Class 8 Science Chapter 9 Important Questions

Class 8 Science Chapter 9 Important Questions Set – 1

Write something about the “modes of reproduction”.

There are many different ways in which new organisms are produced from their parents. Some organisms like Amoeba just splits into two parts to produce new Amoebae. Some organisms like birds and snakes hatch out of the eggs laid by their parents whereas some organisms like human babies kittens and puppies are born from their mother.
This means that each species of organisms reproduces in a different way. All the different ways of reproduction can be divided into two main groups: (i) asexual reproduction and (ii) sexual reproduction.

Write down the male reproductive organs found in human beings.

The human male reproductive system consists of the following organs: Testes, Scrotal sacs, Epidermis, Sperm ducts, Seminal vesicles and Penis.

Write down the female reproductive organs found in human beings.

The human female reproductive system consists of the following organs: Ovaries, Oviducts, Uterus and Vagina.

What do you mean by “sexual reproduction and asexual reproduction”?

The production of a new organism from a single parent without the involvement of sex

cells or gametes, is called asexual reproduction. It is called asexual reproduction because it does not use special cells called “sex” cells or “gametes” for producing a new organism. Some of the examples of asexual reproduction are: binary fission in Amoeba and budding in hydra.
The production of new organism from two parents by making use of their sex cells or gametes, is called sexual reproduction. In sexual reproduction, the sex cell of one parent fuses with the sex cells of the other parent to form a new cell called “zygote”. This zygote then grows and develops to form a new organism. Thus, in sexual reproduction to parents are needed to produce a new organism. The humans, fish, frogs, cats, dogs, all produced by the method of sexual reproduction.

Why reproduction is important for the organisms?

Reproduction is one of the important characteristics of living things. The ability of organism to produce young ones of its own kind is called reproduction. In fact, every living organism remains alive on this earth for a limited period of time and then die. So new organisms have to be produced in place of those who die. Reproduction is essential for:

- i) the continuation of species
- ii) addition of new species
- iii) replacement of dead organisms
- iv) transfer of variations from one generation to another.
- Imagine what would have happened if organisms had not reproduced. You will realise that reproduction is very important.

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What do you mean by "sperm cell" of male human beings?

The sperms are extremely small cells and we need a microscope to see them. A sperm is about 0.05 millimetre long. A sperm has a head, a middle piece and a tail. A sperm is a single cell with all the usual cell components like nucleus, cytoplasm and cell membrane. The nucleus of sperm cell is tightly packed on its head. The sperm cell has very little cytoplasm. The purpose of tail of sperm is to make it move.

What do you mean by "eggs cell" of female human beings?

The eggs or ova are also very small and we need a microscope to see them. Eggs or ova are much larger than the sperms. The human egg or ovum is round and about 0.15 millimetre in diameter. The egg or ovum is also a single cell having a nucleus, cytoplasm and cell membrane. Outside the cell membrane, an egg or ovum has a thin layer of jelly called "Jelly Coat" which allows only one sperm to enter into it during fertilization.

Describe the process of fertilization in human beings.

The first step in the process of reproduction is the fusion of a sperm and an ovum. When sperms come in contact with an egg, one of the sperms may fuse with the egg. Such fusion of the egg and the sperm is called fertilization. During fertilization, the nuclei of the sperm and the egg fuse to form a single nucleus. In the other words, the fusion of male gamete or sperm with the female gamete or egg gives rise to a new cell called "zygote". The zygote begins to develop into an embryo which attaches to a female uterus wall. The embryo further multiples into many cells and develop further into a small baby called foetus. Remember, the process of fertilization is the meeting of an egg cell from the mother and a sperm cell from the father. So, the new individual inherits some characteristics from the

mother and some from the father.
Fertilization which takes place inside the female body is called internal fertilization.
Internal fertilization occurs in many animals including humans, cows, dogs and hens.

A girl of class 8 wants to know about IVF or In Vitro Fertilization. Would you help her?

