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NCERT Solutions for Class 10 Science Chapter 8 How Do Organisms Reproduce?

Reproduction: Reproduction in animals and plants (asexual) and (sexual) reproductive health - need and methods of family planning. Safe sex vs HIV/ AIDS. Child bearing and women’s health.

Formulae Handbook for Class 10 Maths and Science

Page 128

Question 1. What is the importance of DNA copying in reproduction?
Answer: DNA copying in reproduction is important for maintenance of body designs and features. Moreover, DNA copying leads to variations. Variation is useful for the survival of species.

Question 2. Why is variation beneficial to the species but not necessarily for the individual?
Answer: Population of organisms reside in well-defined places or niches in the ecosystem. However, niches can change because of reasons beyond the control of the organisms, e.g., temperature changes, water level changes, etc. If population of reproducing organisms suited to particular niche and if the niche is drastically altered, the population can be wiped out. However, if some variations are present in a few individuals in these populations, there will be chances for their survival. The surviving individual can further reproduce and develop a population according to the changed niche, Thus, variation is beneficial to the species but not necessarily for the individual.

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Question 1. How does binary fission differ from multiple fission?
Answer: When two new daughter cells are formed as a result of fission. It is called binary fission, e.g., Amoeba. When many daughter cells are formed as a result of fission, this is called multiple fission, e.g., Malarial parasite.

Question 2. How will an organism be benefited if it reproduces through spores?
Answer: Spore formation is an asexual mode of reproduction. Spores formed are covered by thick walls that protect them from adverse conditions. During favourable condition thick resistant wall breaks down and new organism grows from it. Spores are very light weight and they easily get dispersed through winds which give them more variations and thus better chances of survival.

Question 3. Can you think of reasons why more complex organisms cannot give rise to new individuals through regeneration?
Answer: Complex organisms are not simply a random collection of cells where specialized cells are organised as tissues, and tissues are organised into organs which then have to be placed at definite positions in the body. In such a carefully organised situation, it is not easy to develop organism through regeneration.

Question 4. Why is vegetative propagation practised for growing some type of plants?
Answer: Vegetative propagation makes possible for the propagation of plants such as banana, orange, rose and jasmine that have lost the capacity to produce seeds. Moreover, all plants produced through vegetative propagation are genetically similar to the parent plant.

Question 5. Why is DNA copying an essential part of the process of reproduction?
Answer: The process of reproduction results in the production of offspring which resemble to their parents. This means during the reproduction there must be a transfer of the blueprint of the body design from parent to the offsprings. As we know DNA contains all the information that passes from parents to the next generation, so before reproduction, DNA is copied in the parent cell. Out of these two copies, one copy is passed to the newly formed individual.

Page 140
Question 1. How is the process of pollination different from fertilization?
Answer: Pollination is the transfer of pollen grains from the anther to the stigma of a flower whereas fertilization is the fusion of male gamete with female gamete (egg).

Question 2. What is the role of the seminal vesicles and the prostate gland?
Answer: Seminal vesicles and the prostate gland add their secretions so that the sperms are in a fluid (semen) which makes their transport easier and this fluid also provides nutrition.

Question 3. What are the changes seen in girls at the time of puberty?
Answer: Changes seen in girls at the time of puberty are:
1. Breast size begins to increase.
2. Girls begin to menstruate.
3. Growth of pubic hair.
4. Skin becomes oily.

**Question 4. How does the embryo get nourishment inside the Mother's body?**
**Answer:** Embryo gets nutrition from mother's blood with the help of a special tissue called placenta. Through placenta, glucose and oxygen pass from mother to the embryo. Moreover, waste substance of embryo are removed through placenta into the mother's blood.

**Question 5. If a woman is using a copper-T will it help in protecting her from sexually transmitted diseases?**
**Answer:** No, copper-T will not protect her from sexually transmitted diseases. Only barrier methods protect from sexually transmitted diseases.

**Page 141**
**Question 1.** Asexual reproduction takes place through budding in :
(a) Amoeba
(b) Yeast
(c) Plasmodium
(d) Leishmania.
**Answer:** (b) Yeast.

**Question 2.** 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.

**Question 3.** The anther contains:
(a) Sepals
(b) Ovules
(c) Carpel
(d) Pollen grains.
**Answer:** (d) Pollen grains

**Question 4.** What are the advantages of sexual reproduction over asexual reproduction?
**Answer:** Sexual reproduction leads to new combination of genes as it involves two parents and meiosis. This produces variation in offspring. Variations are the basis for evolution.

**Question 5.** What are the functions performed by the testes in human beings?
**Answer:** Functions of testes are:
(i) Testes produce sperms.
(ii) Testosterone (male sex hormone) is also produced by testes.

