Class 10 Science Chapter 7: How do Organisms Reproduce? - Notes, Important Questions and MCQs (2026-27)

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These Class 10 Science Chapter 7 PDF Notes explain How do Organisms Reproduce? in a clear, exam-ready way: DNA copying and variation, modes of asexual reproduction, sexual reproduction in flowering plants and humans, and reproductive health.

Board papers ask about binary and multiple fission, vegetative propagation, the parts of a flower, pollination versus fertilisation, and contraceptive methods. Diagrams of a flower's longitudinal section and the human reproductive systems are also important.

Use the table of contents below to jump to the part you need, or read top to bottom for a complete revision of the chapter.

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Chapter Overview

Reproduction is the process by which organisms produce new individuals of their own kind. It is not needed for an individual to survive, but it is essential for a species to continue.

The basic event is copying of DNA. Small changes in copying create variation, which helps species survive changes in the environment. The chapter then compares asexual reproduction (one parent) with sexual reproduction (two parents) in plants and humans.

Important Topics and Concepts

Do organisms create exact copies of themselves?

Reproduction involves making a copy of the DNA in the nucleus, along with additional cellular structures. DNA copying is never perfectly accurate, so slight variations arise. Variations that are useful can help a population survive when its environment (its niche) changes.

Fission

- Binary fission: one cell divides into two, e.g. Amoeba (any plane) and Leishmania (definite plane, because of its whip-like structure).
- Multiple fission: one cell divides into many daughter cells at once, e.g. Plasmodium (malaria parasite).

Fragmentation and regeneration

Fragmentation: a simple multicellular body breaks into pieces that each grow into a new organism, e.g. Spirogyra. Regeneration: specialised cells can grow a whole organism from a cut body part, e.g. Hydra and Planaria. Regeneration is different from reproduction because most organisms do not normally depend on being cut up.

Budding

A bud grows from a specific site due to repeated cell division, develops into a small individual and detaches when mature, e.g. Hydra and yeast.

Vegetative propagation

New plants grow from roots, stems or leaves. Natural examples: Bryophyllum leaf buds, potato eyes. Artificial methods: layering, grafting and cutting (sugarcane, rose, grapes, banana, orange). Advantages: plants bear flowers and fruits earlier than seed-grown ones, plants without seeds can be grown, and all plants are genetically similar to the parent.

Spore formation and tissue culture

Rhizopus (bread mould) forms sporangia that release spores with thick walls; spores grow into new individuals in moist conditions. Tissue culture grows new plants from a few cells of the growing tip in a culture medium, used for ornamental plants.

Sexual reproduction: why two parents?

Combining DNA from two individuals creates more variation. Germ cells (gametes) have half the DNA (made by reduction in chromosome number), so when two gametes fuse, the zygote gets the normal amount. The male gamete is usually small and motile; the female gamete is large and stores food.

Sexual reproduction in flowering plants

- Flower parts: sepals, petals, stamens (male; anther makes pollen) and pistil/carpel (female; stigma, style, ovary with ovules containing the egg).
- Unisexual flowers have either stamens or pistil (papaya, watermelon); bisexual flowers have both (hibiscus, mustard).
- Pollination: transfer of pollen from anther to stigma; self-pollination (same flower) or cross-pollination (another flower), aided by wind, water or animals.
- Fertilisation: the pollen grows a pollen tube through the style to the ovule, and the male germ cell fuses with the female germ cell to form a zygote.

- After fertilisation, the ovule becomes the seed (with the embryo) and the ovary becomes the fruit; petals, sepals, stamens, style and stigma usually fall off.
- Germination: the seed grows into a seedling under suitable conditions; parts include plumule, radicle and cotyledons.

Reproduction in human beings

- Puberty brings changes such as hair growth, voice changes in boys, breast development and menstruation in girls, driven by hormones.
- Male system: testes (in the scrotum, which keeps them at a lower temperature) make sperms and testosterone; sperms travel through the vas deferens and urethra, with secretions from the seminal vesicles and prostate gland.
- Female system: ovaries release one egg every month; it passes through the fallopian tube (oviduct), where fertilisation happens. The zygote implants in the thick, blood-rich lining of the uterus.
- The embryo gets nutrition from the mother through the placenta, a disc-like tissue with villi. Development takes about nine months.
- If the egg is not fertilised, the uterine lining breaks down and is shed as menstruation, which lasts about two to eight days every month.

