REPRODUCTION

CONTENTS

REPRODUCTION

The process by which living organisms produce offsprings of their own kind is called reproduction.

Types of reproduction :

- Asexual reproduction
- Sexual reproduction

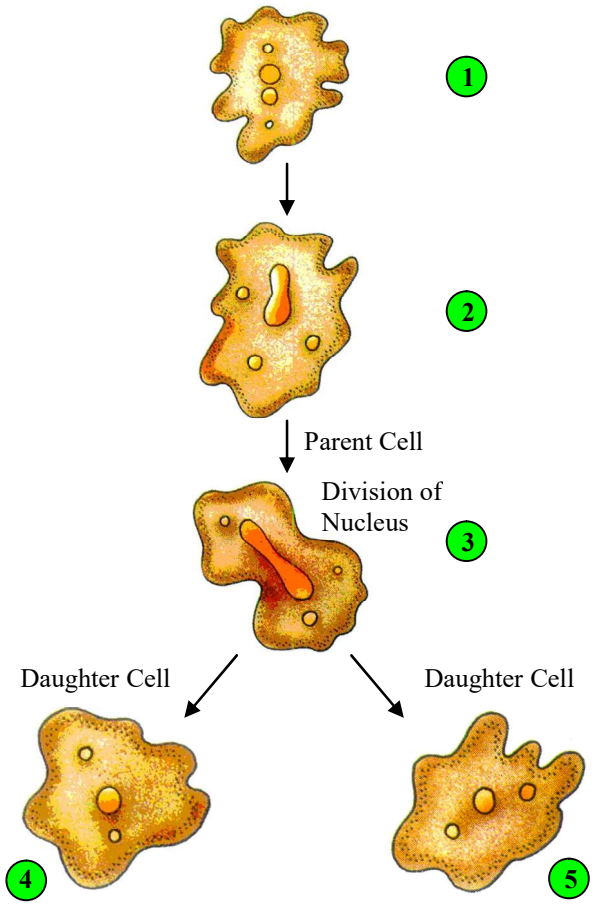
ASEXUAL REPRODUCTION

This occurs without involving sex organs. Asexual reproduction requires only one parent for multiplication and formation of new offsprings. It does not require both male and female parents. It is the simplest form of reproduction and is commonly found in unicellular organisms *(hydra, Amoeba, Paramecium)* and lower animals like starfish, sponges and worms

The various methods of asexual reproduction commonly found in animals are as follows :

◈ Binary Fission :

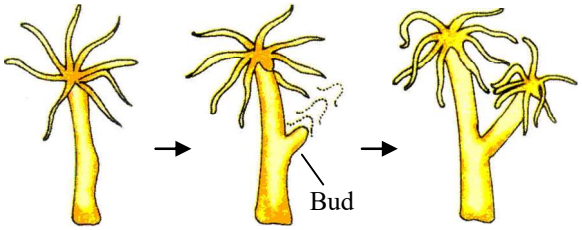
- When one mature unicellular organism like *Amoeba* splits into two daughter individuals, the process is called binary fission.
  This type of reproduction occurs when environmental conditions are most favourable



- In *Amoeba,* the nucleus first divides into two nuclei. Then the cytoplasm divides into two parts, each containing a nucleus. A constriction develops in the body which gradually deepens to form two daughter amoebae. This type of reproduction is binary fission.

◈ Budding :

- In this type of reproduction, as seen in hydra, a small outgrowth appears on the body of the organism. This outgrowth is called a bud. The nucleus of the parent body divides into two and one nucleus goes into the bud. The bud grows and finally gets detached from the parent body of hydra and begins to live as an independent individual



- Since new individuals develop from the bud in hydra, this type of reproduction is called budding
- Besides these two processes, there are other methods of asexual reproduction which you will study in your higher classes.

➢ SEXUAL REPRODUCTION

- This is one of the most common methods of reproduction, found in most animals including human beings. In sexual reproduction, two parents, one male and the other female, are required. Each parent produces reproductive cells called gametes. The male gamete is called a sperm. and the female gamete is known as an egg or ovum.
- Those organisms which produce only one type of gamete are called unisexual, e.g. dogs, cat, fish, man, birds, reptiles
- Those organisms which have both the male and female sex organs in their body are called bisexual or hermaphrodite, e.g. earthworm, leech, hydra.

◈ Fertilisation :

- The prosess of fusion of the sperm with the ovum is called fertilization. Zygote is formed after fertilization.

