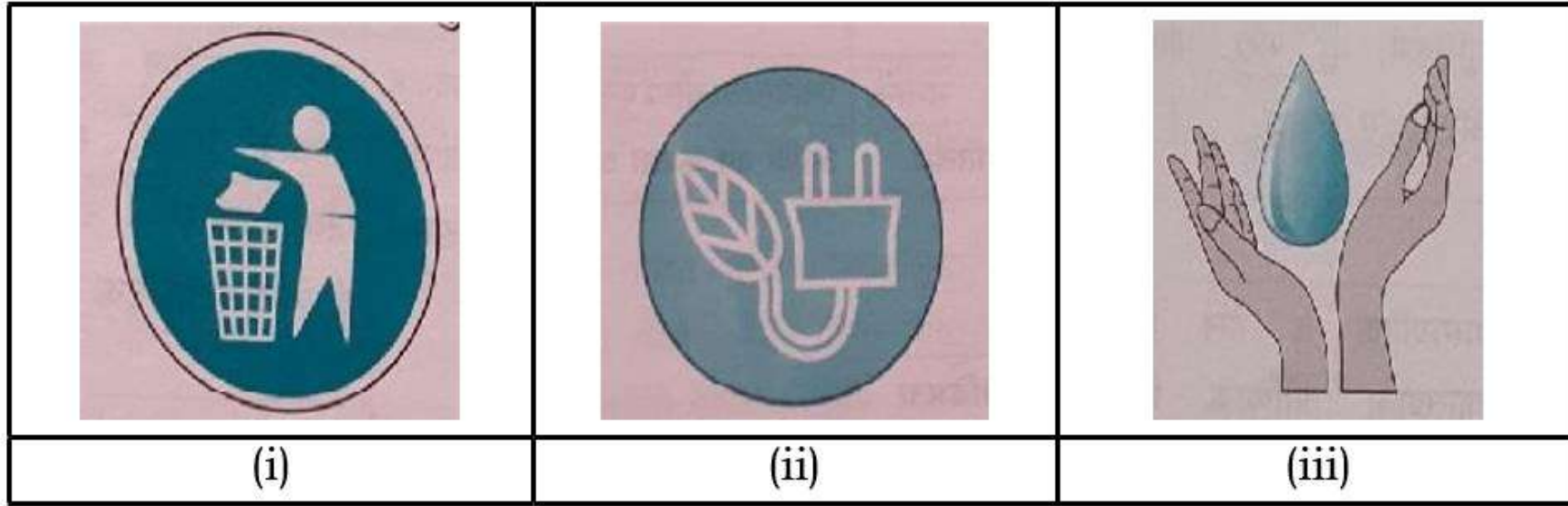
- (3) What are the meanings of symbols A, B, C shown in the figure with respect to environment?



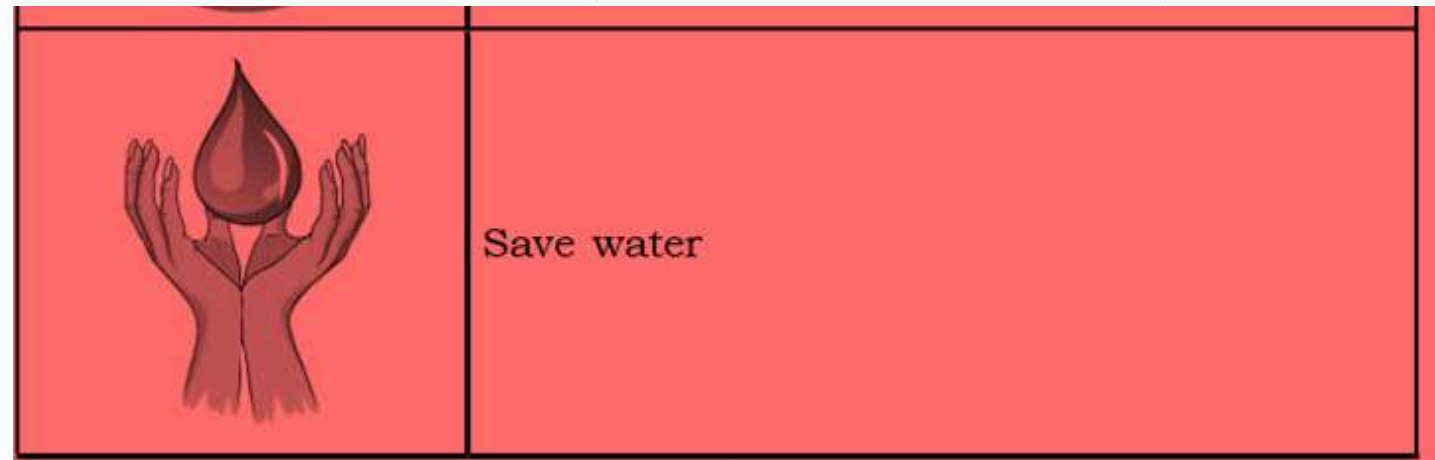
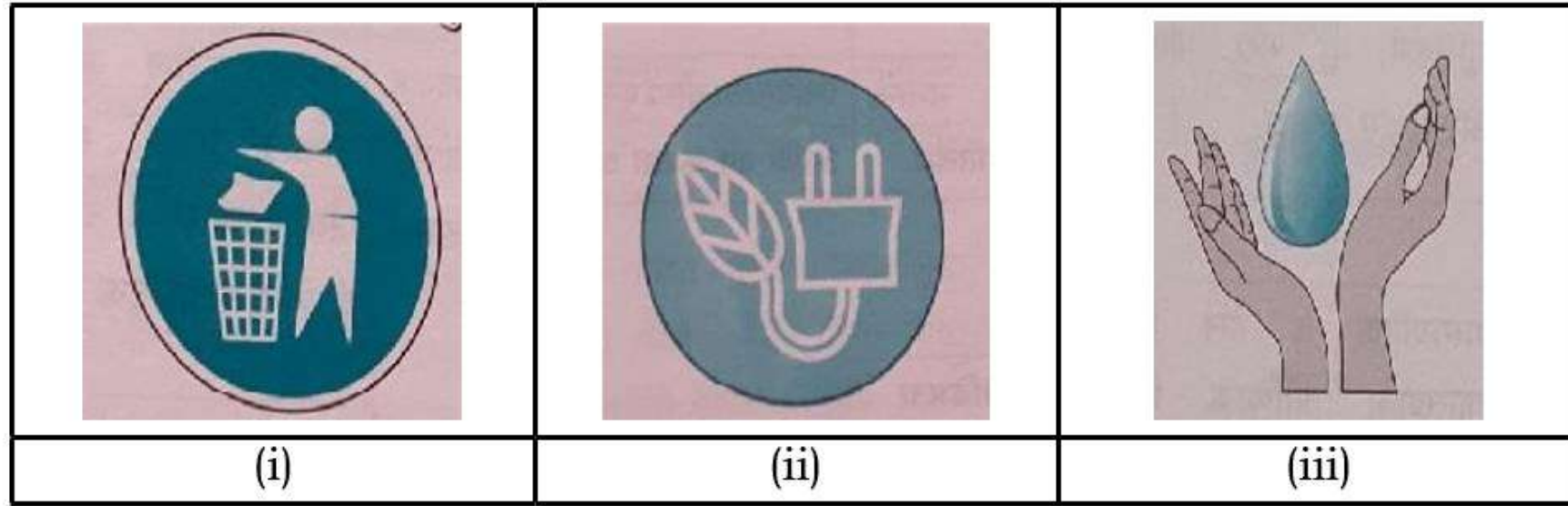
What are the meanings of symbols A, B, C shown in the figure with respect to environment?

