Long Answer Type Questions

[5 Marks]

Q. 1. Write two points of difference between asexual and sexual types of reproduction, Describe why variations are observed in the offspring formed by sexual reproduction.

Ans.

Asexual Reproduction	Sexual Reproduction
1. Involves only one parent. 2. Gametes are not produced. 3. No fertilisation and zygote formation. 4. Meiosis does not occur at anytime during reproduction.	1. Often involves two parents. 2. Gametes are produced. 3. Fertilisation and zygote formation is observed. 4. Meiosis occurs at the time of gamete formation.

During sexual reproduction two types of gametes fuse. Although the gametes contain the same number of chromosomes, their DNA is not identical. This situation generates variations among the offspring's.

Q.2 What is multiple fission? How does it occur in an organism? Explain briefly. Name one organism which exhibits this type of reproduction.

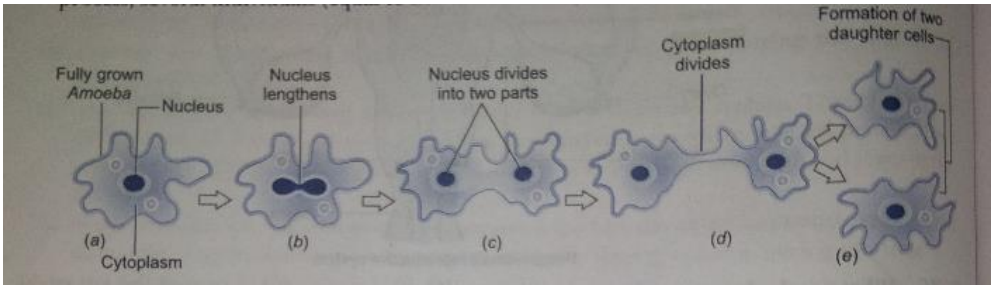
Ans. Multiple fission is the process of reproduction in which many individuals are formed or produced from the parent cell. In this process, the nucleus divides repeatedly to produce large number of nuclei. Each nucleus gathers a bit of cytoplasm around itself and develops a membrane around each structure. Many daughter cells develop which on liberation grow into adult organism.
Plasmodium exhibits this type of fission.

Q. 3. (a) Describe asexual reproduction in Amoeba.

(b) How does sexual reproduction in plants takes place?

Ans. (a) In Amoeba, asexual reproduction occurs by fission (binary and multiple). In Amoeba, nucleus first divides into two daughter nuclei by mitosis and then body along with the cytoplasm consticts from the middle, which gradually deepens and eventually divides into two individual parts, each part has one nucleus. Thus, two daughter Amochae develop from one. This is called binary fision. In multiple fission, nucleus repeatedly divides to form a large number of nuclei, which reach at the periphery. Later

cytoplasm gathers around each nucleus to form a daughter Amoebo. In this process, several individuals (equal to number of nuclei) develop from a single Amoeba.



(b) Sexual reproduction in plants takes place in the following steps:

(i) The male reproductive organ 'stamen' makes the male gametes.

(ii) The female reproductive organ ‘carpel, makes the female gamete.

(iii) The male gametes fertilise the female gametes.

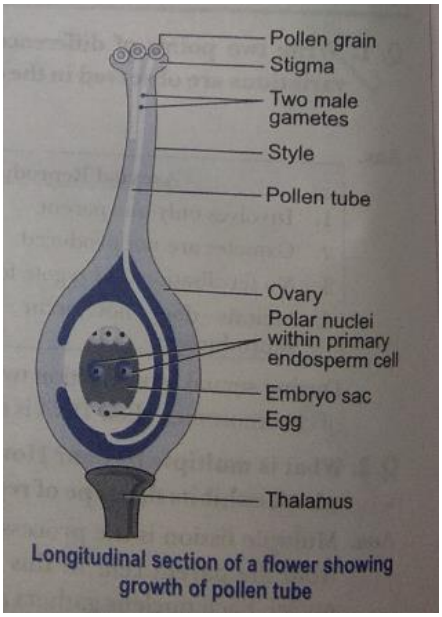
(iv) The fertilised ovules grow and become seeds.

