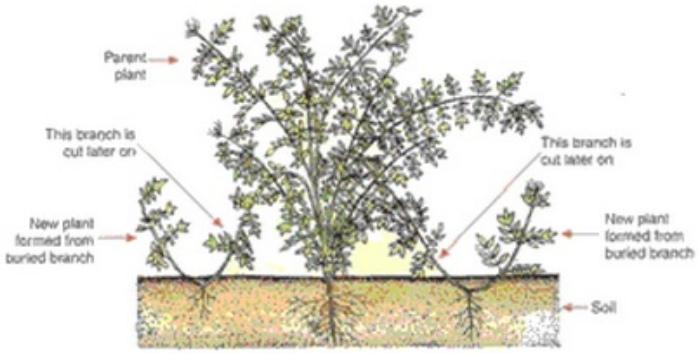
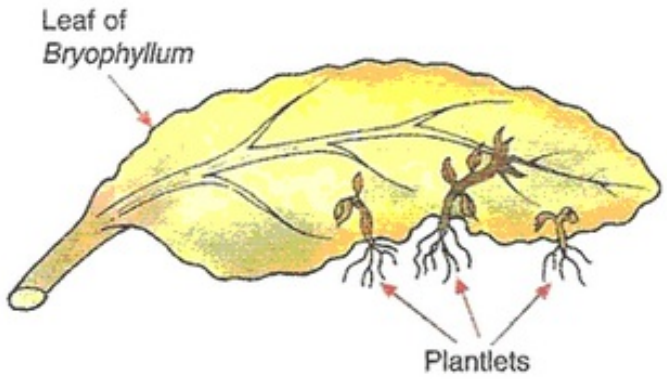
Page No:142
Solution 26
Layering - In this method, a branch of the plant is pulled towards the ground and the part of it is covered with moist soil leaving the tip of the branch exposed above the ground. After some time, new roots develop from the part of the branch buried in the soil. The branch is then cut off from the parent plant. The part of the plant which has developed roots grows to become a new plant. The layering method is used for the propagation of plants like Jasmine, Strawberry, Raspberry, Lemon and Guava.



The propagation of jasmine plants (*chameli*) by the layering method.

Solution 27
(a) Fission means the splitting of an organism into two new organisms.
(b) Binary Fission
(i) In binary fission, the parent organism splits to form two new organisms.
(ii) It occurs during normal conditions.
Multiple Fission
(i) In multiple fission, the parent organisms splits to form many new organisms.
(ii)It takes place during unfavorable conditions.
(c) Amoeba reproduces by binary fission and Plasmodium reproduces by multiple fission. (d) Both the above mentioned organisms are animals.
Solution 28
(a) Yes, because it leads to the formation two daughter cells.
(b) The new organisms produced by one parent through asexual reproduction (which are genetically identical to the parent) are called clones. The offspring's formed by asexual reproduction exhibit remarkably similarity because the replication of DNA in the cells is done by certain biochemical reactions which synthesise more of genetic material. When the DNA already present in the nucleus of the parent cell is replicated by making more DNA at the time of asexual reproduction then slight variations come in the two copies formed. Due to this the two DNA molecules formed will be similar but not identical.
Solution 29
(a) Water does not provide any energy to the yeast cells. So, yeast cells fail to multiply in water due to inadequate energy in its cells. Sugar provides energy to them to carry out reproduction by multiplying rapidly.

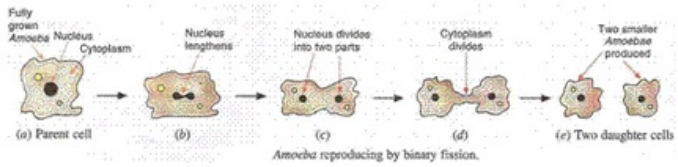
(b) Moisture is necessary for the growth of bread mould. The moist slice of bread provides both moisture and nutrients due to which bread mould grows profusely. On the other hand, the dry slice of bread provides nutrients but no moisture. So, in the absence of moisture, bread mould does not grow on the dry slice of bread.
Solution 30
(a) A tuber is the thickened, underground stem (or root) of a plant which is swollen with stored food. Stem tuber: Potato; Root tuber: Sweet potato.
(b) Buds.
(c) Potatoes.
Solution 31
(a) Vegetative propagation is an asexual method of reproduction in which new plants are obtained from the parts of old plants (like stems, roots and leaves) without the help of any reproductive organs.
(b) Buds.
(c) The fields have dry stems of the old grass plants all over them. These dry stems have buds which are in the inactive state. By getting rainwater, the buds present on the dry grass stems get activated and grow to produce new grass plants.
Solution 32
(a) Bryophyllum can be reproduced by vegetative propagation by using either a piece of its stem or leaves. The leaves of a Bryophyllum plant have special buds in their margins which may get detached from the leaves, fall to the ground and then grow to produce a new plant.