Symbol	Meaning of Symbol
	Please do not litter; Dispose your waste in dustbin/Trash bin

- (3) What are the meanings of symbols A, B, C shown in the figure with respect to environment?



- (3) What are the meanings of symbols A, B, C shown in the figure with respect to environment?



(4) What is the importance of stem cells in medical science?

- i. Stem cells are used in regenerative therapy and organ transplantation.
- ii. Cell therapy: In case of medical conditions like myocardial infarction, diabetes, Alzheimer's disease, Parkinson's disease, etc., stem cells are used to replace dead cells.
- iii. In conditions like anemia, thalassemia and leukemia, where blood count is affected, stem cells are used to produce new blood cells. This is known as regenerative cell therapy.
- iv. Advances in research may make it possible to produce organs like liver or kidney from stem cells to be used for transplantation in case of organ failure.

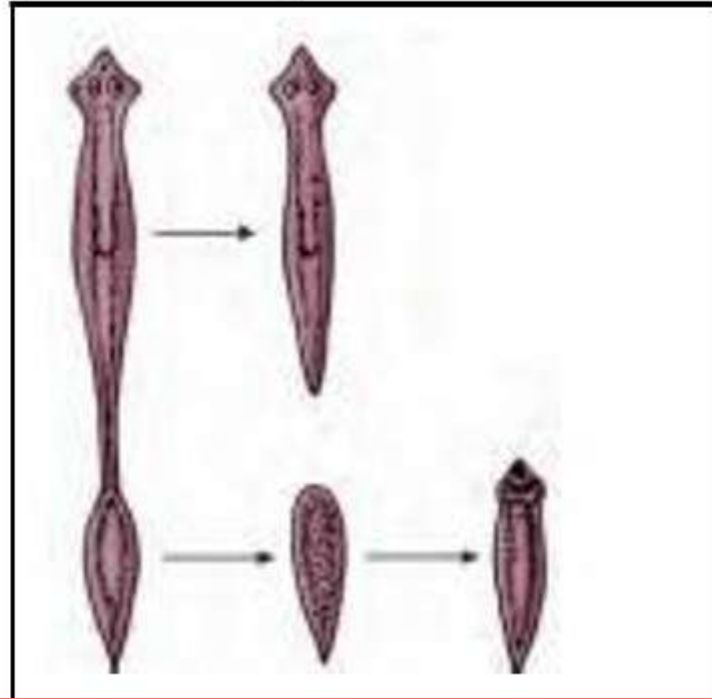
(5) Distinguish between : Conventional energy sources & Non-conventional energy sources

Conventional energy sources		Non-conventional energy sources	
i.	Conventional energy sources are exhaustible.	i.	Non-conventional sources of energy are inexhaustible.
ii.	They cause pollution.	ii.	They cause less or no pollution.
iii.	These sources are expensive.	iii.	These sources are free or cheaper.
iv.	These sources require thousands of years to form.	iv.	They are abundantly available in nature.
v.	Examples : Coal, Petrol, Diesel etc.	v.	Examples : Solar energy, wind energy, bio-gas etc.

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

[15]

- (1) Observe the given diagram and explain the method of reproduction.



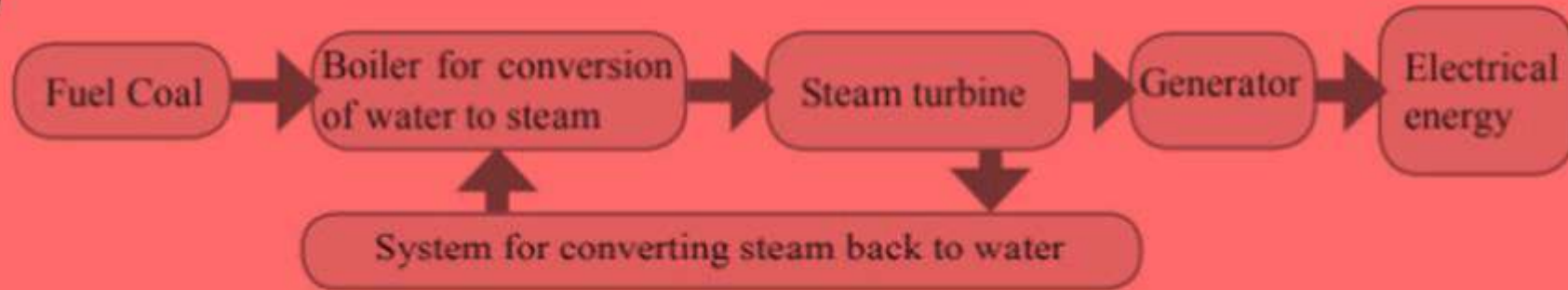
- i. The given diagram represents regeneration which is a method of asexual reproduction in some multicellular organisms.
- ii. In this type of asexual reproduction, the body of an organism breaks into parts and thereafter each part regenerates the remaining part of the body and new organisms are formed.
- iii. In Planaria, when the body is cut, each part formed, develops into a whole new organism.

(2) A married couple does not have children even after the necessary tests, so what are the solutions you would suggest?

