NCERT SOLUTIONS

CLASS - 10th

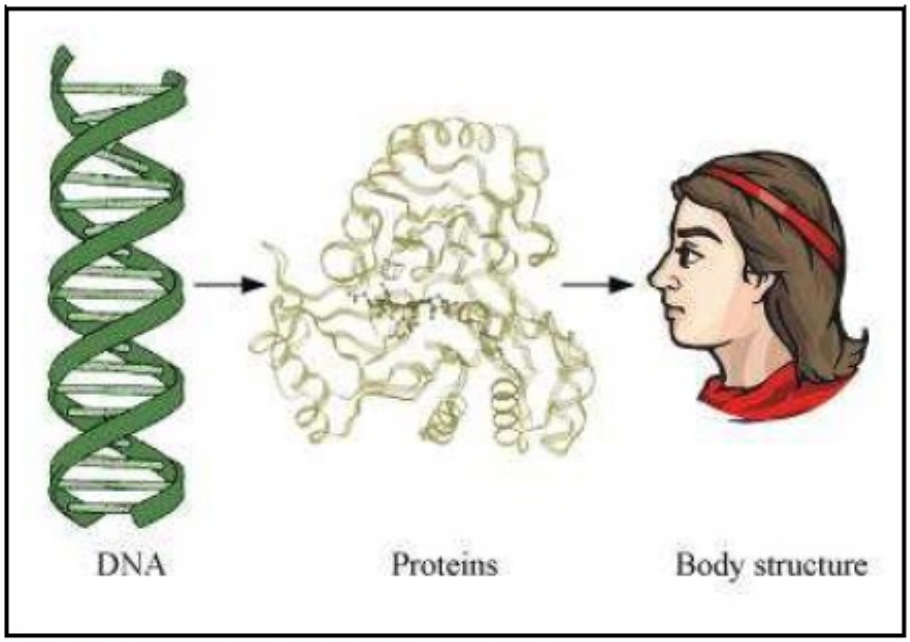


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Class : 10th
Subject : Science
Chapter : 8
Chapter Name : How Do Organisms Reproduce?

Q1 What is the importance of DNA copying in reproduction?

Answer. DNA (Deoxyribonucleic acid) is the genetic material found in the chromosomes, which are present in the nucleus of a cell. The DNA is the information site for making proteins and each specific type of protein leads to a specific type of body design.
Thus, it is the DNA molecule that determines the body design of an individual. Therefore, it can be concluded that it is the DNA that gets transferred from parents to offsprings and makes them look similar.



DNA determines body structure

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Q2 Why is variation beneficial to the species but not necessarily for the individual?

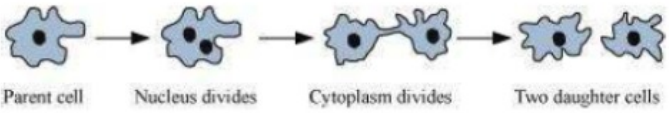
Answer. Variations are beneficial to the species than individual because sometimes for a species, the environmental conditions change so drastically that their survival becomes difficult. For example, if the temperature of water increases suddenly, then most of the bacteria living in that water would die. Only few variants that are resistant to heat would be able to survive. However, if these variants were not there, then the entire species of bacteria would have been destroyed. Thus, these variants help in the survival of the species. However,

all variations are not necessarily beneficial for the individual organisms.

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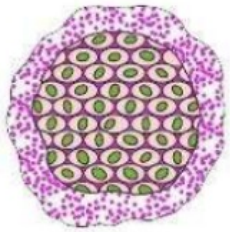
Q1 How does binary fission differ from multiple fission?

Answer. In binary fission, a single cell divides into two equal halves. Amoeba and Bacteria divide by binary fission.



Binary fission in *Amoeba*

In multiple fission, a single cell divides into many daughter cells simultaneously. *Amoeba* and *Plasmodium* divide by multiple fission.



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Q2 How will an organism be benefited if it reproduces through spores?

Answer. There are many advantages, if an organism reproduces through spores.
Advantages of spore formation:
Large numbers of spores are produced in one sporangium.
Spores are distributed easily by air to far-off places to avoid competition at one place.
Spores are covered by thick walls to prevent dehydration under unfavourable conditions.