Plantlets growing in the margin of *Bryophyllum* leaf

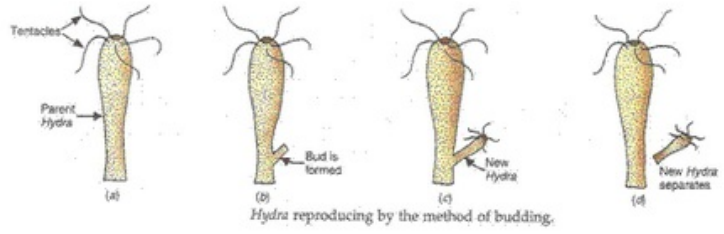
(b) Money plant can be grown by vegetative propagation by using a piece of its stem which has at least one leaf on it. One end of the stem is dipped in water and after a few days new roots appear at the point where the leaf was attached. This piece of stem grows gradually into a new money plant.
Solution 33
(i) - (j)
(ii) - (g)
(iii) - (f)
(iv) - (k)
(v) - (b)
(vi) - (h)
(vii) - (a)
(viii) - (d)
(ix) - (c)
(x) - (e)
(xi) - (i)
(xii) - (i)
Solution 34
(a) Theproduction of new organisms from the existing organisms

of the same species is known as reproduction.
(b) The two methods of reproduction in living organisms are asexual reproduction and sexual reproduction.
(c) Amoeba reproduces by binary fission by dividing its body into two parts. When the amoeba cell reaches its maximum size, the nucleus of amoeba lengthens and divides into two parts. After that the cytoplasm of amoeba divides into two parts, one part around each nucleus. In this way one parent amoeba divides to form two smaller amoebae.



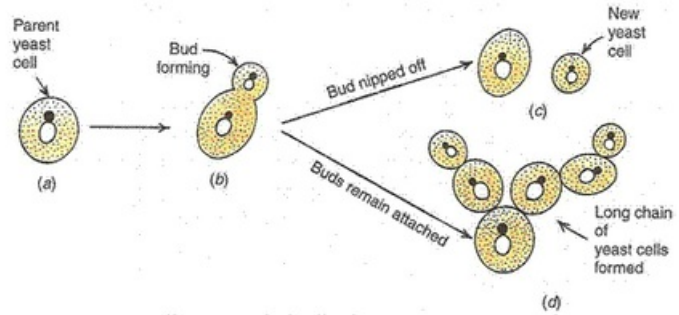
Amoeba reproducing by binary fission.

(d) Binary fission.
(e) Paramecium and Leishmania.
Solution 35
(a) Fission
(i) It is a process in which an organism splits to form two or more new organisms.
(ii) Fission occurs in unicellular organisms.
Example : Amoeba.
Fragmentation
(i) It is a process in which the body breaks up into two or more pieces on maturing, each of which subsequently grows to form a complete new organism.
(ii) It takes place in multicellular organisms.
Example : Spirogyra.
(b) Amoeba reproduces by fission and spirogyra reproduces by fragmentation.
(c) Multiple fission is a process in which a parent organism splits to form many new organisms at the same time. Plasmodium reproduces by multiple fission.
(d) Hydra reproduces by budding. In hydra, first a small outgrowth called bud is formed on the side of its body by repeated mitotic divisions of its cells. This bud then grows gradually to form a small hydra by developing a mouth and tentacles. The tiny new hydra detaches itself from the parent body and develops into a separate organism.



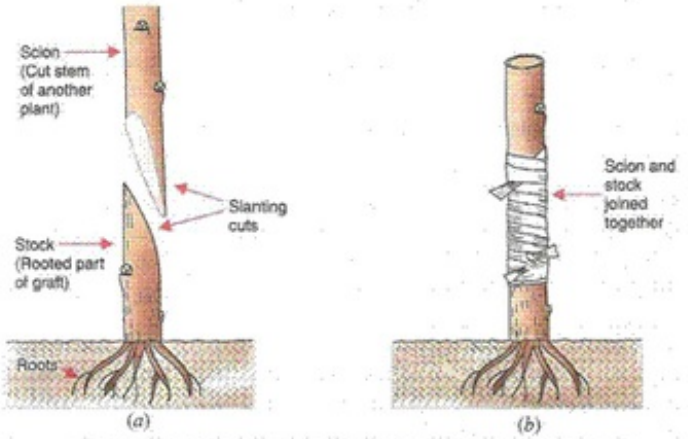
Hydra reproducing by the method of budding.