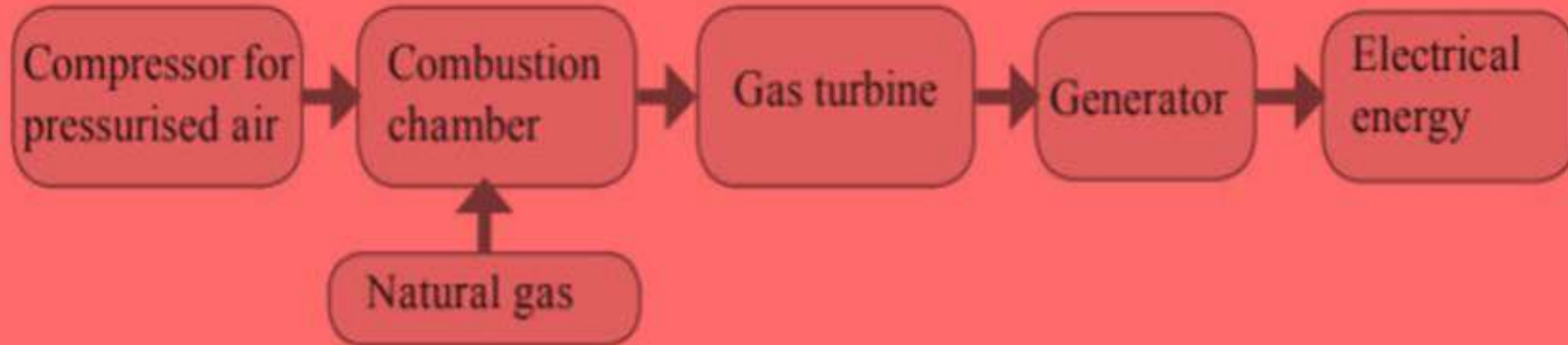
- i. Childless couples can have a child with the help of advance medical techniques like surrogacy, sperm bank and IVF.
- ii. Women having problems with implantation of the embryo in the uterus can have a child with the help of surrogacy technique. In this technique, oocyte is collected from the concerned woman and fertilized in a test tube with the help of sperms collected from her husband. Embryo formed from fertilization is implanted in another woman (surrogate mother), having a normal uterus.
- iii. In sperm banks, semen is collected from the sperm donors after their physical and medical check-up and stored. Semen sample from the sperm bank is used to fertilize the oocyte of the female partner of the concerned couple. The resultant embryo is implanted in the uterus of the same woman. Couples, in which males have problems in sperm production, can have a child with the help of this technique.
- iv. Childless couples having problems like less sperm count, obstacles in oviduct, etc., can use IVF technique. In this technique, fertilization is brought about in the test tube and the embryo formed is implanted in the woman's uterus at an appropriate time.

- (3) Draw the flowcharts for the given power stations.
- a) Thermal energy based electric power plant
 - b) Power generation plant on energy of natural gas

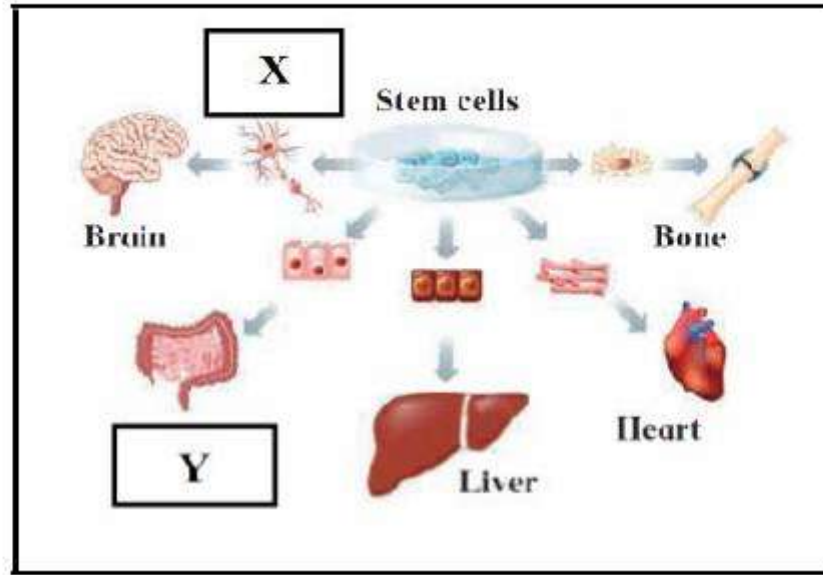
(a)



(b)



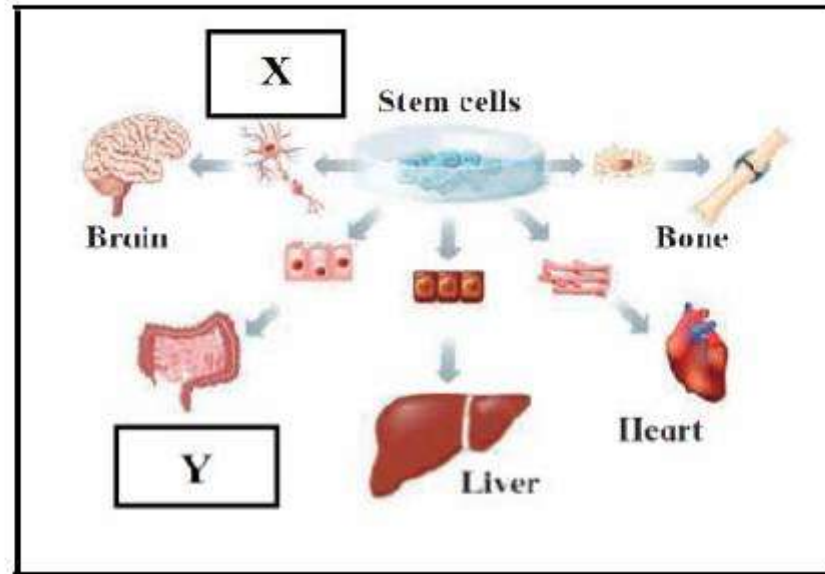
(4) Observe the following figure and answer the questions.



a. Which property of stem cell is shown in figure?

a. Pluripotency (the self-multiplying ability of undifferentiated stem cells by which they are capable of giving rise to all types of human cells) is shown in the given figure.

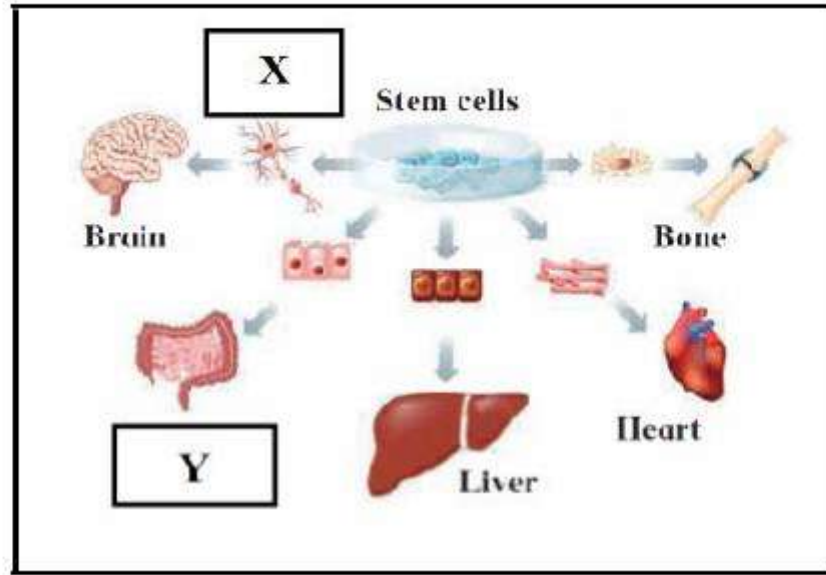
(4) Observe the following figure and answer the questions.



b. Write the name of the cells or organs denoted by X and Y.

b. X: Neuron, Y: Intestine.