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Q3 Can you think of reasons why more complex organisms cannot give rise to new individuals through regeneration?

Answer. Simple organisms such as Hydra and Planaria are capable of producing new individuals through the process of regeneration. The process of regeneration involves the formation of new organisms from its body parts. Simple organisms can utilize this method of reproduction as their entire body is made of similar kind of cells in which any part of their body can be formed by growth and development. However, complex organisms have organ-system level of organization. All the organ systems of their body work together as an interconnected unit. They can regenerate their
lost body parts such as skin, muscles, blood, etc. However, they cannot give rise to new individuals through regeneration.

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Q4 Why is vegetative propagation practised for growing some types of plants?

Answer. Vegetative propagation method is used for growing certain plants which do not produce viable seeds. It is also used for growing of plants bearing superior traits, because they produce genetically identical plants. It is also used for growing plants which require longer time to grow and become mature. Plant which require lot of care during early stages of development are also grown by this method.

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Q5 Why is DNA copying an essential part of the process of reproduction?

Answer. DNA (Deoxyribonucleic acid) copying is an essential part of reproduction as it passes genetic information from parents to offspring. It determines the body design of an individual. The reproducing cells produce a copy of their DNA through some chemical reactions and result in two copies of DNA. The copying of DNA always takes place along with the creation of additional cellular structure. This process is then followed by division of a cell to form two cells.

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Q1 How is the process of pollination different from fertilisation?

Answer. Pollination is the process of transfer of pollens from another to stigma. It occurs with the help of certain pollinators such as air, water, birds, or some insects. Fertilization, on the other hand, is the fusion of the male and female gametes. It occurs inside the ovule and leads to the formation of zygote.

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Q2 What is the role of the seminal vesicles and the prostate gland?

Answer. The secretions from seminal vesicles and prostate glands lubricate the sperms and provide a fluid medium for easy transport of sperms. Their secretion also provides nutrient in the form of fructose, calcium, and some enzymes.

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Q3 What are the changes seen in girls at the time of puberty?

Answer. Secondary sexual characteristics in girls:
• Increase in breast size and darkening of skin of the nipples present at the tips of the breasts.

Appearance of hair in the genital area. Appearance of hair in other areas of skin like underarms, face, hands, and legs.
• Increase in the size of uterus and ovary.
Beginning of menstrual cycle.
• More secretion of oil from the skin, which results in the appearance of pimples.

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Q4 How does the embryo get nourishment inside the mother’s body?

Answer. The embryo develops inside the mother's body for about nine months. Inside the uterus, the outer tissue surrounding the embryo develops finger-like projections called villi. These villi are
surrounded by uterine tissue and maternal blood. They provide a large surface area for exchange of oxygen and nutrients. Also, there is a special tissue called placenta, which is embedded in the uterine wall. The embryo receives the oxygen and nutrients from the mother's blood via the placenta. The waste materials produced by the embryo are also removed through the placenta.

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Q5 If a woman is using a copper -T, will it help in protecting her from sexually transmitted diseases?

Answer. No. Using a copper-T will not provide a protection from sexually transmitted diseases, as it does not prevent the entry of semen. It only prevents the implantation of the embryo in the uterus.

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Q1 Asexual reproduction takes place through budding in
(a) amoeba.
(b) yeast.
(c) plasmodium.
(d) leishmania.

Answer. (b) Asexual reproduction takes place through budding in yeast.

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Q2 Which of the following is not a part of the female reproductive system in human beings?
(a) Ovary
(b) Uterus
(c) Vas deferens
(d) Fallopian tube

Answer. (c) Vas deferens is not a part of the female reproductive system in human beings.

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Q3 The anther contains
(a) sepals.
(b) ovules.
(c) pistil.
(d) pollen grains.

Answer. (d) The anther contains pollen grains.

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Q4 What are the advantages of sexual reproduction over asexual reproduction?

Answer. Advantages of sexual reproduction:
• In sexual reproduction, more variations are produced. Thus, it ensures survival of species in a population.
• The new formed individual has characteristics of both the parents.
Variations are more viable in sexual mode than in asexual one. This is because in asexual reproduction, DNA has to function inside the inherited cellular apparatus.

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Q5 What are the functions performed by the testis in human beings?