**Question 6.** Why does menstruation occur?
**Answer:** If the egg is not fertilized and uterus does not get zygote, the developed lining slowly breaks and menstruation occur.
Question 8. What are the different methods of contraception?
Answer: There are three main methods of contraception:

1. Barrier methods,
2. Chemical methods, and
3. Surgical methods.

1. **Barrier methods**: In barrier methods, physical devices such as condom, diaphragm and cervical caps are used. They prevent the entry of sperms in the female genital tract during copulation.

2. **Chemical methods**: The chemical methods make use of specific drugs by females. There are two types of such drugs, Oral pills and vaginal pills. Oral pills are mainly hormonal preparation, and are called oral contraceptives (OCS).

3. **Surgical methods**: In the surgical methods, a small portion of vas deferens in male, and the fallopian tube in female, in surgically removed or ligated (tied). It is called *vasectomy* in males and *tubectomy* in females.

Apart from these three methods the intrauterine contraceptive devices are used to prevent pregnancies. The use of Intra Uterine Contraceptive Devices (IUCDs) is also very effective and popular. A copper-T is placed safely inside the uterus by a practising doctor or a skilled nurse. IUCDs prevent implantation in the uterus.

Question 9. How are the modes for reproduction different in unicellular and multicellular organisms?
Answer: Unicellular organisms reproduce asexually whereas multicellular organisms reproduce mainly by sexual reproduction.

Question 10. How does reproduction help in providing stability to populations of species?
Answer: The rate of birth and death in a given population determine its stability. The rate of birth should be approximately equal to the rate of death. So, by checking birth rate, which is increasing at an alarming rate, stability to population of species can be provided.

Question 11. What could be the reasons for adopting contraceptive methods?
Answer: Frequent pregnancies have an adverse effect on the health of a woman. Frequent and unwanted pregnancies can be avoided by adopting contraceptive methods. Also, these methods check population growth by controlling child birth rate.

**Multiple Choice Questions (MCQs) [1 Mark each]**

**Question 1.**
Asexual reproduction takes place through budding in [NCERT]
(a) Amoeba
(b) Yeast
(c) Plasmodium
(d) Leishmania

**Answer:**
(b) Asexual reproduction in Hydra and yeast takes place by budding.
Question 2.
The ability of a cell to divide into several cells during reproduction in Plasmodium is called
[NCERT Exemplar]
(a) budding  
(b) reduction division  
(c) binary fission  
(d) multiple fission  
**Answer:**  
(d) Multiple fission Organisms divide into many daughter cells simultaneously, e.g. Plasmodium.

Question 3.
The anther contains [NCERT]
(a) sepals  
(b) ovules  
(c) carpels  
(d) pollen grains  
**Answer:**  
(d) Anther is the male reproductive part in plants. It contains pollen grains, having male germ cells.

Question 4.
Characters that are transmitted from parents to offspring during reproduction show [NCERT Exemplar]
(a) only similarities with parents  
(b) only variations with parents  
(c) both similarities and variations with parents  
(d) neither similarities nor variations  
**Answer:**  
(c) In sexual reproduction, the offsprings are not exactly identical to the parents or to one another. This is because the offsprings receive some genes from mother and some from father. Because of mixing of genes on re-establishment of the exact number of chromosomes as in the parents, the offsprings show both similarities and variations with their parents.

Question 5.
Which among the following diseases is not sexually transmitted? [NCERT Exemplar]
(a) Syphilis  
(b) Hepatitis  
(c) HIV-AIDS  
(d) Gonorrhoea  
**Answer:**  
(b) The diseases, which are spread by sexual contact with an infected person are called Sexually Transmitted Diseases or STDs, e.g. gonorrhoea, syphilis and AIDS. Hepatitis is a water borne viral disease which affects liver.

Question 6.
Which of the following is not a part of the female reproductive system in human beings? [NCERT]
(a) Ovary  
(b) Uterus
(c) Vas deferens
(d) Fallopian tube
**Answer:**
(c) Vas deferens is a part of male reproductive system in humans.

**Question 7.**
A feature of reproduction that is common to Amoeba, Spirogyra and yeast is that [NCERT Exemplar]
(a) they reproduce asexually
(b) they are all unicellular
(c) they reproduce only sexually
(d) they are all multicellular
**Answer:**
(a) Amoeba and yeast are unicellular while Spirogyra is multicellular. But, all the three reproduce asexually.

**Question 8.**
Which among the following statements are true for unisexual flowers? [NCERT Exemplar]
I. They possess both stamen and pistil.
II. They possess either stamen or pistil.
III. They exhibit cross-pollination.
IV. Unisexual flowers possessing only stamens cannot produce fruits.
(a) I and IV
(b) II, III and IV
(c) III and IV
(d) I, III and IV
**Answer:**
(b) The flowers which are unisexual (papaya, watermelon) contain either stamens or carpels. Since, only one reproductive organ is present in them, they depend on cross-pollination to form zygote after fertilisation. Both stamens and carpels are required for fertilisation, so only one of them cannot produce fruits.

