INDIAN SCHOOL AL WADI AL KABIR

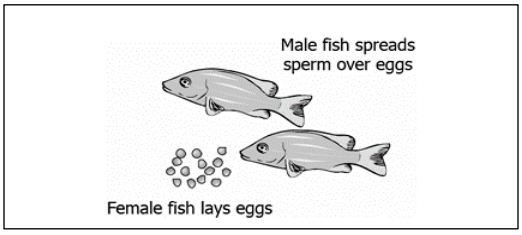
CLASS: VIII	DEPARTMENT: SCIENCE (2024 2025)	DATE: 18/11/2024
WORKSHEET NO.:10 WITH ANSWERS	**TOPIC: REPRODUCTION IN ANIMALS**	**NOTE:A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS: 1. How many mature eggs are typically released into the oviduct by a woman's ovary each month?

a) Five
b) One
c) Ten
d) Fourteen

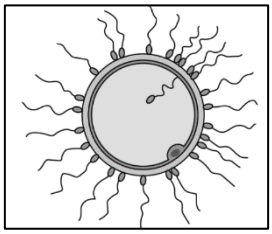
2. The image shows a mode of reproduction in fishes.
Based on the image, what is the mode of reproduction and the type of fertilization shown?

a) sexual reproduction and internal fertilisation
b) **sexual reproduction and external fertilisation**
c) asexual reproduction and internal fertilisation
d) asexual reproduction and external fertilisation



3. What is the difference between the sperm cells and ova of an animal?
a) **Sperm cells are male gametes while ova are female gametes**.
b) Sperm cells are female gametes while ova are male gametes.
c) Sperm cells are transferred from a female to the reproductive organs of a male.
d) Sperm cells are produced in females while both sperm cells and ova are produced in males.

4. A reproductive process is as shown. Which statement describes the process shown in the image?
a) Several ova penetrate the egg cell and fertilise it to form a zygote.
b) Several sperm penetrate the egg cell and fertilise it to form a zygote.
c) A single ovum penetrates the egg cell and fertilises it to form a zygote.
d) **A single sperm penetrates the egg cell and fertilises it to form a zygote**.



5. Internal fertilisation occurs:
a) In the female body
b) Outside female body

c) In the male body
d) Outside male body.

6. When the embryo can be identified with body parts, it is known as:
a) Zygote
b) Foetus
c) Infant
d) Egg

7. The organisms having both the male and female sex organs present in the same body are called:
a) Unisexuals
b) Multisexuals
c) Hermaphrodites
d) Asexuals

For the following questions, *two statements are given- one labelled Assertion (A) and the other labelled Reason (R).* ***Select the correct answer to these questions from the codes (i), (ii), (iii), and (iv) as given below.***

i) Both A and R are true and R is the correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion
iii) A is true but R is false.
iv) A is false but R is true.

8. Assertion(A): Hens and ducks are called Oviparous animals.

Reason(R): Oviparous animals lay eggs.

i) Both A and R are true and R is the correct explanation of the assertion.

9. Assertion(A): The fusion of sperm and ovum is called fertilisation.

Reason(R): Fertilisation occurs only in birds.

iii) A is true but R is false.

10. Assertion(A): Hydra produces young ones by the process of budding.

Reason(R): An amoeba reproduces by binary fission.

ii) Both A and R are true but R is not the correct explanation of the assertion

11. Assertion(A): The babies born through IVF technique are called test tube babies.

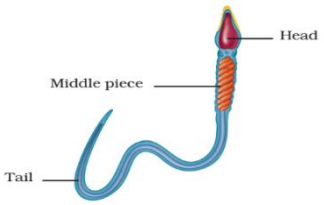
Reason(R): Fertilisation is done outside the uterus in a glass vessel by combining a female egg with a sperm.

i) Both A and R are true and R is the correct explanation of the assertion.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. a) What is metamorphosis? **(Hint: The transformation of the larva into an adult through drastic changes is called metamorphosis.)**

. b) Explain the structure of human sperm with a diagram.