Answer. The testes are the male reproductive organs that are located outside the abdominal cavity within a pouch called scrotum.
Functions of testes:
• Produce sperms
• Produce a hormone called testosterone, which brings about secondary sexual characters in

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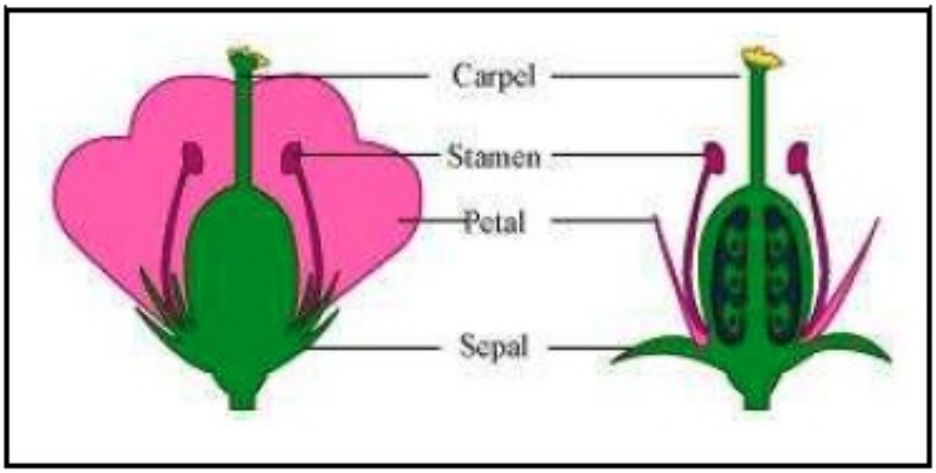
Q6 Why does menstruation occur?

Answer. Menstruation is a process in which blood and mucous flows out every month through the vagina. This process occurs every month because one egg is released from the ovary every month and at the same time, the uterus (womb) prepares itself to receive the fertilized egg. Thus, the inner lining of the uterus gets thickened and is supplied with blood to nourish the embryo. If the egg does not get fertilised, then the lining of the uterus breaks down slowly and gets released in the form of blood and mucous from the vagina.

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Q7 Draw a labelled diagram of the longitudinal section of a flower.

Answer.



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Q8 What are the different methods of contraception?

Answer. The contraceptive methods can be broadly divided into the following types:
• Natural method— It involves avoiding the chances of meeting of sperms and ovum. In this method, the sexual act is avoided from day 10th to 17th of the menstrual cycle because during this period, ovulation is expected and therefore, the chances of fertilization are very high.
• Barrier method In this method, the fertilization of ovum and sperm is prevented with the help of barriers. Barriers are available for both males and females. Condoms are barriers made of thin rubber that are used to cover penis in males and vagina in females.
• Oral contraceptives In this method, tablets or drugs are taken orally. These contain small doses of hormones that prevent the release of eggs and thus fertilization cannot occur.
• Implants and surgical methods Contraceptive devices such as the loop or Copper-T are placed in uterus to prevent pregnancy.
Some surgical methods can also be used to block the gamete transfer. It includes the blocking of vas deferens to prevent the transfer of sperms known as vasectomy. Similarly, fallopian tubes of the female can be blocked so that the egg will not reach the uterus known as tubectomy.

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Q9 How are the modes for reproduction different in unicellular and multicellular organisms?

Answer. In unicellular organisms, reproduction occurs by the division of the entire cell. The modes of reproduction in unicellular organisms can be fission, budding, etc. whereas in multicellular organisms, specialised reproductive organs are present. Therefore, they can

reproduce by complex reproductive methods such as vegetative propagation, spore formation, etc. In more complex multicellular organisms such as human beings and plants, the mode of reproduction is sexual reproduction.

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Q10 How does reproduction help in providing stability to populations of species?

Answer. Living organisms reproduce for the continuation of a particular species. It helps in providing stability to the population of species by producing a new individual that resembles the parents. This is the reason why cats give birth to only cats or dogs give birth to only dogs. Therefore, reproduction provides stability to populations of dogs or cats or any other species.

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Q11 What could be the reasons for adopting contraceptive methods?

Answer. Contraceptive methods are mainly adopted because of the following reasons:
(i) To prevent unwanted pregnancies.
(ii) To control population rise or birth rate.
(iii) To prevent the transfer of sexually transmitted diseases.

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