Reproductive health

Sexually transmitted diseases include bacterial ones (gonorrhoea, syphilis) and viral ones (warts, HIV-AIDS). Contraception methods: mechanical barriers (condoms), hormonal pills, devices like the loop or copper-T placed in the uterus, and surgical methods (vasectomy and tubectomy). Prenatal sex determination is illegal in India; female foeticide has reduced the child sex ratio in some areas.

Asexual vs Sexual Reproduction

Feature	Asexual	Sexual
Parents	One	Two (usually)
Gametes	Not formed	Male and female gametes fuse
Variation	Very little	More variation
Speed	Fast; many offspring	Slower
Examples	Amoeba, Hydra, Bryophyllum, Rhizopus	Flowering plants, humans

Important Definitions and Terms

Term	Meaning
DNA	Deoxyribonucleic acid, the information source for making proteins and passing traits
Variation	Differences among individuals of a species
Binary fission	Division of a parent cell into two daughter cells
Multiple fission	Division of a parent cell into many daughter cells
Regeneration	Growth of a whole organism from a body part

Term	Meaning
Budding	Development of a new individual from an outgrowth (bud)
Vegetative propagation	Growing new plants from roots, stems or leaves
Gamete	A reproductive cell with half the normal chromosome number
Zygote	Cell formed by fusion of male and female gametes
Pollination	Transfer of pollen from anther to stigma
Fertilisation	Fusion of male and female gametes
Placenta	Tissue connecting the embryo to the mother’s uterine wall
Puberty	Period when sexual maturity begins
Contraception	Methods to prevent pregnancy

Short Answer Questions

Q1. What is the importance of DNA copying in reproduction?

DNA carries the information for making proteins and controlling traits. Copying it ensures that the new cell gets the instructions to function like the parent, while small copying changes create useful variation.

Q2. How is the process of pollination different from fertilisation?

Pollination is the transfer of pollen from the anther to the stigma. Fertilisation is the fusion of the male germ cell with the female germ cell inside the ovule, which happens after pollination.

Q3. Why is vegetative propagation practised for growing some plants?

It produces plants faster, gives flowers and fruits sooner, allows plants that do not produce viable seeds (banana, rose, orange) to be grown, and keeps all plants genetically similar to the parent.

Q4. Can you think of reasons why more complex organisms cannot give rise to new individuals through regeneration?

Complex organisms have highly specialised cells, tissues and organ systems. Their cells cannot easily form all the different types of cells and organs needed for a whole new body.

Q5. What is the role of the seminal vesicles and the prostate gland?

They add secretions to sperms, making their transport easier and providing nutrition.

Q6. What changes are seen in girls at puberty?

Breast size increases, hair grows in the armpits and genital area, the skin can become oily, and menstruation starts.

Q7. How does the embryo get nourishment inside the mother’s body?

Through the placenta, which has villi on the embryo’s side and blood spaces on the mother’s side. Glucose and oxygen pass from mother to embryo, and wastes pass back.

Q8. If a woman is using a copper-T, will it help protect her from sexually transmitted diseases?

No. Copper-T only prevents pregnancy. It does not stop the transfer of infections, which needs barrier methods like condoms.

Long Answer Questions

Q1. Describe sexual reproduction in flowering plants from pollination to seed formation.

A flower has stamens (male) and a pistil (female). The anther produces pollen grains; the ovary contains ovules, each with an egg cell.

Pollination: pollen is carried from the anther to the stigma by wind, water or animals (self- or cross-pollination).

The pollen grain grows a pollen tube through the style down to the ovule in the ovary. The male germ cell moves through the tube and fuses with the female germ cell: this is fertilisation, forming a zygote.

The zygote divides to form an embryo inside the ovule. The ovule develops a tough coat and becomes a seed; the ovary grows and ripens into a fruit. Other floral parts dry and fall off.

When conditions are right, the seed germinates to give a new plant.

Q2. Describe the human female reproductive system and what happens if the egg is not fertilised.

The female system has two ovaries, oviducts (fallopian tubes), the uterus and the vagina. Ovaries produce eggs and hormones such as oestrogen; one egg is released every month.

The egg travels down the oviduct, where it may meet sperm and be fertilised. The zygote then implants in the thick, spongy lining of the uterus and develops into an embryo, nourished through the placenta.

If the egg is not fertilised, it lives for about a day. The thickened uterine lining is no longer needed, so it breaks down and is shed through the vagina as blood and mucus. This is menstruation, which occurs roughly every month and lasts about two to eight days.

Q3. What are contraceptive methods? Explain their types and the importance of reproductive health.

