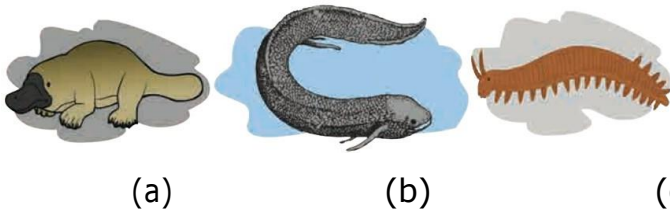


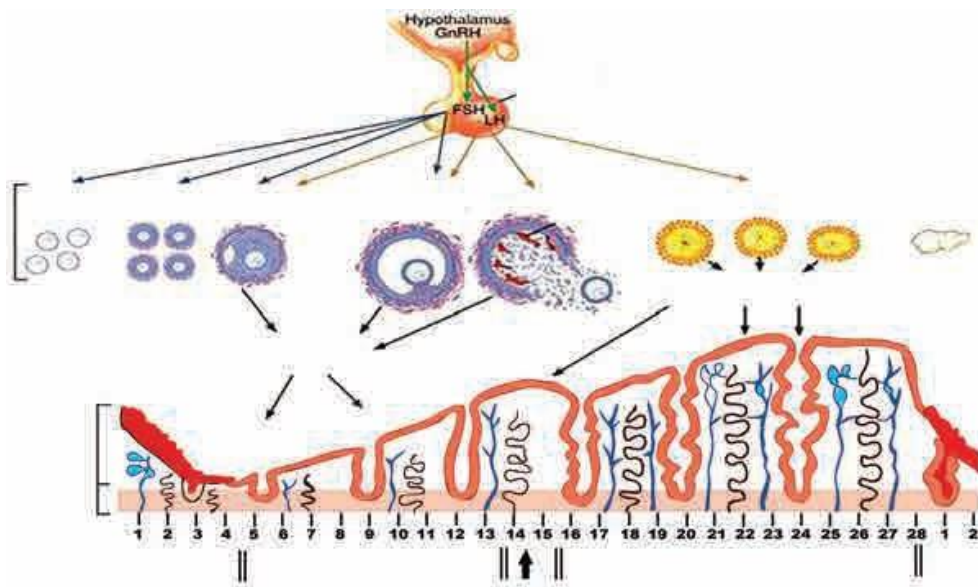
Question 4. Solve the following questions.

- 1) Explain any five types of evidence that support the theory of evolution.
- 2) Explain in short- transcription and mutation.
- 3) Write the reasons why the theory of gradual development of living organisms is followed by all.
- 4) Write the answers to the questions by observing the figure below.

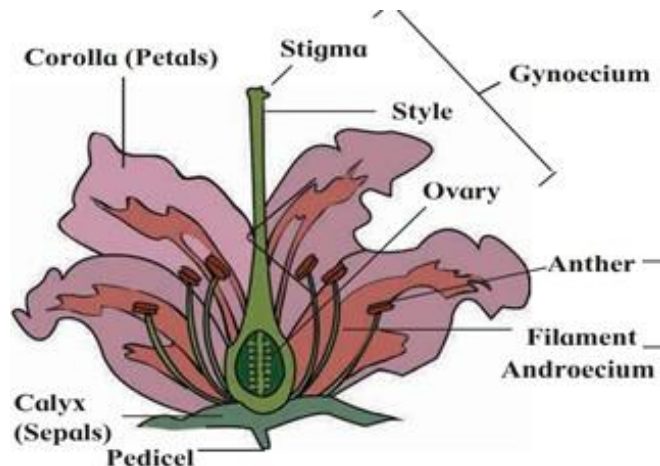


- a) Write the name of the animal 'A' in the figure.
- b) Write the name of the animal 'B' in the figure.
- c) Write the name of the animal 'C' in the figure.
- d) Which evolutionary evidence is illustrated by this figure?
- e) Write the definition of that evidence for evolution.

- 5) Write the expanded form of the names FAD, FMN, NAD, NADP, ATP.
- 6) Draw neat and labelled diagrams.
 - a) Double fertilisation in angiosperms
 - b) Human male reproductive organs.
 - c) Spore formation
 - d) Human female reproductive system
- 7) How is it determined whether it will be a boy or a girl?
- 8) Write the answers to the following questions by observing the figure below.



- 9) What does the figure above show?
- 10) Which organs are involved in this process?
- 11) Which hormones are involved in this process?
- 12) After how many days do these changes happen again?
- 13) Explain your opinion about the statement that a woman's body is impure while the above process is going on.
- 14) Explain the sexual reproductive process in plants with a diagram.
- 15) Observe the figure below. Write functions of the labelled parts.



