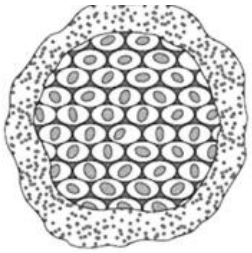
THE VILLAGE INTERNATIONAL SCHOOL
"We Nurture Dreams"

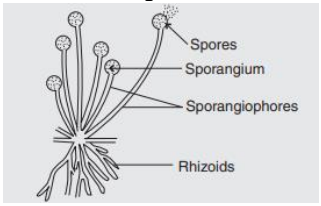
CHAPTER 8 – How do organisms reproduce?

Short Answer Type Questions – 3 marks

1) What is vegetative propagation ? State two advantages and two disadvantages of this method.
Ans. Vegetative propagation is a mode of asexual reproduction in which new plants are formed from roots, stems, leaves and buds of the individual vegetative parts of the plants, example; eyes of potato. Advantages :(i) Offsprings are genetically identical and therefore useful traits can be preserved. (ii) It is a rapid and economical method. Disadvantages :(i) New characters cannot be introduced. (ii) The disease of the parent plant gets transferred to the offspring.
2) Define reproduction. How does it help in providing stability to the population of species ?
Ans. Reproduction : It is a (biological) process by which new individuals of the same species are produced by the existing organisms. (i) Populations of organisms live in well defined places called niches in the ecosystem using their ability to reproduce. (ii) Reproduction involves DNA copying which is the source of information for making proteins thereby controlling body design. (iii) These body designs allow the organism to use a particular niche for the stability of the population of a species. (iv) (Minor) variations may also lead to the stability of the species.
3) What is regeneration ? Give one example of an organism that shows this process and one organism that does not. Why does regeneration not occur in the latter ?
Ans. (i) Regeneration : Ability of organisms to give rise to new individual organisms from their body parts. (ii) Planaria/Hydra (iii) Amoeba/Rhizopus/Banana/Sugarcane/any other (iv) Regeneration is carried out by specialized cells which are not present in non regenerating organisms.
4) In the context of reproduction of species state the main difference between fission and fragmentation. Also give one example of each.
Ans. Fission : It is the method of asexual reproduction in unicellular forms of life. In this process the parent organism splits to form two or more daughter cells. Example : Amoeba / Plasmodium / Paramecium. Fragmentation : It is the process found in multicellular organisms. The filament breaks up into two or more pieces upon maturation. These pieces then grow into new individuals Example : Spirogyra
5) What happens when : (a) Accidently, Planaria gets cut into many pieces ? (b) Bryophyllum leaf falls on the wet soil? (c) On maturation sporangia of Rhizopus bursts ?
Ans. (a) Each piece regenerates into new Planaria. (b) Bud, at its notches develop into new plants. (c) It releases spores which germinate into new mycelium in moist conditions.
6) What is multiple fission ? How does it occur in an organism ? Explain briefly. Name one organism which exhibits this type of reproduction.
Ans. Multiple fission : The process of reproduction in which many individuals are formed or produced from the parent cell. In this process, the nucleus divides repeatedly to produce large number of nuclei. Each nucleus gathers a bit of cytoplasm around itself, develops a membrane around each structure. Many daughter cells develop which on liberation grow into adult organism. Plasmodium exhibits this type of fission.
7) Describe Reproduction by spores in Rhizopus.
Ans. Rhizopus have sporangia which contain spores/ Diagram :, Labelling : When sporangia bursts the spores are liberated out. They contain protective thick wall to tide over unfavourable conditions. On return of the favourable conditions, spores germinate to grow into Rhizopus.
8) The picture given below depicts the process of asexual reproduction in Plasmodium.



