# Chapter 3 Life Processes in Living Organisms Part – 2

**Question 1.**
**Complete the following chart.**

**Answer:**

| Asexual reproduction | Sexual reproduction |
|---|---|
| 1. Reproduction that occurs with the help of somatic cells is called asexual reproduction. | 1. Reproduction that occurs due to fertilization of gametes is called sexual reproduction. |
| 2. For asexual reproduction only one parent is necessary. | 2. Male and female parents are necessary for sexual reproduction. |
| 3. This reproduction occurs with the help of mitosis only. | 3. This reproduction occurs with the help of both mitosis and meiosis. |
| 4. New individual formed by this method is genetically identical with parents. | 4. New individual formed by this method is genetically different from parents. |
| 5. Asexual reproduction occurs in different individuals by various methods like binary fission, multiple fission, budding, fragmentation, regeneration, vegetative propagation, spore production, etc. | 5. Sexual reproduction occurs in two steps: First formation of haploid gametes by meiosis and then fertilization of these haploid gametes to form diploid zygote. There are no subtypes in the sexual reproduction. |

**Question 2.**
**Fill in the blanks.**

a. In humans, sperm production occurs in the organ .....
(a) prostate gland
(b) testis
(c) ovaries
(d) Cowper's gland
**Answer:**
**(b) testis**
b. In humans, ..... chromosome is responsible for maleness.
(a) X
(b) Y
(c) Z

(d) O
**Answer:**
**(b) Y**

c. In male and female reproductive system of human, ..... gland is same.
**Answer:**
**bulbourethral**

d. Implantation of embryo occurs in .....
(a) ovaries
(b) fallopian duct
(c) uterus
(d) vagina
**Answer:**
**(c) uterus**

e. .....type of reproduction occurs without fusion of gametes.
(a) Asexual
(b) sexual
(c) Fertilization
(d) Gamete formation
**Answer:**
**(a) Asexual**

f. Body breaks up into several fragments and each fragment begins to live as a new individual.
This is ..... type of reproduction.
(a) regeneration
(b) fragmentation
(c) binary fission
(d) budding
**Answer:**
**(b) fragmentation**

g. Pollen grains are formed by division in locules of anthers.
(a) meiosis
(b) mitosis
(c) amitosis
(d) binary
**Answer:**
**(a) meiosis**

**Question 3.**
**Complete the paragraph with the help of words given in the bracket: (Luteinizing hormone, endometrium of uterus, follicle stimulating hormone, estrogen, progesterone, corpus luteum)**
Growth of follicles present in the ovary occurs under the effect of ..... This follicle secretes estrogen. Ovarian follicle along with oocyte grows/regenerates under the effect of estrogen. Under the effect of ....., fully grown up follicle bursts, ovulation occurs and ..... is formed from remaining part of follicle. It secretes ..... and ..... Under the effect of these hormones, glands of ..... are activated and it becomes ready for implantation.
**Answer:**
Growth of follicles present in the ovary occurs under the effect of follicle stimulating hormone. This follicle secretes estrogen. Ovarian follicle along with oocyte grows/regenerates under the effect of estrogen. Under the effect of Luteinizing hormone, fully grown up follicle bursts, ovulation occurs and corpus luteum is formed from remaining part of follicle. It secretes estrogen and progesterone. Under the effect of these hormones, glands of endometrium of uterus are activated and it becomes ready for implantation.