16) Read the following paragraph and write the answers to the questions based on it.

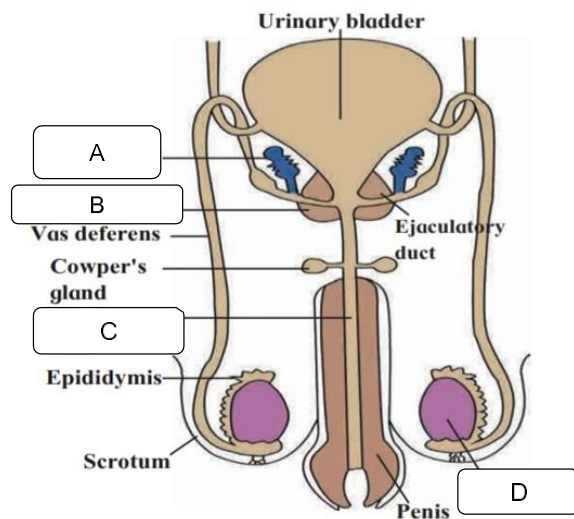
Reproduction is an important process for the survival of an organism. Asexual reproduction occurs in different ways in plants. E.g. Vegetative propagation, fragmentation, budding, spore formation etc. Gametes are formed for sexual reproduction. In the animal kingdom, various methods like budding, binary fission, and parthenogenesis are used. There is no difference between males and females in the animals in which these methods are observed. The method of regeneration also creates new organisms. But regeneration is not the real method of reproduction. Regeneration is the process of healing wounds, creating new organs. This ability has completely disappeared in the developed animals. Modern research is being done on the method of sexual reproduction, e.g. Cloning. So in the future women will be able to create their own offspring without a father.

- How do living organisms maintain their own species continuity?
- What are the methods of asexual reproduction in animals?
- Why is it said that regeneration is not the real method of reproduction?
- What are the different methods of reproduction in plants?
- What modern breeding methods are being researched in developed animals?

17) 'Surrogacy, In Vitro Fertilisation (IVF), Sperm Bank/ Semen Bank etc. modern technology will be useful to humans.' Support this statement.

18) Write the answers to the questions by observing the figure.

- What does the above figure show?
- Write the names of parts A, B, C, D.
- Write the function of the part 'D'.
- How is semen formed?



19) a) What process does the next figure show?



- Describe in short that process.
- Who can benefit from this process?

20) i) Explain my role in the environment based on the following points.

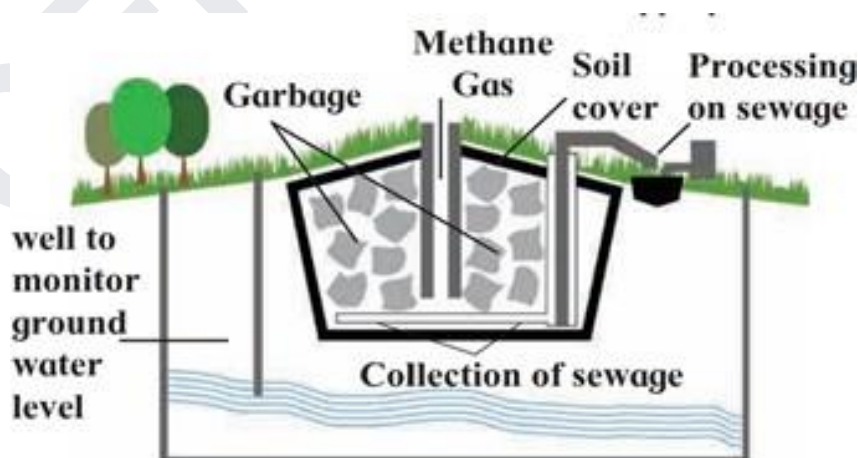
(Write two actions each)

- Control
- Conservation
- Production
- Preservation
- Awareness

- ii) What initiatives will you take regarding environmental conservation? Write how.
- iii) What are the endangered species of animals and plants? How can they be saved?
- 21) Write the effects of radioactive pollution on humans.
- 22) Name any 5 NGOs in India working on the environment.
- 23) Briefly explain the environmental role of microorganisms in pollution control?
- 24) Write any 5 catchy slogans about environment protection.
- 25) How can biodiversity be conserved?
- 26) Prepare a table showing the names of major wind power generation projects in India, their location and power generation capacity.
- 27) What products do you get from microorganisms through the fermentation process? Explain with an example.
- 28) Explain biofuel production with the help of a diagram.
- 29) Observe the figure and write the answers to the questions asked.