9) (i)Name the process depicted above and define it. (ii) What is meant by asexual reproduction ?
Ans. (i) Multiple Fission. It is a division of single-celled organisms into many daughter cells simultaneously. (ii) Creation of a new generation from a single individual or a single parent is involved
10) Why is DNA copying an essential part of the process of reproduction ? What are the advantages of sexual reproduction over asexual reproduction ? OR Why is DNA copying an essential part of the process of reproduction ?
Ans. DNA copying is essential because it makes possible the transmission of characters from parents to the next generation. 1 Advantages of sexual reproduction over asexual reproduction-Sexual reproduction gives rise to variations; which are essential for evolution as well as survival of species under unfavourable condition.
11) List any two modes of asexual reproduction in animals. Under which mode of reproduction is vegetative propagation placed and why ? List two advantages of vegetative propagation.
Ans. The two modes of asexual reproduction in animals are : (i) Binary fission, (ii) Budding. Vegetative propagation is a form of asexual reproduction. It is the ability of plants to produce new plants from the vegetative parts, such as leaves, stems and roots, under favourable conditions. Advantages of vegetative propagation : (i) Only one parent is required for reproduction; this eliminates the need of special mechanisms (pollination). (ii) Many plants are able to tide over unfavourable conditions because of the presence of vegetative reproductive parts like tubers, corns and bulbs. (iii) Plants that do not produce seeds are propagated by this method, e.g., sugarcane and potato. (iv) Vegetative propagation is a cheaper, easier and rapid method of propagation in plants than growing plants from their seeds. For example, lilies grow very slowly and take four to seven years to develop flowers when their seeds are grown, but flowers are produced only after a year or two when grown vegetatively. (v) The trait (character) of the parent plant is preserved and the offspring are genetically identical.
12) Explain the process of regeneration in Planaria. How is this process different from reproduction ?
Ans. When Planaria is cut into many pieces, each piece grows into a complete organism; this regeneration process is carried out by specialized cell; which proliferate; develop and differentiate into various cell types and tissues. Regeneration is not same as reproduction as most of the organisms would not normally depend on being cut up to be able to reproduce.
13) (i)With the help of a diagram, show asexual reproduction in Rhizopus ? (ii) How this method is advantageous for Rhizopus ?
Ans. (i) Spore formation takes place in Rhizopus. Rhizopus consists of fine thread like projection called hyphae. It has a knob like structure which is involved in reproduction called sporangia, containing spores, that develop into new Rhizopus.



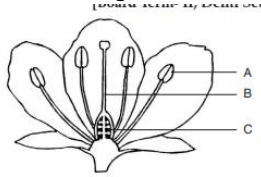
(ii) More number of spores are produced which can easily help the Rhizopus to spread.
14) (i)What is meant by pollination ? Name and differentiate between the two types of pollination.
Ans. (i) Pollination : The transfer of pollen grains from the anther to the stigma is called pollination. The two types of pollination : (ii) Self pollination : When the pollen grains from the stamens of a flower fall on the stigma of the same flower, then self pollination occurs. (iii) Cross pollination : When pollen grains from the stamens of a flower fall on the stigma of another flower, then cross pollination occurs.
15) Describe in brief the function of various parts of female reproductive part of bisexual flower.

Ans. (i) Sepals and petals : Sepals in the calyx cup protect the flower in the bud stage. They persist in the fruit. Petals of insect pollinated flowers are brightly coloured and scented to attract bees and butterflies for pollination. They are colourless and inconspicuous in wind pollinated flowers. (ii) Stamen : This is the male reproductive part of the flower. The anther produces pollen grains. (iii) Carpel : It has a swollen bottom part called ovary, a middle elongated part called style and a sticky terminal part called stigma. The ovary contains ovules which contain the female gametes - the eggs.

16) What is sexual reproduction ? List its four Significance

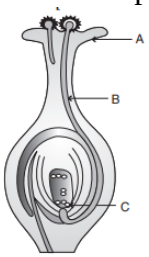
Ans. Two major processes namely formation of gametes and fusion of gametes constitute sexual reproduction Significance–(i) Incorporates the process of combining DNA from two different individuals during reproduction. (ii) Increases genetic variation. (iii) Promotes diversity in the offsprings. (iv) Plays a role in the origin of new species.