(4) Observe the following figure and answer the questions.



c. What is the benefit of tissue / organ culture from stem cells?

- c. i. In the given diagram, we can observe that stem cells are capable of forming a variety of new cell types that can combine to form tissues and organs.
- ii. With advances in biotechnology, if provided with specific chemicals/stimulus and optimum conditions, stem cells may develop into neurons, brain, intestines, liver, heart and bone.
- iii. These valuable organs could then be used for organ transplantation.

(5) What is the importance/ function of a solar reflector?

The solar panel consists of many reflectors that reflect and concentrate solar radiations on absorbers.

(6)



a) What mental disorder is shown in the given picture?

- a. The given picture shows pedestrians making a video clip of the accident scene rather than helping the victim. People taking videos at the site of the accident are irresponsible, insensitive and lack helpful nature.

(6)



b) What social message would you give from this?

- b. The social message is to think about the impact of one's action before indulging in such an irresponsible activity. Rather than posting these disturbing images/ videos on social media, people should think about helping the victims or calling for help and be more sensitive to the victims and their families.

(7) What will you do? Why?

a) Your sister has become incommunicative. She prefers to remain alone.

- i. Becoming incommunicative indicates that the person is mentally stressed or worried.
- ii. If my sister has become incommunicative or prefers to stay alone, then I will talk to her and try to find out the reason for her stress and try to give a solution to her problem.
- iii. I will advise her to practice yoga as meditation gives relieve from mental stress.
- iv. If required I will approach the professional counsellor and get her out of mental stress.

(7) What will you do? Why?

b) You are spending more time on internet/mobile games, phone, etc.

- i. Spending more time in internet/mobile games, phone, etc. causes various physical problems like tiredness, headache, insomnia, forgetfulness, tinnitus, joint pains and problems in vision. Also, a person becomes solitary
- ii. Hence, one should develop hobbies like reading books, writing diary, collecting various materials, drawing, singing, listening to music, etc.
- iii. One can meditate to get rid of internet addiction.
- iv. One should talk to family members or friends when I feel lonely instead of using internet or mobile phones.

(7) What will you do? Why?

c) You have to use free space around your home for good purpose.

i. I will carry out planting which will help counteract global warming.

ii. Also, I will let people use it as a playground or give it to government for constructing small garden area.

iii. I can also make the space available for parking of public vehicles.

(8) What is the use of antibiotics to human & other animals ?

The use of antibiotics are as follows:

- i. Many diseases of human and other animals have been controlled due to antibiotics obtained from different types of bacteria and fungi.
- ii. Antibiotics like penicillin, cephalosporins, monobactam, bacitracin, erythromycin, gentamycin, neomycin, streptomycin, tetracyclins, vancomycin, etc. are used against various strains of gram positive and gram negative bacteria.
- iii. Rifamycin is effective against tuberculosis.

Q.4. Answer the following questions : (Any One)

[5]

- (1) Complete the paragraph by selecting the appropriate option in parentheses. (energy, microbial, erosion-proof, reused, purification, environmentally Friendly)

Nowadays, instead of chemical catalysts, **microbial** enzymes are used in the chemical industry. These enzymes are active at low temperature, pH and pressure; due to which **energy**. is saved and **erosion-proof** instruments are also not necessary. Enzymes carry out specific processes; hence unnecessary byproducts are not formed due to which expenses on **purification** are minimised. In case of microbial enzymatic reactions, elimination and decomposition of waste material is avoided and enzymes can be **reused** Hence, such enzymes are **environmentally friendly**.

(2) Write the answers to the questions by observing the picture.



a) What is the concept shown in the picture?

a. The concept of laughter clubs in which people relieve mental stress by laughing loudly is shown in the picture.

(2) Write the answers to the questions by observing the picture.



b) Write its benefits.

b. The benefits of laughter clubs are to relieve mental stress and improve social health.

(2) Write the answers to the questions by observing the picture.



c) What do you do when you feel stressed?

c. To relieve stress, I foster hobbies like material collection, photography, reading, cooking, sculpting, drawing, making rangoli, dancing, singing, listening to music, etc.

Q.2. (A) Give scientific Reasons : (Any Two)

- (1) The role of human beings in environmental balance is important.

Asexual reproduction		Sexual reproduction	
i.	Reproduction that occurs with the help of somatic cells is called as asexual reproduction.	i.	Reproduction that occurs with the help of two germ cells is called sexual reproduction.
ii.	This is uniparental reproduction, thus both male and female parents are not necessary.	ii.	Male and female parents are necessary for sexual reproduction.
iii.	This reproduction occurs with the help of mitosis only.	iii.	This reproduction involves both mitosis and meiosis types of cell division.
iv.	The new individual formed by this method is genetically identical to its parent.	iv.	New individual formed by this method is genetically different from parents.
v.	Asexual reproduction occurs in different individuals by various methods like binary fission, multiple fission, budding, fragmentation, regeneration, vegetative propagation, spore formation, etc.	v.	In all individuals, sexual reproduction occurs by gamate formation and fertilization.

(2) Microbial enzymes are eco-friendly.

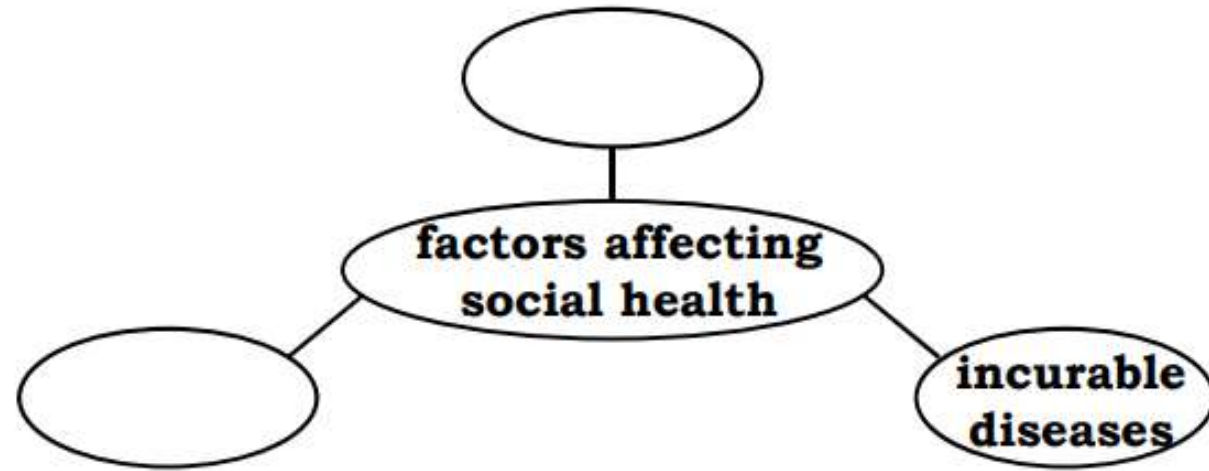
The advantages of animal classification are as follows :