- a) Write the name of the fungus in the figure above.
- b) What is the source of these fungi?
- c) Which organic acid obtained from this organism is used in commercial production?
- 30) Observe the figure and write the answers to the questions asked.



- a) Name the above figure.
- b) What is it used for?
- c) Which gas is formed in it?
- d) How is this gas formed?
- e) What is done with sewage ?

31) Complete the paragraph by selecting the appropriate option in parentheses.

(energy, microbial, erosion-proof, reused, purification, environmentally Friendly)

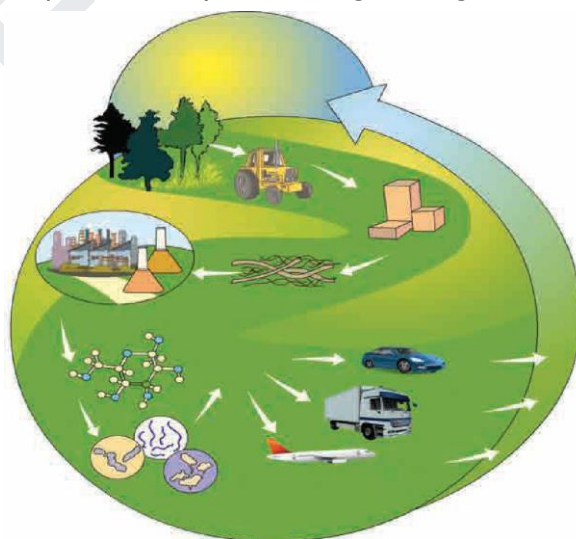
Nowadays, instead of chemical catalysts, enzymes are used in the chemical industry. These enzymes are active at low temperature, pH and pressure; due to which.....is saved and instruments are also not necessary. Enzymes carry out specific processes; hence unnecessary byproducts are not formed due to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

32) Read the following paragraph and write the answers to the questions asked.

Sulphuric acid is present in the acid rain and materials coming out of mines. You know that erosion of metals present in statues, bridges and buildings occurs due to it. Sulphuric acid is a source of energy for some species of bacteria like *Acidophilum* spp. and *Acidobacillus ferrooxidans*. Hence, these bacteria can control the soil pollution occurring due to acid rain. Water soluble salts of uranium are present in the wastes produced during electroplating and in effluent released in the environment from the atomic energy plant. *Geobacter* convert these salts of uranium into insoluble salts and thereby prevent those salts from mixing with groundwater sources.

- What causes metal erosion in statues, bridges and buildings?
- Sulphuric acid is the source of energy for which bacteria?
- What kind of pollution do these bacteria control?
- What are the water soluble salts in nuclear power plants and in the process of electrolysis?
- Which bacteria prevent these salts from mixing with ground water by converting them into insoluble salts?

33) Write the answers to the questions by observing the figure.



- What type of fuel production process is shown in the figure?

b) Write two examples each of the solid, liquid and gaseous fuels produced in this fuel production process ?

c) How do microorganisms play their role in this process?

34) Write down the names of five medicinal plants and their uses.

35) Read the following paragraph and write the answers to the questions based on them.

Vaccination gives either permanent or temporary immunity against a specific pathogen or disease. Traditionally, vaccines were prepared with the help of pathogens. Completely or partially killed pathogens were used as vaccines. However, due to this, there were chances of contracting the disease in case of some persons. Hence, as an alternative, scientists tried to artificially produce vaccines with the help of biotechnology. For this purpose, scientists produced the antigen in the laboratory with the help of genes isolated from the pathogen and used it as a vaccine. Thus, safer vaccines are being produced. Work on production of edible vaccines is in progress and presently, potatoes are being produced with the help of biotechnology. These potatoes are called transgenic potatoes. These potatoes will act against. Consumption of these raw potatoes generates immunity against pathogens. For the production of such edible vaccines, antigens are produced by isolating the desired gene from human pathogens and injecting it into plants.

a) How can people who have been vaccinated with haemophilia be infected?