17) Name the parts A, B and C shown in the following diagram and state one function of each.



Ans. A. Anther : It produces pollen grains. B. Style : It provides the path through which the pollen tube grows and reaches the ovary. C. Ovary : It contains ovules and each ovule has an egg cell/female gamete. It develops into fruit after fertilization.

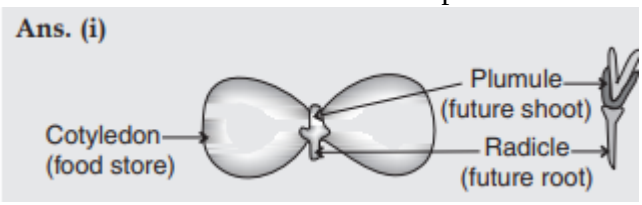
18) Name the parts A, B and C shown in the diagram and write their functions.



Ans. Part A is Stigma. Function : It is the terminal part of carpel, which may be sticky and helps in receiving the pollen grains from the anther of stamen during pollination. Part B is Pollen tube. Function : The pollen tube grows out of the pollen grain through the style to reach the ovary. Part C is Female Germ Cell. Function : It is a female gametes which fuses with male gamete to form a diploid cell known as zygote

19) (i)Draw a neat labelled diagram of a germinated seed and label radicle, plumule and cotyledon. (ii) Mention function of each of these parts.

Ans. (i)



(ii) (a) Radicle : Future root, (b) Plumule : Future stem, (c) Cotyledon (food store).

20) State the basic requirement for sexual reproduction ? Write the importance of such reproductions in nature.

Ans. Formation of male and female gametes, fusion of gametes/syngamy Importance : Combination of DNA from two different individuals lead to increase in genetic variation in the organism. This leads to diversity in the population which helps in natural selection.

21) Mention the total number of chromosomes along with the sex chromosomes that are present in a human female and a human male. Explain how in sexually producing organisms the number of chromosomes in the progeny remains the same as that of the parents.

Ans. Total number of chromosomes is 46. In humans, two sex chromosomes present are X and Y, while in human female, both sex chromosomes are X. During sexual reproduction, a female gamete or egg cell fuses with a male gamete or sperm cell which are haploid to form zygote. Zygote is diploid which

contains 23 chromosomes from mother and 23 from father. In this way, an equal genetic contribution of male and female parents is ensured in the progeny.

22) What are the functions of testis in the human male reproductive system ? Why are these located outside the abdominal cavity ? Who is responsible for bringing about changes in appearance seen in boys at the time of puberty?

Ans. Functions of testis— (i) Produce sperms. (ii) Produces male hormone/ testosterone. (a) These are located outside the human body, as sperms need lower temperature than the normal body temperature to mature.

23) What is placenta ? Write any two major functions of placenta.

Ans. A disc shaped organ or special tissue in the uterus of pregnant mammal, nourishing and maintaining the foetus through the umbilical cord. Functions of Placenta : (i) Provides large surface area for glucose and oxygen to pass from mother to the embryo. (ii) Removal of waste generated in the developing embryo into the mother‘s blood.

24) (a)Mention the role of the following organs of human male reproductive system : (i) Testis; (ii) Scrotum; (iii) Vas deferens; (iv) Prostate glands. (b) What are the two roles of testosterone ?

Ans. (a) (i) Testis—To produce male gametes // sperm or male hormone / testosterone. (ii) Scrotum—To provide optimal temperature to testis for the formation of sperm. (iii) Vas deferens—To deliver the sperms to the urinary bladder. (iv) Prostrate glands—To secrete the fluid which provides nutrition and medium for transport of sperms. (b) (i) Regulates formation of sperms, (ii) brings about the changes in boys during adolescence.