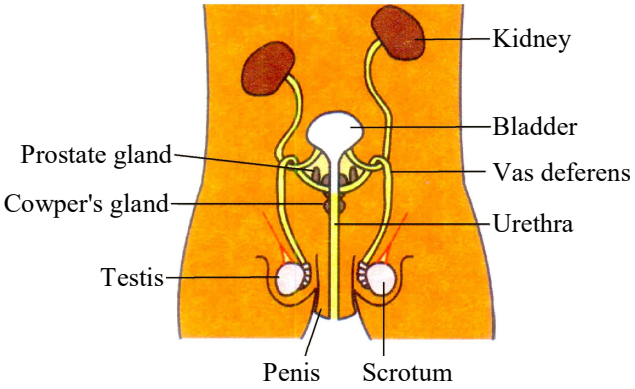
  Types of fertilisation :

  There are two types of fertilization in animals
- **Internal fertilization :** When the fertilization occurs inside the body of female, as it happens in humans, it is called internal fertilization. Internal fertilization takes place in most of higher animals, e.g. birds, mammals.
- **External fertillization :** When the eggs are fertilized outside the body of the female, it is called external fertilization. Fertilization in animals like frog and fish is external. In these organisms, the eggs are discharged ouside the body, i.e., in water. On these eggs, the male discharges the sperms to fertilize them

➢ SEXUAL REPRODUCTION IN HUMAN

◈ The Male Reproductive System :

The male reproductive system of humans consists of the following organs



- **Testies :**

  There is a pair of testes which lie outside the body within the **scrotum.** They produce millions of sperms
- **Vas Deferens (Sperm duct) :**

  Vas deferens are two in numbers. This duct connects each testies to the urethra. It carries sperms to the urethra along with the secretion of reproductive glands. This mixture of sperms and secretions is called semen.
- **Urerthra :**

  The two vas deferens open into the urethra and pass through the penis.
- **Penis :**

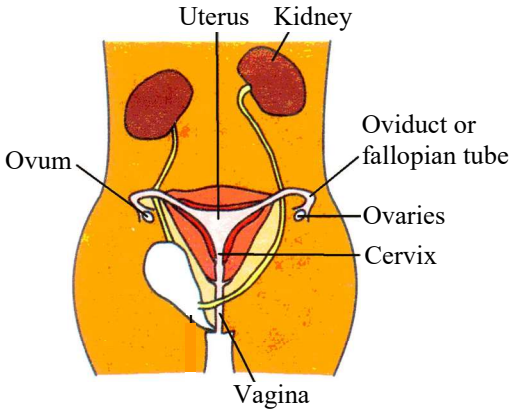
  Urethra leads to a muscular organ called **penis.** It is used to deliver semen into the vagina of the female during mating. It is used to pass urine as well
- **Sperms :**

  The sexual maturity in human males is attained around the age of 14 to 15 years.

  Sperms are produced in millions by the testes. They are very small in size. Each sperm consists of a head, a middle piece and a tail. Sperms swim in semen with the help of a tail.

◈ The Female Reproductive System :

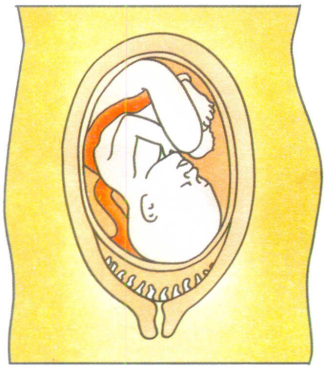
The female reproductive system of humans consists of the following organs.



- **Ovaries :**
  There are two ovaries which are situated in the abdominal cavity. Each ovary produces one mature **ovum (egg)** every month a process called **ovulation.** Like sperm, an egg is also a single cell.
- **Oviduct or Fallopian Tubes :**
  It is a muscular tube which joins the uterus with the ovary. It carries the ovum into the uterus.
- **Uterus :**
  It is a hollow, muscular, pear-shaped organ. The development of the baby takes place inside it. The lower narrow part of the uterus is called cervix.
- **Vagina :**
  The uterus opens into a wide muscular tube called vagina. The vagina receives the penis during sexual intercourse. The sperms are discharged into the vagina.

➢ DEVELOPMENT OF EMBRYO

- Once the zygote reaches the *uterus,* it implants itself there. The zygote then starts dividing repeatedly to give rise to a ball of cells.
- The developing baby is called the embryo during the first eight weeks after fertilisation. The embryo attaches itself to the uterus wall with the help of placenta.
- The embryo continues to develop in the uterus. It gradually develops body parts such as hands, legs, eyes, ears, etc. From eight weeks till birth, the baby is called foetus.
- During this period of pregnancy, the baby takes in nourishment from the mother through the placenta and the umbilical cord.