- i. Classification facilitates the identification of animals with great accuracy.
- ii. The study of animals becomes convenient.
- iii. It helps in understanding the relationship of animals with other living organisms.
- iv. It helps to understand the habitat of each animal along with its role in nature.
- v. By studying few animals from a group, we can gain a better understanding about the entire group.
- vi. It helps in understanding different adaptations shown by animals.
- vii. It gives an idea about the evolution of animals.

(3) Alcoholism is always bad.

- i. Yoghurt is a milk product produced with the help of lactobacilli.
- ii. For maintaining the protein content, condensed milk powder is mixed with milk to be fermented for industrial production of yoghurt.
- iii.
 1. Milk is boiled and once it cools to warm temperature, bacterial strains of *Streptococcus thermophilus* and *Lactobacillus delbrueckii* are added to it in 1 : 1 proportion.
 2. Lactic acid is formed due to Streptococcus that makes the proteins to gel out that gives dense consistency to the yoghurt.
 3. Acetaldehyde like compounds are formed due to lactobacilli that gives characteristic taste to the yoghurt
- iv. Various fruit juices are mixed with yoghurt to impart different flavours.
- v. Shelf life of yoghurt and its probiotic properties can be improved by pasteurization.

(4) Complete the following concept chart.



(5) Observe the given photographs & answer the questions.



(a) Name the disaster shown in pictures.

(a) The disaster shown in the pictures is floods.

(5) Observe the given photographs & answer the questions.

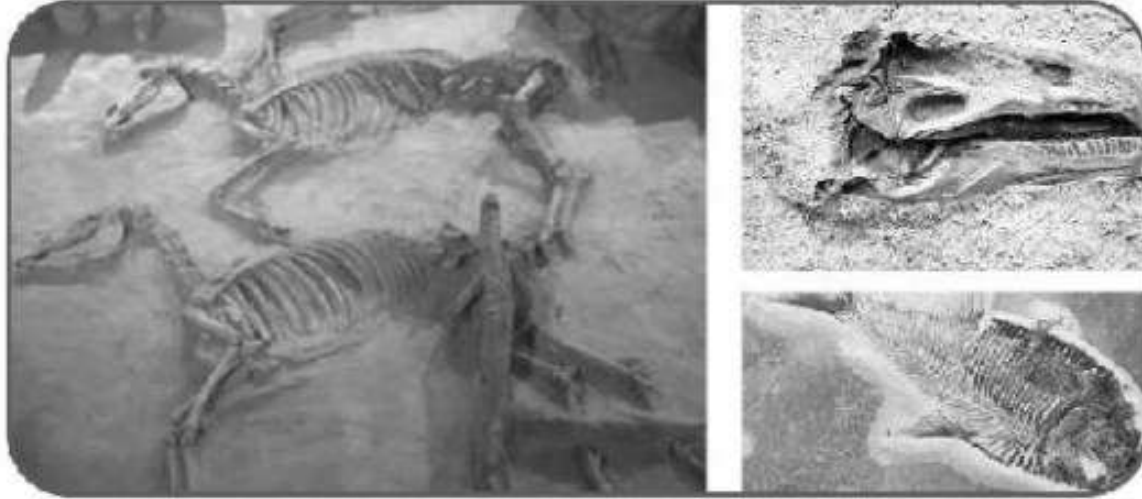


(b) Write any two effects of this disaster.

(b) The effects of floods are collapsing of bridges, flooding of coastal villages, massive loss of life and property, shortage of food, soil erosion, spread of water-borne diseases and other epidemics.

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

(1)

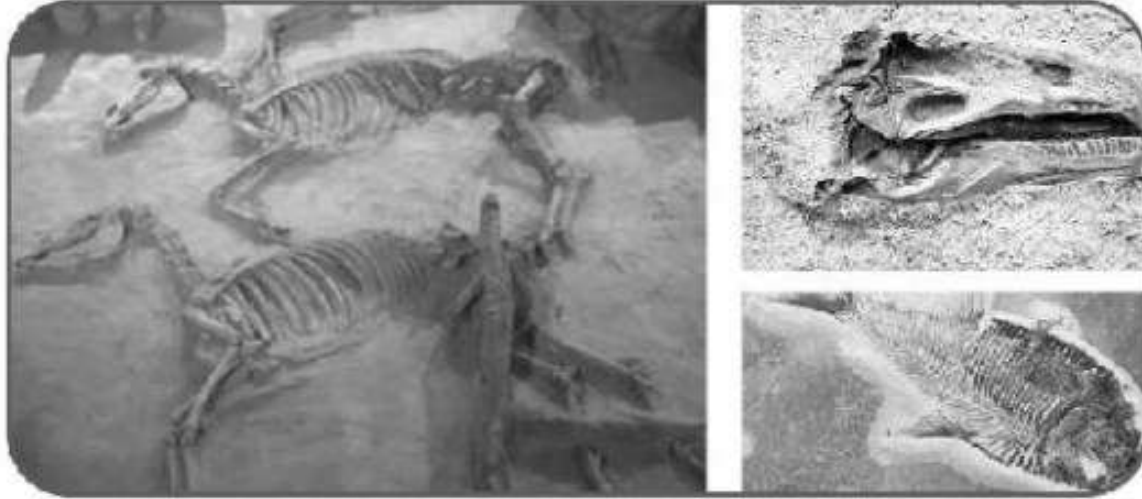


(a) Which evolutionary evidences are indicated in the given picture?

(a) The given pictures indicate paleontological evidences of evolution.