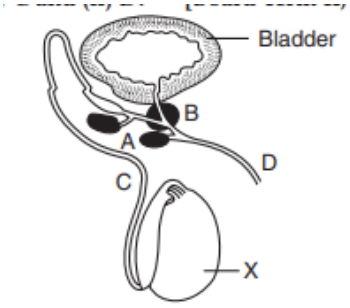
25) Write the functions of the following parts of human male reproductive system : (i) Testis; (ii) Vas deferens; (iii) Urethra; (iv) Prostate. (b) List any two common pubertal changes that appear in human males.

Ans. (a) (i) Testis—Formation of sperm / germ cells // secretion of testosterone (ii) Vas deferens—Delivery of sperms from testis to urethra. (iii) Urethra—Ejaculation of sperms. (iv) Prostrate—Its secretions nourishes the sperms. (b) Thick hair growth on the face, voice begins to crack, hair growth in armpits.

26) State briefly the changes that take place in a fertilized egg till birth of the child in the human female reproductive system. What happens to the egg when it is not fertilized ?

Ans. Changes in fertilized egg : ¬ Zygote/fertilized egg starts dividing. ¬ Implantation of zygote in the inner uterine wall. ¬ Embryo starts growing with the help of the placenta which results in the development of the child. ¬ Birth of a child as a result of rhythmic contraction of the muscles in the uterus. ¬ When egg is not fertilized, the inner lining of the uterus slowly breaks and comes out through the vagina as blood and mucous (Menstruation)

27) In the diagram of human male reproductive system given below : (i) Label the parts A and B. (ii) Name the hormone produced by organ ‘X’. What is the role of this hormone in the human male ? (iii) Mention the name of substances that are transported by tubes. (i) C and (ii) D.



Ans. (i) A-Seminal vesicle B-Prostate gland. (ii) Testosterone; controls gamete formation and develops secondary sex organs. (iii) (a) C-Sperms, (b) D-Sperms/semen and urine.

28) How many eggs are produced every month by either of the ovaries in a human female ? Where does fertilization takes place in the female reproductive system ? (ii) What happens in case the eggs released by the ovary is not fertilized ?

Ans. (i) One egg is produced every month by one of the ovaries. Fertilization takes place in the fallopian tubes. (ii) In case the egg released by the ovaries is not fertilized, it lives for about one day. But since the

uterus prepares itself every month to receive a fertilized egg, its lining become thick and spongy. When the egg does not fertilize this lining slowly breaks and come out through the vagina as blood and mucus and is known as menstruation.

29) Mention two secondary sexual characters in human male. (ii) Why testis in male body are extra-abdominal ? (iii) Write the dual purpose served by urethra in males ?
Ans. (i) Hair growth on face, chest, armpit and genital area / body becomes muscular / voice becomes deep and coarse / penis occasionally begins to become enlarged and erect. (ii) Formation of sperms needs lower temperature than the normal body temperature. Hence, testis lie outside the body cavity in the scrotum. (iii) Urethra is a common duct for the passage of both urine and semen.

30) State any two changes seen in boys at the time of puberty. (ii) Define implantation and fertilization.
Ans. (i) Boys begin to have thick hair growth on the face. Their voice begins to crack. (ii) Implantation is the process of fixing of zygote to the uterine wall. 1 Fertilization is the union of male and female gamete to form a zygote.

31) Explain the following : (i) Testes and Ovaries are considered as the primary sex organs. (ii) Advantage of seed production in plant. (iii) Vas deferens is long in human male.
Ans. (i) Both produces gametes and sex hormones. (ii) Contains body plant (embryo) which maintains the species of a particular plant. (iii) To carry sperm from testes, which enter penis for their release.

32) What is contraception ? Name any two methods. How does the use of these methods have a direct effect on the health and prosperity of a family ? State any three points.
Ans. ¬ Contraception : Any method which prevents conception/ pregnancy is called contraception. ¬ Barrier Method, Chemical Method, Surgical Method ¬ Health of women (mother) is maintained, Parents can give more attention to their children/ family, More resources may be made available for improvement of standard of living.