Class 10 Science · Chapter 7: How do Organisms Reproduce?

Answer key and marking scheme · 20 marks · about 40 minutes · based on NCERT

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1. A blood smear from a patient with malaria shows one parasite cell that has divided into many small daughter cells at the same time. This process is [1]

(a) binary fission
(b) multiple fission
(c) budding
(d) fragmentation

Answer: (b) The malarial parasite Plasmodium divides into many daughter cells simultaneously, which is multiple fission.

2. A student watches several Amoeba cells dividing on a slide and notes that the line along which each cell splits points a different way every time. This shows that in Amoeba [1]

(a) a small bud separates from the parent
(b) division always follows the whip-like structure at one end
(c) the cell splits into many daughter cells at once
(d) division can take place in any plane

Answer: (d) In Amoeba the splitting of the two cells during division can take place in any plane, so the line of splitting varies from cell to cell.

3. In a school laboratory a Planaria is cut into three pieces and kept in clean pond water. After some days the class would most likely find [1]

(a) three dead pieces
(b) three complete Planaria
(c) only the head piece alive
(d) one Planaria with three heads

Answer: (b) Planaria can be cut into any number of pieces and each piece grows into a complete organism; this is regeneration.

4. In a sample from a kala-azar patient, every dividing parasite is seen to split in the same fixed direction. The reason is that the parasite [1]

(a) divides by multiple fission
(b) has no nucleus, so it cannot divide in any other way
(c) has a whip-like structure at one end, and its fission occurs in a definite orientation to it
(d) forms a bud at one specific site

Answer: (c) Leishmania, which causes kala-azar, has a whip-like structure at one end, and its binary fission occurs in a definite orientation in relation to that structure.

5. In a plant laboratory, cells taken from the growing tip of a plant are placed in an artificial medium, where they divide rapidly. The undifferentiated mass they form is called a [1]

(a) callus
(b) sporangium
(c) bud
(d) zygote

Answer: (a) In tissue culture the cells from the growing tip divide rapidly in the artificial medium to form a callus.

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6. At a school health camp a doctor lists diseases that spread through sexual contact. Name one such disease caused by bacteria and one caused by a virus, and one method that reduces their spread. [2]

Bacterial: gonorrhoea or syphilis. Viral: warts or HIV-AIDS. Using a condom during sex helps prevent their transmission to some extent.

- one bacterial (gonorrhoea/syphilis) and one viral (warts/HIV-AIDS) (1)
- condom reduces transmission to some extent (1)

7. A litter of puppies looks very much like its parents. In which part of the cell is the information for this likeness stored, and in which molecule? [2]

The information is in the chromosomes in the nucleus of the cell, in the form of DNA (deoxyribonucleic acid) molecules.

- chromosomes in the nucleus (1)
- DNA, deoxyribonucleic acid (1)

8. Reproductive tissues in humans begin to mature only in adolescence, not in early childhood. Give the reason, and name the period in which this happens. [2]

While the body is growing towards adult size, its resources are directed mainly at that growth. As the rate of general body growth slows down, the reproductive tissues begin to mature. This period in adolescence is puberty.

- body resources go mainly to growth; maturation starts as growth slows (1)
- the period is puberty (1)

9. A farmer's watermelon vines carry unisexual flowers. (i) Can self-pollination within a single flower take place here? Give a reason. (ii) Name the kind of pollination these flowers need and two agents that can bring it about. (iii) What must happen after the pollen lands on the stigma for the male germ-cell to reach the ovary? [3]

(i) No: a unisexual flower has either stamens or a pistil, so no pollen can pass from stamen to stigma within the same flower. (ii) Cross-pollination, from one flower to another, by agents such as wind, water or animals (insects). (iii) A tube grows out of the pollen grain and travels through the style to reach the female germ-cell in the ovary.

- no; the flower has stamens or pistil only (1)
- cross-pollination with two agents (1)
- pollen tube grows through the style to the ovary (1)

10. Describe what happens from the moment a human egg is fertilised until the baby is born, under these heads: (i) the zygote, (ii) the uterus, (iii) birth. [3]

(i) The zygote divides to form a ball of cells, the embryo. (ii) The uterus has thickened its lining, richly supplied with blood; the embryo is implanted in this lining and grows, developing organs, into a foetus. (iii) Development takes about nine months, and the child is born by rhythmic contractions of the muscles of the uterus.

- zygote divides into a ball of cells, the embryo (1)
- implanted in the thick, blood-rich lining; grows into a foetus (1)
- about nine months; born by rhythmic contractions of uterine muscles (1)

11. A survey in a district finds that there are far fewer girls than boys among young children. (i) State the cause given in the chapter. (ii) What has the law done about it? (iii) How is surgery misused here? [3]

(i) Reckless female foeticide has made the child sex ratio decline in some sections of society; a healthy society needs the female-male ratio maintained. (ii) Prenatal sex determination has been prohibited by law. (iii) Surgery meant for removing unwanted pregnancies is misused for illegal sex-selective abortion of female foetuses.

- female foeticide lowers the child sex ratio (1)
- prenatal sex determination prohibited by law (1)
- surgery misused for sex-selective abortion of female foetuses (1)