There are few circumstances where in some women oviducts are blocked. These women are unable to bear babies because sperms cannot reach the egg for fertilization. In such cases, doctors collect freshly released egg and sperms and keep them together for a few hours for IVF or in vitro fertilization (fertilization outside the body). In case fertilization occurs, the zygote is allowed to develop for about a week and then it is placed in the mother's uterus. Complete development takes place in the uterus and the baby is born like any other baby. Babies born through this technique are called test-tube babies. This term is actually misleading because babies cannot grow in test tubes.

Discuss with examples of "external fertilization" in aquatic animals.

During spring or rainy season, frogs and toads move to ponds and slow- flowing streams. When the male and female come together in water, the female lays hundreds of eggs. Unlike hen's egg, frog's egg is not covered by a shell and it is comparatively very delicate. A layer of jelly holds the eggs together and provides protection to the eggs. As the eggs are laid, the male deposits sperms over them. Each sperm swims randomly in water with the help of its long tail. The sperms come in contact with the eggs. This results in fertilization. This type of fertilization in which the fusion of a male and a female gamete takes place outside the body of the female is called external fertilization. It is very common in aquatic animals such as fish, starfish, etc.

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Why do fish and frogs lay eggs in hundreds at a time?

Though these animals lay hundreds of eggs and release millions of sperms, all the eggs do not get fertilized and develop into new individuals. This is because the eggs and sperms get exposed to water movement, wind and rainfall. Also, there are other animals in the pond which may feed on eggs. Thus, production of large number of eggs and sperms is necessary to ensure fertilization of at least a few of them.

The process of reproduction in human take place in two steps. Discuss the second one.

The process of reproduction in human take place in two steps as:
i)Fertilization and
ii)Development of embryo.
Development of Embryo: Fertilization results in the formation of zygote which begins to develop into an embryo. The zygote divides repeatedly to give rise to a ball of cells. The cells then begin to form groups that develop into different tissues and organs of the body. This developing structure is termed an embryo. The embryo gets embedded in the wall of the uterus for further development.
The embryo continues to develop in the uterus. It gradually develops the body parts such as hands, legs, head, eyes, ears, etc. The stage of the embryo in which all the body parts can be identified is called a foetus. When the development of the foetus is complete, the mother gives birth to the baby.

Internal fertilization take place in hen also, but a hen does not give birth to chicks as human beings do. Why?

There are many different ways in which new organisms are produced from their parents. Remember, internal fertilization take place in hen also but after fertilization, the zygote divides repeatedly and travels down the oviduct. As it travels down, many protective layers are formed around it. The hard shell that you see in a hen's egg is one such protective layer. After the hard shell is formed around the developing embryo, the hen finally lays the egg.
The embryo takes about 3 weeks or 21 days to develop into a complete chick. The hen then sits on the eggs to provide sufficient warmth to the eggs for the development of the embryo into the chicks. And after the chick is completely developed, the egg shell breaks open automatically and the chick comes out of it.

What do you mean by "Viviparous animals and Oviparous animals"?

Some animals give birth to young ones. Those animals which give birth to young ones or baby animals are called viviparous animals. In viviparous animals, the young one develops in the uterus inside the body of the mother or female parent. When the young one is fully developed, then the mother gives birth due to which the alive young one or baby animals.
Some animals lay eggs which later on develop into young ones. Those animals which lay eggs from which young ones or baby animals, are hatched later on, are called oviparous animals. In oviparous animals, the mother or female parent lay eggs outside its body. The young one of the animals develops inside the egg. When the development of the young one inside the egg is complete, the egg shell breaks open and an alive young one or baby animal comes out of it.

How does metamorphosis occur in frog?

The process of transformation from an immature form of an animal like "larva" to its adult form in two or more distinct stages, is called metamorphosis. Metamorphosis occurs in amphibians (like frog) and insects (such as silk moth, butterfly, housefly and mosquito etc).
The hatching of a fertilized egg of frog produces a very immature young one called tadpole. The tadpole or larva of frog develops gradually and undergoes many drastic changes in appearance before it forms an adult frog. The tadpole looks very different from the adult frog. They transform into adults capable of jumping and swimming. The transformation of the larva into an adult through drastic changes is called metamorphosis.

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Discuss the asexual reproduction by hydra.