Contraceptive methods prevent pregnancy and help in family planning.

Mechanical barriers such as condoms stop sperm from reaching the egg and also protect against sexually transmitted diseases.

Hormonal methods (oral pills) change the hormonal balance so eggs are not released; they may have side effects.

Devices such as the loop or copper-T placed in the uterus prevent pregnancy but may cause irritation.

Surgical methods: vasectomy (blocking the vas deferens in males) and tubectomy (blocking the fallopian tubes in females).

Good reproductive health means being aware of STDs, maintaining hygiene, spacing children and avoiding illegal sex-selective practices such as female foeticide.

MCQs with Answers

1. Multiple fission is seen in(a) Amoeba (b) Plasmodium (c) Hydra (d) SpirogyraAnswer: (b) Plasmodium

3. Rhizopus reproduces by(a) Budding (b) Spore formation (c) Fragmentation (d) Binary fissionAnswer: (b) Spore formation

4. The female reproductive part of a flower is the(a) Stamen (b) Anther (c) Pistil (d) SepalAnswer: (c) Pistil

5. After fertilisation, the ovary develops into the(a) Seed (b) Fruit (c) Embryo (d) FlowerAnswer: (b) Fruit

6. The site of fertilisation in human females is the(a) Uterus (b) Ovary (c) Oviduct (d) VaginaAnswer: (c) Oviduct

7. Which method protects against STDs?(a) Copper-T (b) Oral pills (c) Condom (d) TubectomyAnswer: (c) Condom

8. Regeneration is seen in(a) Planaria (b) Plasmodium (c) Yeast (d) RhizopusAnswer: (a) Planaria

9. Testes are located outside the abdominal cavity because(a) They need more blood (b) Sperm formation needs a lower temperature (c) They need more space (d) They need sunlightAnswer: (b) Sperm formation needs a lower temperature

10. Which of these is a unisexual flower?(a) Hibiscus (b) Mustard (c) Papaya (d) RoseAnswer: (c) Papaya

Quick Revision Points

- DNA copying is the basic event in reproduction; errors bring variation.
- Binary fission (Amoeba, Leishmania); multiple fission (Plasmodium).
- Fragmentation (Spirogyra); regeneration (Hydra, Planaria); budding (Hydra, yeast).
- Vegetative propagation: layering, grafting, cutting; Bryophyllum leaf buds.
- Pollination → fertilisation → zygote → seed (ovule) and fruit (ovary).
- Human fertilisation happens in the oviduct; placenta nourishes the embryo.
- Condoms also prevent STDs; copper-T and pills do not.

Chapter Summary

Reproduction keeps a species going. It rests on DNA copying, which is slightly imperfect and so creates variation that helps populations survive changing environments. Single-celled and simple organisms reproduce asexually by fission, fragmentation, regeneration, budding, spores and vegetative propagation.

Sexual reproduction mixes DNA from two parents through gametes. In flowering plants, pollination and fertilisation lead to seeds and fruits. In humans, puberty prepares the body, fertilisation occurs in the oviduct, and the embryo grows in the uterus with the help of the placenta. Responsible reproductive health includes knowledge of STDs and contraception.

Exam Tips and PYQ Pattern

- Longitudinal section of a flower and germination of pollen on stigma are frequent diagram questions.
- Know examples for each asexual method; MCQs often swap them.
- Expect 3- or 5-mark questions on the human reproductive systems or contraception.
- Case-based questions may ask about vegetative propagation or tissue culture in agriculture.

Frequently Asked Questions

Why is variation useful?

Variation helps some individuals survive if the environment changes, which keeps the species alive.

Is regeneration the same as reproduction?

No. Regeneration rebuilds an organism from a part, but most organisms do not depend on being cut to reproduce.

What is the role of the placenta?

It supplies food and oxygen from the mother to the embryo and removes wastes.

Conclusion

How do Organisms Reproduce? explains how life continues across generations. Learn each asexual method with an example, master the flower and human reproductive diagrams, and understand the difference between pollination and fertilisation to score well.

More Notes: Class 10 Science Chapter 6: Control and Coordination notes | Class 10 Science Chapter 8: Heredity notes | All Class 10 Science notes

Author Bio: Written and reviewed by the Nextoper Editorial Team, a group of CBSE science educators who build chapter notes directly from the NCERT textbook and past board paper patterns.

Freshness Note: These notes follow the NCERT Class 10 Science textbook (Reprint 2026-27) and the CBSE syllabus for the 2026-27 session. Last checked on 7 November 2026.