(v) The seeds produce new plants under favourable conditions like presence of water, warmth, air, light, etc.

Q. 4. (a) Describe the process of fertilisation in a flower.

(b) Why is the number of sperms produced always much more than the number of eggs produced?

Ans. (a) A pollen grain contains two male gametes. When a pollen grain falls on the stigma of the carpel, it grows a pollen tube downwards into the style. One of the male gametes reaches the ovary through pollen tube and fuses with egg to form. The other male gamete fuses with two polar nuclei one from each end of embryo sac to form endosperm nucleus. This fusion is called triple fusion. The zygote grows into an embryo and an endosperm nucleus grows into endosperm (the food storage tissue of seed).



Longitudinal section of a flower showing growth of pollen tube

(b) Sperms are produced much more in number than eggs because:

(i) Eggs are non-motile whereas sperms are motile and they may be misdirected while they are travelling

towards eggs.

(ii) sperms may not be able to survive under external environmental conditions for long.

(iii) To increase the probability of fertilisation of eggs.

Q.5. (a) State in brief the functions of the following organs in the human female reproductive system:

Ovary, Fallopian tube, Uterus

(b) What is menstruation? Why does it occur?

Ans. (a) Functions of ovary are:

(i) production of female gamete.
(ii) production of female harmone.

Functions of fallopian tube are:

(i) It is the site of fertilisation.
(ii) Transfer of female gamete from ovary takes place through it.

Functions of uterus are:

(i) implantation of zygote.
(i) nourishment to the developing embryo

(b) Menstruation: It is the periodic breakdown of uterine lining and its removal along with blood and mucous in (post pubertal stage of a) human female.
Uterine lining is required to nourish the embryo that is formed if fertilization takes place. In absence of fertilization, the lining is not required and hence is shed in the form of mensuration.

Q. 6. Write the functions of the following in human female reproductive system:

Ovary, oviduct, uterus

How does the embryo get nourishment inside the mother's body? Explain in brief.

OR

(a) Write the functions of the following parts in human female reproductive system:

(i) Ovary (ii) Oviduct (iii) Uterus

(b) Describe the structure and function of placenta.

OR

List two functions of ovary of human female reproductive system.

Ans. Ovary:

(i) Production of female hormone (Oestrogen and progesterone).
(ii) Production of female gamete or egg.

Oviduct:

(i) Transfer of female gamete from the ovary.
(ii) Site of fertilisation.

Uterus:

(i) Implantation of zygote or embryo.
(ii) Nourishment of developing embryo.

The embryo inside the mother's body gets nourishment through the placenta. Placenta is a special disc like tissue embedded in the mother's uterine wall and connected to the embryo. Placenta provides a large surface area for glucose and oxygen, and nutrients to pass from the mother's blood to the embryo.

Q. 7. (a) Name the human male reproductive organ that produces sperms and also secretes a hormone.

Write the functions of the secreted hormone.

(b) Name the parts of the human female reproductive system where
(i) fertilisation takes place,
(ii) implantation of the fertilised egg occurs.

Explain how the embryo gets nourishment inside the mother's body.

Ans. (a) Testes produce sperms and secrete a hormone called testosterone.
The function of testosterone is to control the development of male sex organs and secondary sexual features.

(b) (i) Oviduct or fallopian tubes **(ii)** Uterus
After implantation, a disc-like special tissue called placenta develops between the uterus wall and the embryo which helps in the exchange of nutrients, oxygen and waste products between the embryo and the mother.

Q. 9. Reproduction is essentially a phenomenon that is not for survival of an individual but for the stability of a species. Justify.

Ans. (a) Organisms need energy for survival which they obtain from life processes such as nutrition and respiration.

(b) Reproduction needs a lot of energy.

(c) Genetic material is transferred from one generation to the next as a result of reproduction through DNA copying.

(d) DNA copying takes place with high constancy and considerable variations, that is, advantages to the species for stability in the changing environment.