**Question 4.**
**Answer the following questions short.**
**a. Explain with examples types of asexual reproduction in unicellular organism.**
**Answer:**

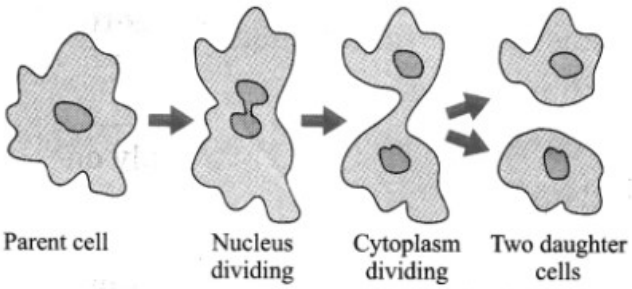


**Fig. 3.2 : Binary fission in *Amoeba***



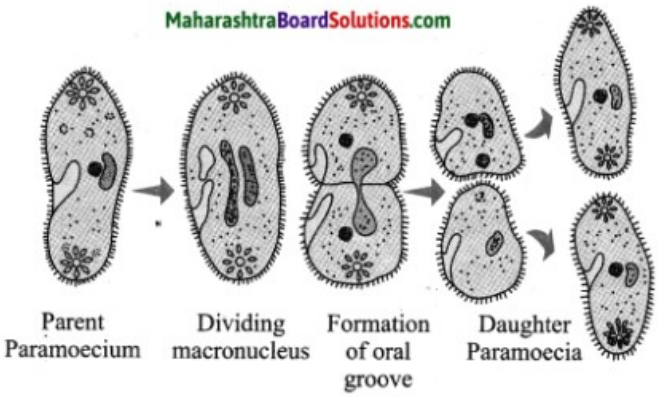
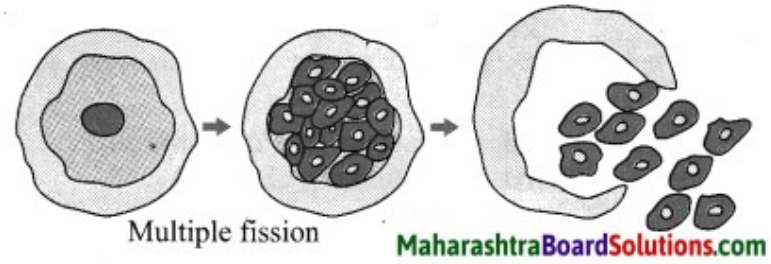


**Fig. 3.3 : Binary fission in *Paramoecium***
**(Transverse binary fission)**

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 binary fission. It takes place either by mitosis or amitosis. When there are favourable conditions and abundant food supply then the organisms undergo binary fission.

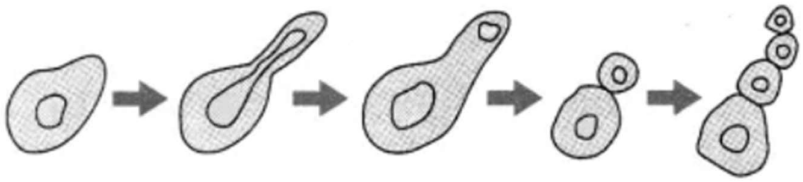
**(2) Multiple fission:**




**Multiple fission in *Amoeba***

During unfavourable conditions when there is lack of food, multiple fission is shown by amoeba. Amoeba forms protective covering and becomes encysted. Inside the cyst, amoeba undergoes repeated nuclear division. This 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 showing budding**

Yeast is unicellular fungus that performs budding. The parent cell produces two daughter nuclei by mitotic division. This results in a small bulgingbud on the surface of parent cell. One daughter nucleus enters the bud. It then grows and upon becoming big, it separates from the parent cell to have independent life as new yeast cell.

**b. Explain the concept of IVF.**

**Answer:**

(1) IVF means In Vitro Fertilization (IVF)

(2) This is the technique in the modern medical field where childless couples can be blessed by their own child.

(3) IVF technique is used for childless couples who are faced with problems such as less sperm count, obstacles in oviduct, etc.

(4) The IVF technique is done by removing the oocyte from the mother and

artificially fertilizing by the sperms collected from father. This fertilization is done in a test-tube. Thus it is also called test tube baby. The embryo formed is implanted in uterus of real mother or a surrogate mother at appropriate time.