- **Each sperm is a single cell.**
- **It has a head, a middle piece, and a tail.**
- **Its head has a nucleus containing chromosomes.**
- **Its tail helps it to move towards the egg for fertilisation**

2. a) What are gametes? **(Hint: Gametes are an organism's reproductive cells. They are also referred to as sex cells.**

b) Name the gametes produced in humans**. (Sperm-male gamete and ovum-female gamete)**

c)Why do only male gametes have a tail? **(Hint: Because sperm need to be motile to reach a non-motile egg in the ovary of a female for fertilisation.)**

3. Although 2 cells called gametes fuse, the product formed is a single cell called a zygote. Justify. **(Hint: During fertilisation only nuclei of the sperm and the egg fuse to form a zygote. Then sperm degenerates. The two gametes have 23 chromosomes each. So, when they fuse, they form a complete cell with 46 chromosomes with characteristics of both the parents).**

4. a) What are the various methods of asexual reproduction? **(Hint: Budding and binary fission)**

b) Two small organisms X and Y both reproduce by the method of budding. Organism X is industrially very important because it is used in making alcohol from sugar. It is also used in making bread. Organism Y is an aquatic organism with tentacles.

i)Identify organisms X and Y. **(Hint: X-Yeast and Y-Hydra)**

ii) Name the process by which X converts sugar into alcohol. **(Hint: Fermentation)**

iii) Out of X and Y which organism is multicellular and which one is unicellular? **(Hint: X – Unicellular Y- Multicellular)**

5. a)How is reproduction in hydra different from that in amoeba?

(Hint: Hydra reproduces by budding where a bud detaches from the parent and grows into a complete organism. Whereas amoeba reproduces by binary fission. The process of reproduction begins with the division of its nucleus into two. This is followed by the division of its body into two.)

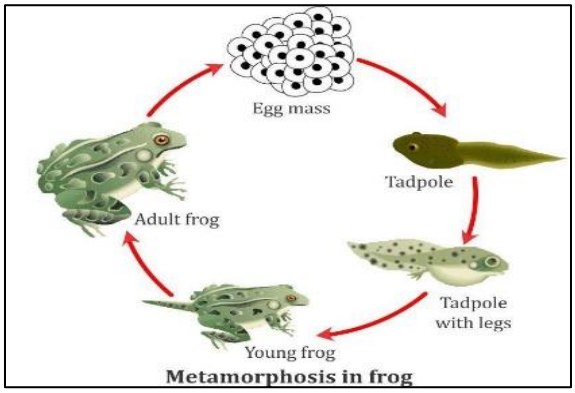
b)Though hens and frogs are oviparous, they have different fertilisation types. Justify.

[Hint: In hen, internal fertilisation takes place. The fertilised egg develops into an embryo inside the body. However, the development of a chick from the embryo takes place outside the body. On the other hand, frog shows external fertilisation. The female frog discharges many

eggs in the water and the male frog discharges sperm. The sperm swim to the eggs and fertilise them.]

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. Explain the life cycle of a frog with a diagram.



(Hint: The life cycle of a frog has three distinct stages:

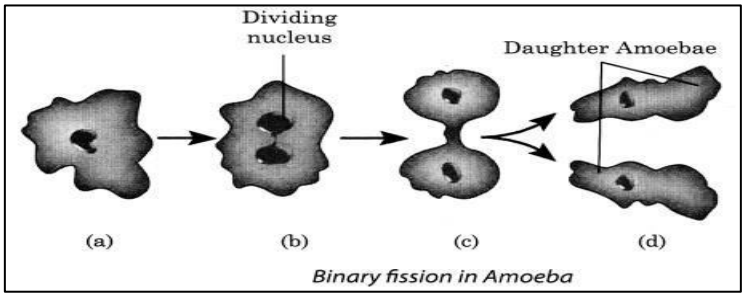
Eggs → Tadpole (larva) → Adult frog

Female frogs lay eggs. These eggs hatch into larvae known as tadpoles. The tadpoles are fish-like and have gills, a tail, and a small circular mouth. They can swim freely in the water. After a few weeks, tadpoles grow and undergo some abrupt changes in their structure through cell growth and development. As a result of such changes, the tadpoles are gradually transformed into frogs.)