In each hydra, there may be one or more bulges. These bulges are the developing new individuals and they are called buds. Recall the presence of buds in yeast. In hydra too the new individuals develop as outgrowths from a single parent. This type of reproduction in which only a single parent is involved is called asexual reproduction. Since new individuals develop from the buds in hydra, this type of asexual reproduction is called budding.

What do you mean by cloning?

Cloning is the production of an exact copy of an animal by means of asexual reproduction. Any two animals which contain exactly the same genes are called “genetically identical”. An animal which is genetically identical to its parent is called a clone. A clone is an exact copy of its parent.

When did the first-time cloning done in the world?

Cloning of an animal was successfully performed for the first time by Ian Wilmut and his colleagues at the Roslin Institute in Edinburgh, Scotland. They cloned successfully a sheep named Dolly. Dolly was born on 5th July 1996 and was the first mammal to be cloned.

Discuss the method of reproduction by “Amoeba”.

Binary fission is an asexual method of reproduction in organisms. In binary fission, the parent organism splits or divides to form two new organisms. When this happens, the parent organisms cease to exist and two new organisms come into existence. The unicellular organisms or unicellular animal called “Amoeba” reproduces by the method of binary fission.
Amoeba is a single-celled organism. It begins the process of reproduction by the division of its nucleus into two nuclei. This is followed by division of its body into two, each part receiving a nucleus. Finally, two amoebae are produced from one parent amoeba. This type of asexual reproduction in which an animal reproduces by dividing into two individuals is called binary fission.

According to this chapter, can you write the cloning process of “Dolly Sheep”?
The Dolly Sheep was cloned in the following way:

- i) During the process of cloning Dolly, a cell was collected from the mammary gland of a female Finn Dorsett sheep.
- ii) Simultaneously, an egg was obtained from a Scottish blackface ewe. The nucleus was removed from the egg.

- iii) Then, the nucleus of the mammary gland cell from the Finn Dorsett sheep was inserted into the egg of the Scottish blackface ewe whose nucleus had been removed.
- iv) The egg thus produced was implanted into the Scottish blackface ewe.

After 148 days, this pregnant Scottish Blackface sheep give birth to Dolly Sheep. Though Dolly Sheep was given birth by a "Scottish Blackface sheep", it was found to be exactly identical to the original Finn Dorsett sheep from whose cell "nucleus" was taken. So, Dolly was a clone of Finn Dorsett sheep from whose cell "nucleus" was used in developing it.

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Mother gives birth to a baby but the baby has characters of both parents. How is this possible?

Although, mother gives birth to a baby but the baby is formed from the fertilization of male and female gamete that comes from the father and mother, respectively. The nuclei of both the parent gametes fuses to form a zygote with new character combinations from both parents.
Hence, the zygote formed from fertilization have characters of both the parents. This zygote develops inside the female body (uterus) and finally takes birth as baby.

The eggs of frogs do not have shells for protection, yet they are safe in the water. How?

Frog's eggs are without any external covering or shell but a layer of jelly hold the eggs together, thus providing them protection.
This jelly or gelatinous covering also protects them from drying up and prevents them from being eaten up by other animals or predators.

An organism has both male and female reproductive organs. Is it possible? If yes, name such organism.

Yes, there are organisms that have both male and female reproductive organs in the same body e.g., earthworm, leech.

How can we say that fish exhibits external fertilization?

Fishes are oviparous organisms. This means that they do not give birth to young fishes, instead, they lay eggs which further develop into young fishes.
The eggs that they lay are unfertilized. The female fishes lay eggs and the male fishes produce sperms. Both these gametes float in water. When a sperm comes in contact with the eggs, there is a fusion of nuclei between the two. Hence fertilization occurs. As this fertilization takes place outside the body of the organism, it is called external fertilization.

The term metamorphosis is not used while describing human development. Why?

The term “metamorphosis” is not used while describing human development because in human beings’ body parts of an adult are present from the time of birth itself, i.e., while beginning of life as a baby and until you are an adult, the basic plan of body does not change.

On the contrary, in metamorphosis, the parts of the adult are different from those at the time of birth.