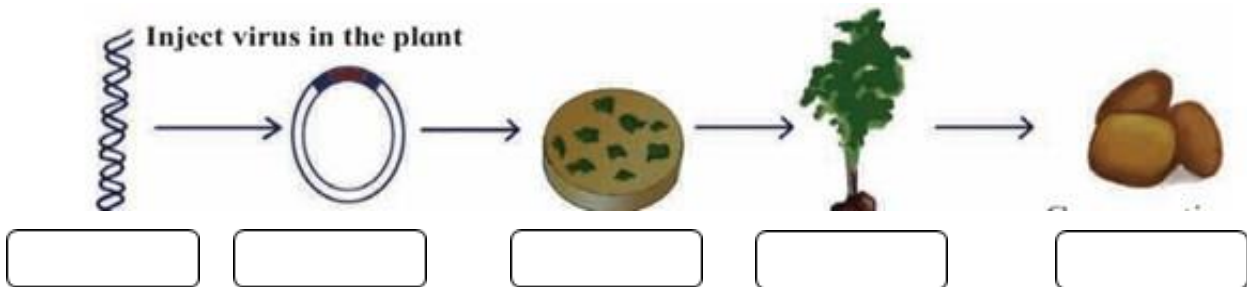
b) Why are vaccines produced with the help of biotechnology safer than conventional vaccines?

c) How does the immune system respond to vaccination?

d) What is the disadvantage of transgenic potatoes?

e) Why is vaccination more beneficial than antibiotics?

36) Write the correct statement from the statements given in the box below the figure.



a) The whole plant is formed from the pieces of leaves which contain the genes of human pathogens.

b) Consumption of raw potatoes builds immunity against those germs.

c) Isolation of desired genes from pathogens found in human beings.

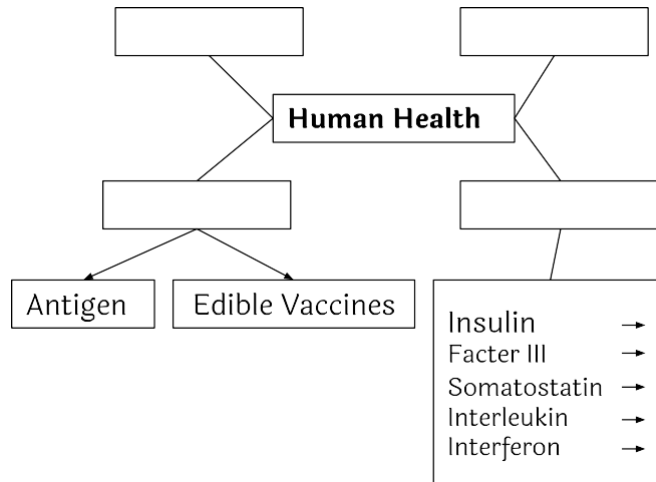
d) Genetically transmitted plant-virus.

e) The virus infects pieces of potato leaves.

37) Explain the statement-The revolutionary phenomenon in biotechnology after cloning is stem cell research.

38) How can we solve many environmental problems using modern biotechnology?

- 39) How is biotechnology useful for human health? Explain with an example.
 40) Complete the concept paper based on 'Use of Biotechnology in Human Health'.



- 41) Write the answers to the following questions regarding cloning.
 a) What is cloning?
 b) What is reproductive cloning?
 c) What is therapeutic cloning?
 d) Which animal was created by cloning technique?
 e) Explain the advantages of cloning technique.
 42) What does the next picture show? What will be the effect?



- 43) What does the next picture mean?



- 44) Observe the figure and write the answers to the questions asked.



- a) What does this picture show?
 b) Explain any two reasons for this problem.
 c) Name any two solutions to solve this problem.

45) Write answers to the questions based on the paragraph.

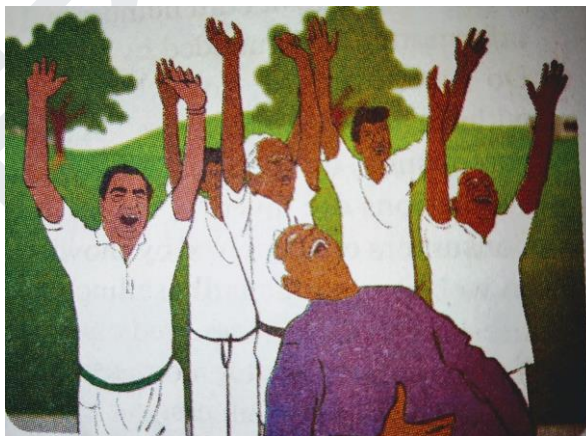
Social health is the ability of a person to establish relationships with other persons. Ability to change one's own behaviour according to changing social conditions is an important characteristic of social health. A socially healthy person can also cope with a variety of social situations. Can behave 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?
- b) What qualities are needed to build good social relationships?
- c) Which vices have negative consequences?
- d) What measures would you take for stress management?
- e) Give two examples of negative shades.

46) What factors determine social health?

47) What are the changes in a person due to constant contact with the internet, mobile, phone?

48) Write the answers to the questions by observing the picture.



- a) What is the concept shown in the picture?
- b) Write its benefits.
- c) What do you do when you feel stressed?