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

(1)

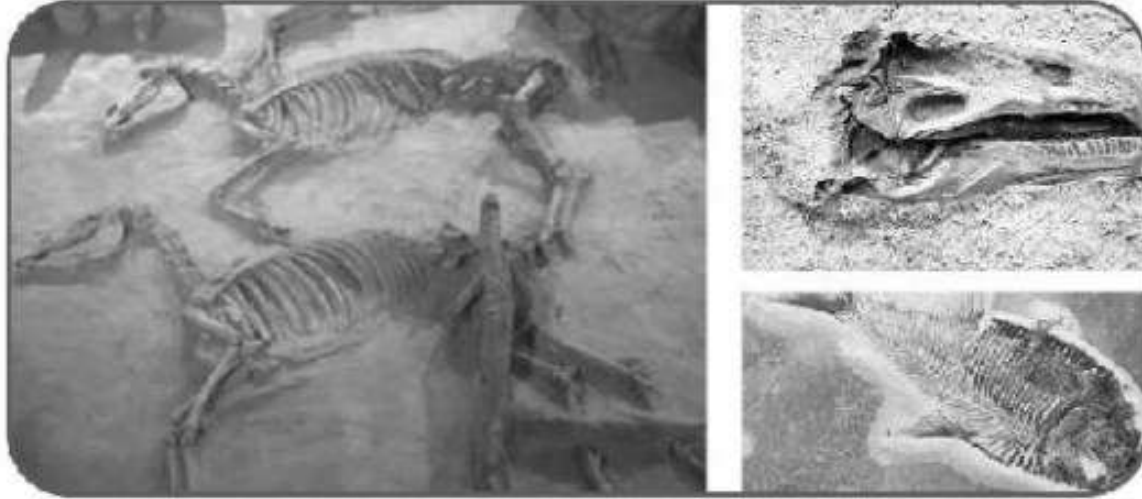


(b) How are they formed?

(b) Large number of organisms get buried due to disasters like flood, earthquake, volcano, etc. Remnants and impressions of such organisms remain preserved underground and form fossil.

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

(1)



(c) Which method is used to measure their age or their time?

(c) Carbon dating is a method used to measure the age of fossils.

(2) What is the meaning of the following symbols ? Write your role accordingly.






A



B



C

Symbol	Meaning	Role
	Save water	Do not waste water, check leakages and promote rain water harvesting
	Renewable Solar energy/ Renewable energy source	Switch to solar energy, use renewable source of energy to prevent depletion of non-renewable energy sources.
	Save water	Do not waste water, check leakages and promote rain water harvesting.

- (3) Which substances are formed after the digestion of amino acids and how are they utilized ?

Amino acids formed after digestion of food are used in our body as follows :

Blood - Haemoglobin, Antibodies.

Skin - Melanin pigment, Keratin Bones - Ossien

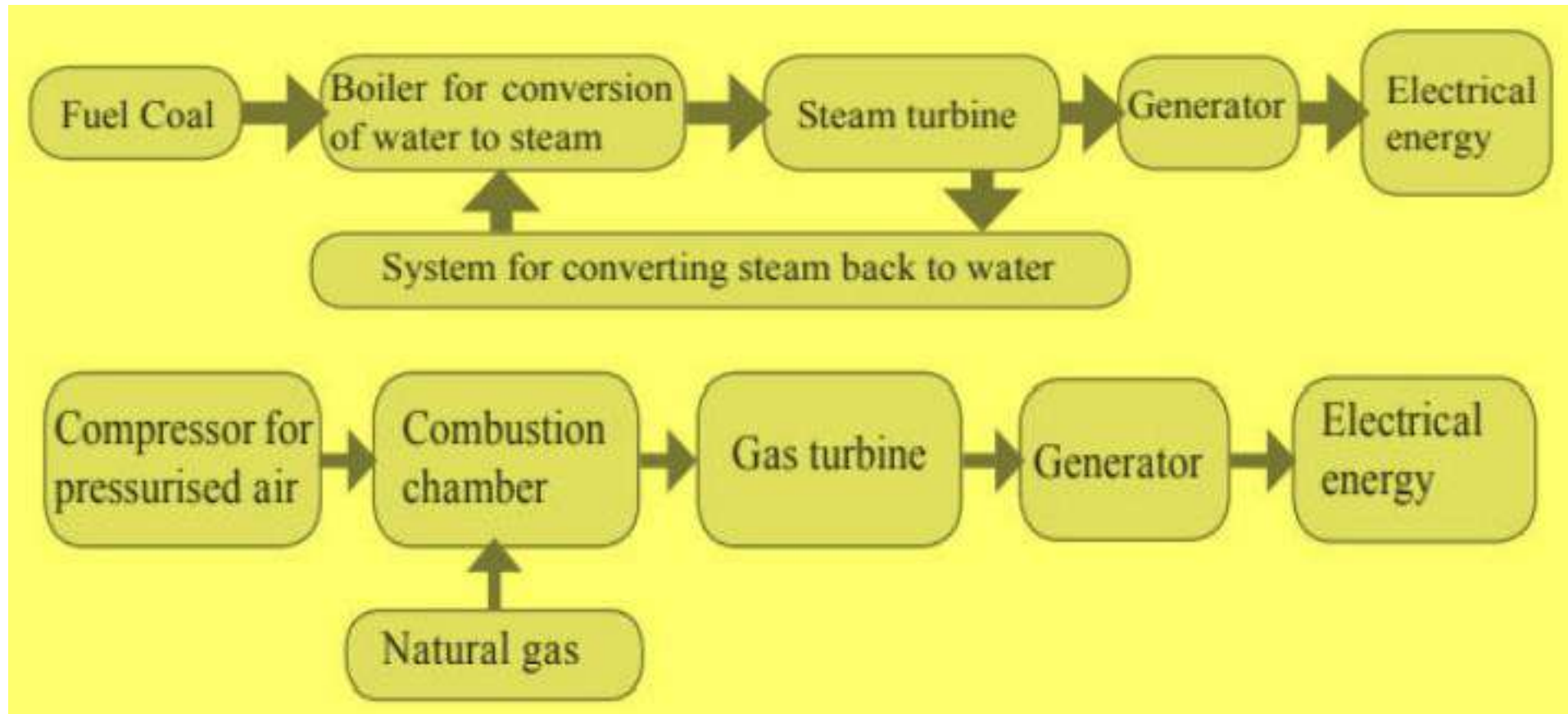
Cells - Enzymes and proteins

Pancrease - Insulin, Trypsin

Pituitary gland - Various hormones

Muscles - Flexible protcins - Myosin and Actin

- (4) Draw the flowcharts for the given power stations.
- (a) Thermal energy based electric power plant
 - (b) Power generation plant on energy of natural gas