**c. Which precautions will you follow to maintain the reproductive health?**
**Answer:**
About reproductive health one should have scientific and authentic information. The cleanliness of body is very essential but keeping the mind clean is also important to maintain good reproductive health. One should be careful about sexual relationships. These things should not be experimented in young age. Mistakes committed like these can change the sexual health forever. The cleanliness of genitals and other private parts are the aspects of personal hygiene.

**d. What is menstrual cycle? Describe it in brief.**
**Answer:**

During IVF, fertilization is brought about in the test-tube and the embryo created is implanted in the uterus of the woman at an appropriate time. This fertilization technique is used to have children by childless couples with problems such as less sperm count, obstacles in oviduct and so on. Also, some of the women may have problems in implantation of embryo in the uterus. Such women can adopt a modern remedial technique known as surrogacy. In this technique, oocyte collected from the ovary of the woman having problems in implantation in the uterus is fertilized in a test-tube with the help of sperms collected from her husband. The embryo resulting from such fertilization is implanted in the uterus of some other woman having a normal uterus. Such a woman, in whose uterus the embryo is implanted, is called a surrogate mother.

**Question 5.**
**In case of sexual reproduction, newborn show similarities about characters. Explain this statement with suitable examples.**
**Answer:**
(1) Sexual reproduction occurs due to two different gametes. One male gamete is from father while the other female gamete is from mother.
(2) Both the gametes are produced by meiosis.
(3) When the gametes unite it is called process of fertilization which produces diploid zygote.
(4) Due to the chromosomes of parents, their DNA pass to the next generation through such fertilization. Therefore, the characters of newborn show similarities with parents.

**Question 7.**
**Give the names.**
a. Hormones related with male reproductive system.
Answer:
Follicle stimulating hormone and ICSH or Luteinizing hormone secreted by pituitary gland, testosterone secreted by testis.

b. Hormones secreted by ovary of female reproductive system.
Answer:
Estrogen and progesterone.

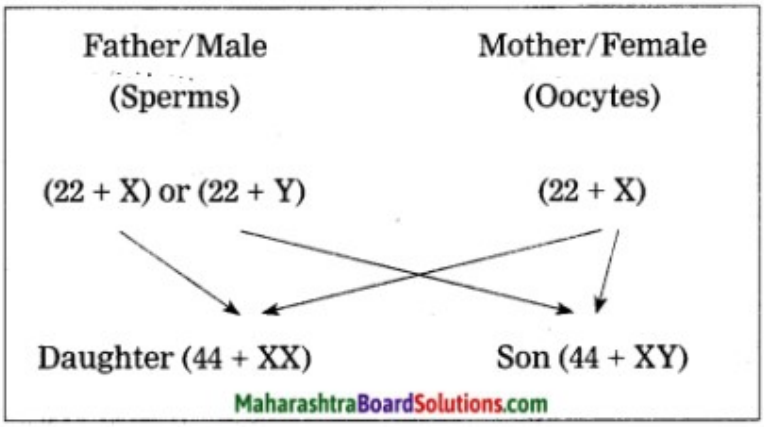
c. Types of twins.
Answer:
Monozygotic twins, Siamese twins and Dizygotic twins.

d. Any two sexual diseases.
Answer:
Gonorrhea and Syphilis.

e. Methods of family planning.
Answer:
Copper T, condoms, oral contraceptive pills.

**Question 8.**
**Gender of child is determined by the male? partner of couple. Explain with reasons whether this statement is true or false.**

**Answer:**




(1) The statement Gender of child is determined by the male partner of couple is true.
(2) It is clearly seen from the diagram that there are two types of sperms produced by males. One sperm has a X chromosome while the other has a Y

chromosome, apart from autosomes. The mother on the other hand has all X bearing oocytes. Thus the sperm that fertilizes the oocyte decides the sex of the child.
(3) If X bearing sperm fertilizes the oocyte, daughter is born and when Y bearing sperm fertilizes the oocyte, son is born.
(4) Thus father or male partner is responsible for the determination of the sex.