**Question 9.**
Length of pollen tube depends on the distance between [NCERT Exemplar]
(a) pollen grain and upper surface of stigma.
(b) pollen grain on upper surface of stigma and ovule.
(c) pollen grain in anther and upper surface of stigma.
(d) upper surface of stigma and lower part of style.
**Answer:**
(b) Length of pollen tube depends on the distance between pollen grain on upper surface of stigma and ovule. A pollen grain falls on the stigma of the carpel, bursts open and develops a pollen tube downwards through the style towards the ovule in the ovary.

**Question 10.**
Which among the following statements are true for sexual reproduction in flowering plants? [NCERT Exemplar]
I. It requires two types of gametes.
II. Fertilisation is a compulsory event.
III. It always results in formation of zygote.
IV. Offsprings formed are clones.

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(a) I and IV  
(b) I and II  
(c) I, II and III  
(d) I, II and IV  
**Answer:** 
(c) Sexual reproduction creates variation in organisms, so, clones cannot be produced through it. Clones are identical copy of parent organism. Sexual reproduction needs two type of gametes, i.e. male and female to form zygote after fertilisation.

**Question 11.**  
Factors responsible for the rapid spread of bread mould on slices of bread are [NCERT Exemplar]  
I. large number of spores.  
II. availability of moisture and nutrients in bread.  
III. presence of tubular branched hyphae.  
IV. formation of round-shaped sporangia  
(a) I and III  
(b) II and IV  
(c) I and II  
(d) III and IV  
**Answer:** 
(c) Under favourable Conditions (like damp and warm conditions, availability of nutrients), the fungal spores present in the air, lands on food, germinate and produce new plants.

**Question 12.**  
During adolescence various changes occur in the body of humans. Mark one change associated with sexual maturation in males. [NCERT Exemplar]  
(a) Loss of milk teeth  
(b) Increase in body height  
(c) Cracking of voice  
(d) Weight gain  
**Answer:** 
(c) Hypertrophy of larynx results in low pitched, cracking voice in human males during adolescence.

**Question 13.**  
Observe the diagram given along side.  
![Diagram](image.png)  
What happens after the above stage?
(a) The ovary splits open
(b) Ovary develops into a fruit and ovules into seeds
(c) The ovules are dispersed
(d) Germination of seeds takes place

**Answer:**
(b) Ovary develops into a fruit and ovules into seeds as in the above given diagram fertilisation has already taken place.

**Question 14.**
What in your opinion could be the best reason to explain why menstruation is not taking place in a healthy woman?
(a) Early release of ovum
(b) Psychological reason
(c) Fertilisation of ovum
(d) Build up of female sex hormones in the blood stream

**Answer:**
(c) If a woman is not having her menstruation on time the probable reason from the given option is that fertilisation of ovum has taken place. Because, during gestation period of pregnancy, menstruation does not take place.

**Question 15.**
The correct sequence of reproductive stages seen in flowering plants is [NCERT Exemplar]
(a) gametes, zygote, embryo, seedling
(b) zygote, gametes, embryo, seedling
(c) seedling, embryo, zygote, gametes
(d) gametes, embryo, zygote, seedling

**Answer:**
(a) Correct sequence of reproductive stages in flowering plants is —> formation of gametes —> fusion of gametes to form zygote —> zygote develops into embryo in the ovary —> ovule develops a tough coat and converts into a seed.

**Question 16.**
Offsprings formed by asexual method of reproduction have greater similarity among themselves because [NCERT Exemplar]
I. asexual reproduction involves only one parent.
II. asexual reproduction does not involve gametes.
III. asexual reproduction occurs before sexual reproduction.
IV. asexual reproduction occurs after sexual reproduction.
(a) I and II
(b) I and III
(c) II and IV
(d) III and IV

**Answer:**
(a) Offsprings have greater similarity as only one parent is involved in asexual reproduction thus, no gametes are formed.

**Question 17.**
Two flowers are identified by a botanist with the following features that flower A is having only stamen and flower B is having both stamen and pistil. Which of the following statements is correct?
(a) Flower A will bear seeds and flower B cannot bear seeds after fertilisation.
(b) Flower A will produce pollen grains and flower B cannot produce pollen grains.
(c) Flower A cannot be fertilised and flower B can show fertilisation.
(d) Neither flower A and nor flower B can show self-pollination.

**Answer:**
Option (c) is correct. Since, flower A bears only stamen, i.e. male reproductive part so, it cannot get fertilised. And flower B bears both male and female reproductive parts, therefore it can get fertilised by pollination and can change into fruit.

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