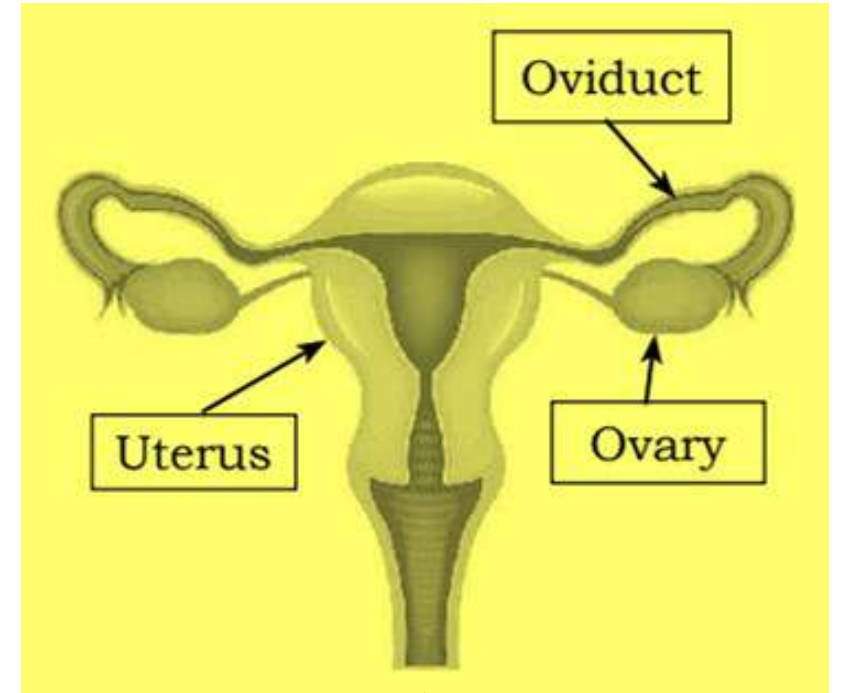
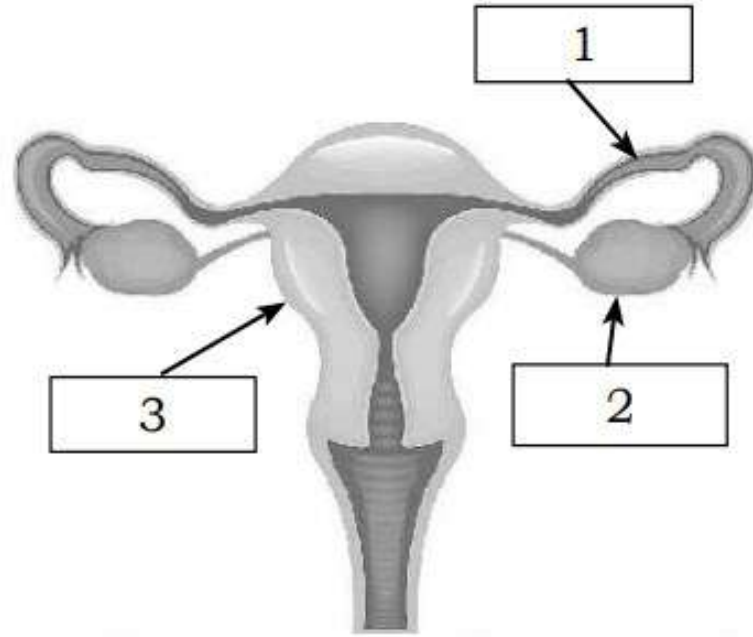


(5) Write the effect of biotechnology on agriculture & allied fields.

Effect of biotechnology on agriculture & allied fields are as follows :

- i. Genetically Modified crops (GM crops) are developed by altering the DNA of natural crops.
- ii. These new varieties possess useful characters that can withstand adverse environmental stresses like frequently changing temperature, families, changing climate, etc.
- iii. GM crops with resistance to insect pests, pathogens and chemical weedicides can be also be developed. This enables the farmers to reduce the use of harmful pesticides.
- iv. There is an improvement in the nutritive value of crop losses due to the use of genetically modified or hybrid seeds.
- v. Biotechnology has helped enhance productivity and economic output from agriculture related fields like horticulture, floriculture, animal husbandry, apiculture, etc.

(6) Observe the diagram and answer the following questions.



(a) Label the indicated parts 1, 2 and 3 in the diagram.

(b) Where the fertilization of ovum occurs?

Fertilization of ovum occurs in oviduct.

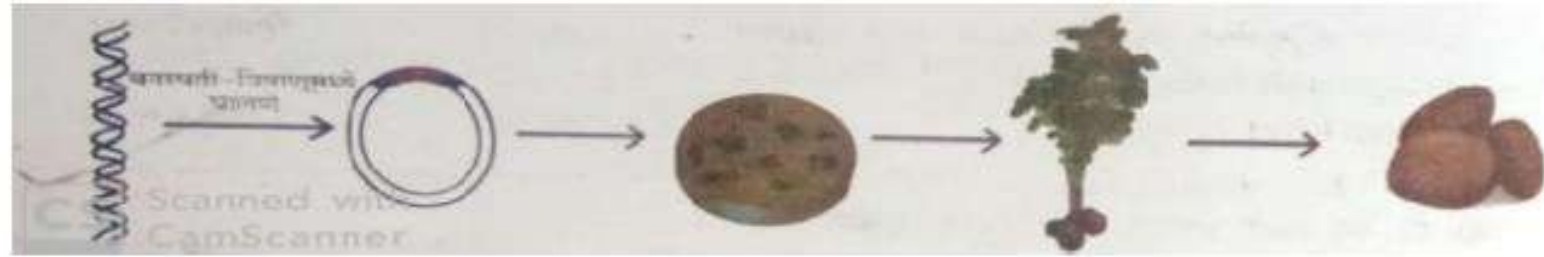
(c) Where does the embryo get implanted after fertilization?

After fertilization, embryo gets implanted in uterus.

- (7) Complete the following. (lungs, carcinogenic, nervous system, useful, deadly, addiction, intoxicating)

Children in their early age try upon tobacco, cigarette, gutkha, alcoholic drinks, drugs, etc. due to either peer-group pressure or symbol of high standard living or as an imitation of elders. However, it may lead to **addiction** to such **deadly** substances. Temporarily **intoxicating** drugs of plant origin and some chemicals may permanently damage the human **nervous system**, muscle system, heart, etc. Earlier, we have studied the **carcinogenic** effect of tobacco containing substances on mouth and **lungs**.

(8)



(a) What does the following figure relate to ?

The given figure relates to the production of edible vaccines.

(8)



(b) Briefly describe each of these steps.