**Question 9.**
**Explain asexual reproduction in plants.**
**Answer:**

- Vegetative propagation is the method of asexual reproduction in plants.
- It takes place with the help of vegetative parts like root, stem, leaf and bud.
- Potato, suran (Amorphophallus) and other tubes propagate with the help of 'eyes' which are buds. These eyes are present on the stem tubers.
- In case of plants like sugarcane and grasses, buds present on nodes perform vegetative propagation.
- Plants like Bryophyllum performs vegetative propagation with the help of buds present on leaf margin.

**Question 10.**
**Modern techniques like surrogate mother, sperm bank and IVF technique will help the human beings. Justify this statement.**
**Answer:**
(1) Some couples want a child but they are not able to bear one due to various problems either in mother or in father. In such cases modern techniques such as IVF, surrogacy and sperm bank are useful in conceiving a child.

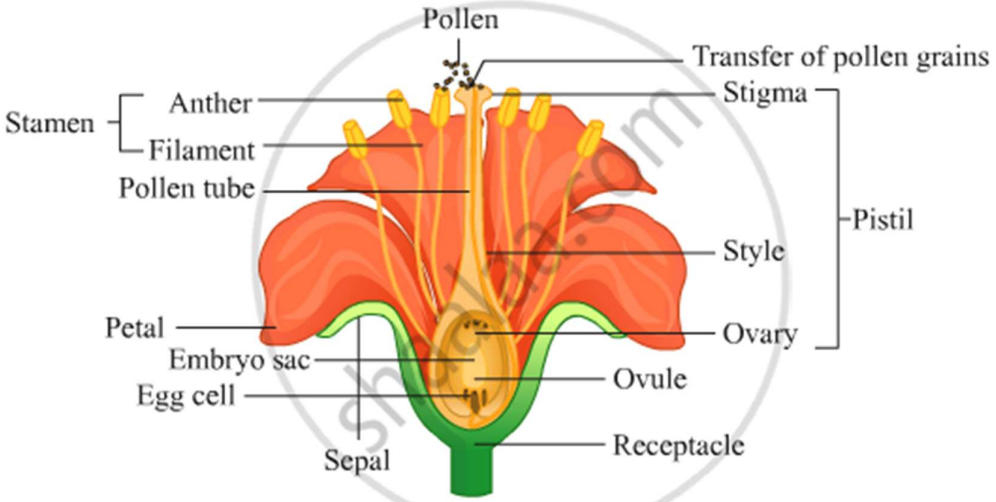
(2) These methods are as follows:
(i) **Surrogacy**: In woman if there is problem regarding the implantation of embryo in uterus, then help of another women is taken. This women is called surrogate mother.

Oocyte from real mother is taken out and fertilized with sperms collected from her husband. These gametes are fertilized outside in a test-tube and then the fertilized zygote is implanted in the surrogate mother.

(ii) **In Vitro Fertilization (IVF)** is done when there are problems like less sperm count or obstacles in oviduct. In IVF, fertilization is done in the test-tube. The embryo formed is implanted in uterus of woman for further growth.

(iii) **Sperm bank**: If man has problems with the sperm production, then the sperms are collected from the sperm bank. Sperm bank is the place where the donor's donate the sperms and such sperms are kept stored. The donor's identity is kept secret and he should also be physically and medically fit person.

**Question 11.**
**Explain sexual reproduction in plants.**
**Answer:**




**Reproduction of flowering plants**

- In sexually reproducing plants, flowers function as the reproductive organs.
- In flowers, male organ is the stamen and female organ is the carpel.
- Flowers which have both the male and female organs i.e. stamens and carpels are called bisexual flowers whereas flowers which have either male or female organs are called unisexual.
- Male gametes called pollen grains are produced by stamen, and carpels produce female gametes called ovules or egg cells inside ovaries.
- Fertilization takes place in the ovule where the egg cell and pollen grain fuse.
- This fertilized egg cell later develops into an embryo and the entire ovule gets converted into a seed.
- Under favourable conditions, the seed germinates to give rise to a new plant.