- The uterus increases in size as the foetus grows. The uterus is filled with a fluid called amniotic fluid that protects the foetus from jerks and change in temperature

➢ GESTATION AND CHILD BIRTH

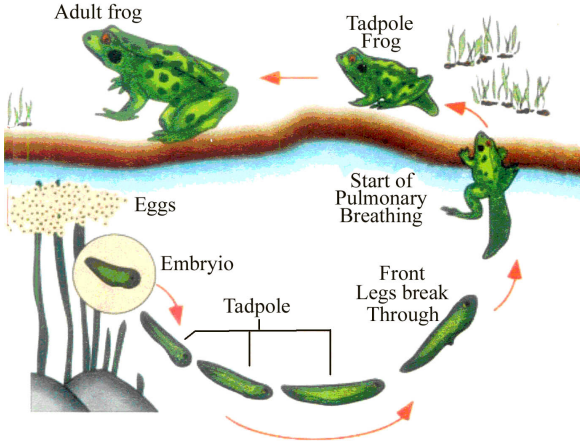
- The period between fertilisation and the birth of the baby is called gestation. The expectant mother is called pregnant. In humans, it lasts for about 40 weeks or around nine months.
- After nine months of pregnancy, the baby is delivered. Natural child birth or labour can last for several hours and is very painful for the mother. Sometimes due to some complications, doctors remove the child from the womb surgically. This is known as caesarian operation
- Babies delivered before completing gestation period are termed as premature babies and need special care

➢ METAMORPHOSIS

The process of change by which a larva transformed into an adult is called Metamorphosis.

Egg → Tadpole → Adult

A frog lays eggs in large numbers. The process of laying eggs in large numbers is called spawning. The baby that hatches out of the frog's egg is called tadpole. The tadpole undergoes several changes before it becomes an adult frog



EXERCISE # 1

A. Single Choice Type Questions

Q.1 Which is a viviparous animal ? -
(A) Frog (B) Lizard
(C) Man (D) snake

Q.2 Cevix is a part of -
(A) Ovary (B) Vagina
(C) Uterus (D) Oviduct

Q.3 Which is a female reproductive organ ?
(A) Oviduct (B) Testes
(C) Urethra (D) Penis

Q.4 The fertilized cell is called -
(A) Embryo (B) Zygote
(C) Uterus (D) Foetus

Q.5 In which of the following animals does internal fertilization take place ?
(A) Reptile (B) Frog
(C) Fish (D) None

Q.6 Ameoba reproduce through -
(A) Binary fission (B) Budding
(C) Fertilisation (D) Tertiary fusion

Q.7 Lizards, frog, hen all are -
(A) Oviparous (B) Viviparous
(C) Hermaphrodite (D) None of these

Q.8 Young one of a frog is called -
(A) Tadpole (B) Larva
(C) Caterpillar (D) Nymph

Q.9 The period when menstrual cycle stops is
(A) menarche (B) luteal phase
(C) menopause (D) heat period

Q.10 Male hormone is
(A) progesterone (B) corpus luteum
(C) gonadotropin (D) testosterone.

Q.11 In mammals the female secondary sexual chracters are developed by the hormone
(A) relaxin (B) estrogens
(C) progesterone (D) gonadotropins

Q.12 Animals which give rise to more of less developed young ones are called :
(A) Oviparous (B) Ovoviviparous
(C) Viviparous (D) Parthenogentic

Q.13 Human beings are :
(A) Ovoviviparous (B) Oviparous
(C) Parthenogentic (D) Viviparous

Q.14 Sperms are produced by the
(A) testes (B) epididymis
(C) penis (D) scrotal sac

B. Fill In The Blanks

Q.15 Hormones are secreted by ..... glands

Q.16 Estrogen is secreted by the .....

Q.17 .....glands produce milk

Q.18 FSH is called ..... stimulating .....

Q.19 The first menstruation in called .....

C. Match The Following

Q.20 Match the column A with Column B

Column-A		Column-B
1. Sexual reproduction	a.	Earthworm
2. Asexual reproduction	b.	Ovum
3. Testes	c.	Penis
4. Ovary	d.	Sperm
5. Hermaphrodite	e.	Hydra
	f.	Man

EXERCISE # 2

A. Very Short Answer Types Questions

Q.1 What is reproduction ?

Q.2 How is an embryo produced ?

Q.3 Which cells are produced by testes ?

Q.4 What is a zygote ?

Q.5 Name the two oviparous and viviparous animals

Q.6 Name the two common methods of reproduction.

Q.7 Which type of reproduction involves only one parents.

Q.8 Name the process of fusion of two gametes.

Q.9 What is the another term of a fertilised egg ?

Q.10 What are the female gametes in humans called ?

B. Short Answer Types Questions

Q.11 What are the parts of a male reproductive system ?

Q.12 Define metamorphosis.

Q.13 How does a sperm differ from an ovum ?

Q.14 What is placenta and what is its importance ?

Q.15 How is zygote formed ?

Q.16 How does human foetus derive its nutrition ?

C. Long Answer Types Questions

Q.17 Explain the female reproductive system with a neat labeled diagram.

Q.18 How is internal fertilization different from external fertilization ?

Q.19 Explain the following terms :

a- Fertilisation

b- Ovaries

c- Zygote

Q.20 Explain binary fission in amoeba

Q.21 Explain the life cycle of a frog

Q.22 Explain the process of fertilization in human beings.

Q.23 How do the sperms travel from testes to the egg cell ?