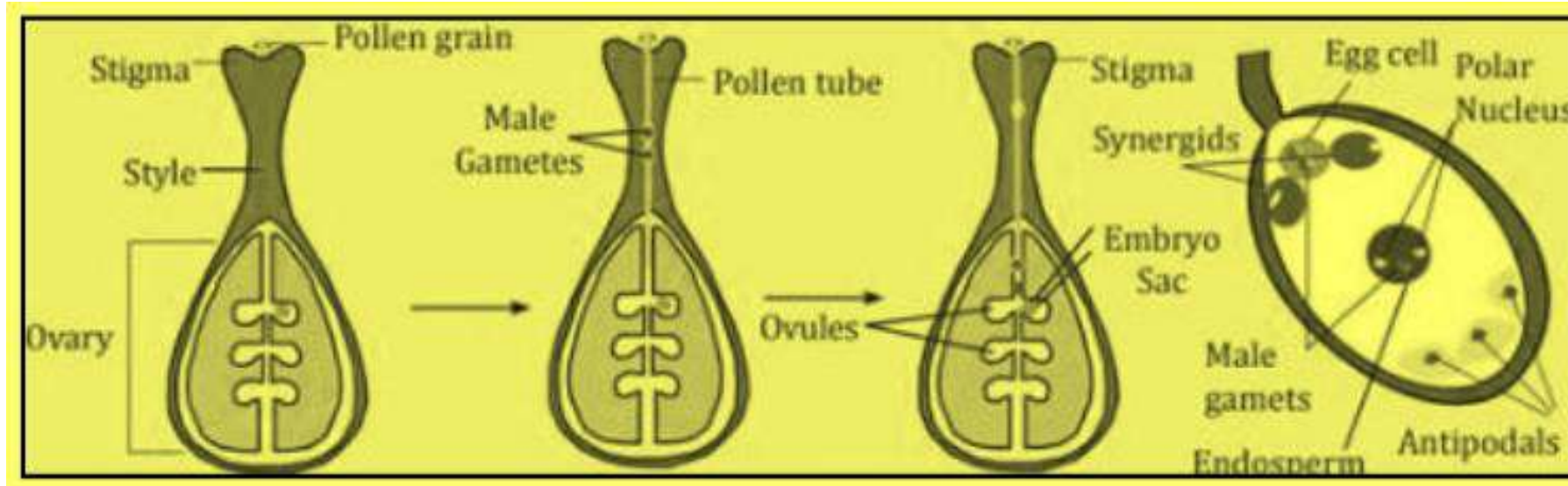
The steps of production of edible vaccine are as follows :

- i. The desired gene is isolated from the human pathogen e.g. *Vibrio cholerae*, *Escherichia coli*, etc.
- ii. This gene is then transferred to the plant cells through a transgenic plant virus that infects the pieces of plant leaves.
- iii. By tissue culture techniques, the entire plant is developed from these leaf pieces which contain the desired gene.
- iv. The potatoes produced by these plants when consumed raw will help the individual develop immunity against the pathogen.

Q.4. Answer the following questions : (Any One)

[5]

(1) Draw neat and labelled diagrams.- Double fertilization in angiosperms



(2) Write answers to the questions based on the paragraph.

Social health is the ability of a person to establish relationships with other persons. Ability to change one's own behaviour according to changing social conditions is an important characteristic of social health. A socially healthy person can also cope with a variety of social situations. Can behave appropriately and adaptable to changing circumstances. Your spouse can match such people with your co-workers and form good relationships. All of these relationships require good communication. It is important to have empathy and a sense of responsibility for each other. On the other hand, there are negative shades like jealousy, revenge, and loneliness. If there is tension in the relationship, healthy relationships will not be formed. Stress management, planning appropriate measures e.g. Regular exercise, deep breathing, and a positive attitude can improve social health.

(a) What is social health

Social health is the ability of a person to establish relationship with other persons.

(2) Write answers to the questions based on the paragraph.

Social health is the ability of a person to establish relationships with other persons. Ability to change one's own behaviour according to changing social conditions is an important characteristic of social health. A socially healthy person can also cope with a variety of social situations. Can behave appropriately and adaptable to changing circumstances. Your spouse can match such people with your co-workers and form good relationships. All of these relationships require good communication. It is important to have empathy and a sense of responsibility for each other. On the other hand, there are negative shades like jealousy, revenge, and loneliness. If there is tension in the relationship, healthy relationships will not be formed. Stress management, planning appropriate measures e.g. Regular exercise, deep breathing, and a positive attitude can improve social health.

(b) What qualities are needed to build good social relationships?

The following qualities are needed to build good social relationships :

- i. Ability to change one's own behaviour according to changing social conditions is an important characteristic of social health.**
- ii. A socially healthy person can also cope with a variety of social situations.**
- iii. They can behave appropriately and the adaptable to changing circumstances.**
- iv. Good communication with others**

(2) Write answers to the questions based on the paragraph.

Social health is the ability of a person to establish relationships with other persons. Ability to change one's own behaviour according to changing social conditions is an important characteristic of social health. A socially healthy person can also cope with a variety of social situations. Can behave appropriately and adaptable to changing circumstances. Your spouse can match such people with your co-workers and form good relationships. All of these relationships require good communication. It is important to have empathy and a sense of responsibility for each other. On the other hand, there are negative shades like jealousy, revenge, and loneliness. If there is tension in the relationship, healthy relationships will not be formed. Stress management, planning appropriate measures e.g. Regular exercise, deep breathing, and a positive attitude can improve social health.

(c) Which vices have negative consequences?

Vices like jealousy, revenge and loneliness have negative consequences.

(2) Write answers to the questions based on the paragraph.

Social health is the ability of a person to establish relationships with other persons. Ability to change one's own behaviour according to changing social conditions is an important characteristic of social health. A socially healthy person can also cope with a variety of social situations. Can behave appropriately and adaptable to changing circumstances. Your spouse can match such people with your co-workers and form good relationships. All of these relationships require good communication. It is important to have empathy and a sense of responsibility for each other. On the other hand, there are negative shades like jealousy, revenge, and loneliness. If there is tension in the relationship, healthy relationships will not be formed. Stress management, planning appropriate measures e.g. Regular exercise, deep breathing, and a positive attitude can improve social health.

(d) What measures would you take for stress management

Regular exercise, deep breathing and a positive attitude are measures to take for stress management.

(2) Write answers to the questions based on the paragraph.

Social health is the ability of a person to establish relationships with other persons. Ability to change one's own behaviour according to changing social conditions is an important characteristic of social health. A socially healthy person can also cope with a variety of social situations. Can behave appropriately and adaptable to changing circumstances. Your spouse can match such people with your co-workers and form good relationships. All of these relationships require good communication. It is important to have empathy and a sense of responsibility for each other. On the other hand, there are negative shades like jealousy, revenge, and loneliness. If there is tension in the relationship, healthy relationships will not be formed. Stress management, planning appropriate measures e.g. Regular exercise, deep breathing, and a positive attitude can improve social health.

(e) Give two examples of negative shades

Jealousy, revenge and loneliness.