(e) Yeast.
Page No:143
Solution 36
(a) Spore formation; asexual reproduction.
(b) Yeast is tiny, unicellular non green plant which reproduces by budding. In yeast, first a bud appears on the outside of the cell wall. The nucleus of the parent yeast cell divides into two parts and one part of the nucleus moves into the bud. Ultimately, the bud separates off from the parent yeast cell and forms a new yeast cell.



Yeast reproducing by the method of budding.

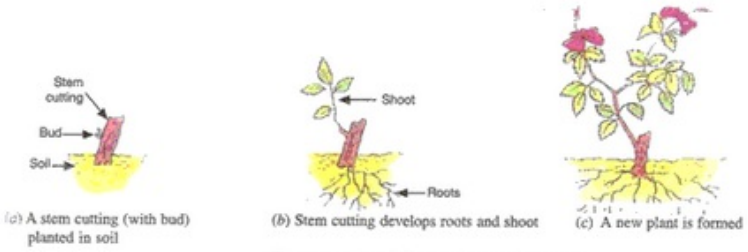
(c) Hydra; Budding.
(d) Sponge and corals.
Solution 37
(a) Grafting - It is a method in which the cut stems of two different plants (one with roots and other without roots) are joined together in such a way that the stems join and grow as a single plant.
(b) The cut stem of a plant having roots is called stock and the cut stem of the other plant without roots is called scion.
(c) In grafting, two plants are chosen which are used as scion and stock. First the stem is removed from the plant chosen to be made scion by giving a slanting cut. The scion is placed over the stock and is fitted together by binding tightly by a piece of cloth or plastic sheet. The cut soon heals and the stock and scion of two plants grow together to become one plant.



The grafting method for the artifical propagation of plants (or trees).

(d) Banana and pineapple.
(e) Advantages of grafting method:
(i) It enables us to combine the most desirable characteristics of the two plants in its flowers and fruits.
(ii) It can be used to produce varieties of seedless fruits.
(f) Cutting
(i) A small part of the plant which is removed by making a cut with a sharp knife is called cutting.
(ii) The new plant formed is exactly similar to the parent plant.
Grafting
(i) It is a method in which the cut stems of two different plants (one with roots and other without roots) are joined together in such a way that the stems join and grow as a single plant.
(ii) The new plant produced has the characteristics of both the parent plants.
Solution 38
(a) The production of new plants from a small piece of plant tissue (or cells) removed from the growing tips of a plant in a suitable growth medium is called tissue culture.
(b) Orchids, dahlia, carnation, chrysanthemum.
(c) (i) The chromosomes in the nucleus of a cell contains information for the inheritance of features from the parents to the

next generation in the form of DNA molecules so the characteristics of a parent organism are transmitted to their offsprings.
(ii) When the DNA already present in the nucleus of a parent cell is copied by making more of DNA by certain biochemical reactions, then slight variations come in the two copies formed. Thus, variations are produced in the offspring's during reproduction which form the basis of evolution. Example: Offspring's produced by asexual reproduction have slight variations from their parents.
(d) The process of reproduction introduces some variations in the individual organisms of a species which enables them to survive even in adverse environmental conditions such as excessive heat or cold, etc. In this way, the introduction of variations during reproduction provides stability to the populations of various species.
(e) Variation is useful for the survival of species even in adverse environmental conditions. This happens as follows: There may be some drastic changes like excessive heat or cold etc in the habitat of a species of organisms. If all the organisms of a population living in that habitat are exactly identical, then there is a danger that all of them may die and no one would survive under these conditions. This will eliminate the species from that habitat completely however, if some variations are present in some individual organisms to tolerate these drastic changes then there is a chance for them to survive and flourish even in adverse environment. Example: Certain bacteria living in temperate water - If the temperature of water increases too much due to global warming most of them will not be able to tolerate excessive heat and would die however, if there are bacteria with variation then there is a chance for them to survive.
Solution 39
(a) A small part of the plant which is removed by making a cut with a sharp knife is called cutting.
(b) While making a cutting, care should be taken to see that there are some buds on it.
(c) In this method, a cutting of the parent plant having some buds on it is taken and its lower part is buried in the moist soil. After few days, the cutting develops roots and shoot, and grows into a new plant which is exactly similar to the parent plant.
(d) Rose and Bougainvillea.



(a) A stem cutting (with bud) planted in soil
(b) Stem cutting develops roots and shoot
(c) A new plant is formed
The propagation of plants by 'cuttings' method.

********** END **********