2. Differentiate between external and internal fertilisation. **(Hint-Internal- the fusion of male and female gametes takes place inside the body, there are high chances of survival of offspring, fewer numbers of eggs are produced, Cows, Hens, Human beings, etc.**

   External-the fusion of male and female gametes takes place outside the body, there are low chances of survival of offspring, and large numbers of eggs are produced, Fish, Frog.)

3. Explain binary fission in amoeba with a neat labelled diagram.

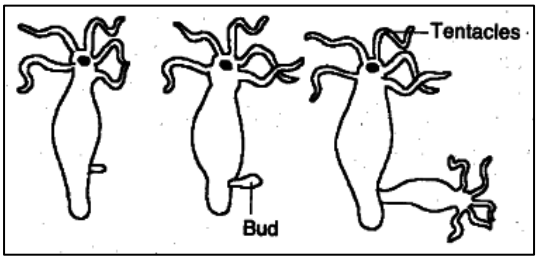


Binary fission: Amoeba is a single-celled organism. It begins the process of reproduction by the division of its nucleus into two nuclei. This is followed by the division of its body into two, each part receiving a nucleus. Finally, two amoebae are produced from one parent amoeba. This type of asexual reproduction in which an animal reproduces by dividing into two individuals is called binary fission.

4. What is the difference between sexual and asexual reproduction?

Sexual Reproduction	Asexual Reproduction
Two parents are involved.	A single parent is involved.
Gametes are formed.	Gametes are not formed.
Fertilisation takes place.	Fertilisation does not take place.
Examples: humans, frogs, birds, etc.	Examples: amoeba, hydra, sponge, etc.

5. With a neatly labelled diagram explain the mode of reproduction in hydra.



Budding: In each hydra, there may be one or more bulges. These bulges are the developing new individuals and they are called buds. In Hydra, 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.

6. Explain what happens after a hen lays a fertilised egg.

(Hint: After laying an egg, the hen sits on the egg to keep it warm. Development of the chick takes place inside the shell. It takes about 3 weeks for the embryo to develop into a chick. After its development is complete, the chick comes out by bursting open the eggshell.)

7. Why do frogs produce a large number of gametes? **(Hint-Frogs produce a large number of gametes because there are always chances of getting eaten by fish present in the water or getting washed out by wind currents and rainfall. In order to increase the chances of fertilisation, frogs lay a greater number of eggs.)**

8. Briefly explain cloning.

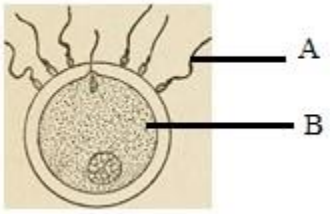
(Hint: Cloning is the production of an exact copy of an animal using asexual reproduction. The nucleus of a normal body cell of the animal is transferred into an empty egg cell. The newly formed egg cell is allowed to develop normally. An exact copy of the animal is produced.

9. Why is the young one of a frog called a tadpole and not a baby frog? **(Hint: - Because tadpole is the first stage of incomplete metamorphosis. This incomplete metamorphosis has only larval and adult stages and no pupal stages so the young one is called a larva and not a baby frog.)**

IV. LONG ANSWER TYPE QUESTIONS (5 M):

1. a) Briefly explain in-vitro fertilisation. **(Hint: It is a method in which the ovum collected from a female's body is allowed to fuse with sperm collected from a male's body in an external medium or outside the body of the female. The zygote so developed is allowed to grow in vitro (i.e. glass) for about a week and then implanted in the female's uterus where it further develops as a normal embryo. A baby born of this technique is often called a 'test tube baby'.)**

b) Observe the given figure and answer the questions that follow.



b.i) Label A and B- **Sperm and egg.**

b. ii) Identify the process- **fertilisation**

b.iii) What happens during the process and what is formed? **(Hint- the sperm nucleus fuses with the egg nucleus as a result of which a zygote is formed.)**

c)How would you distinguish between, a zygote, an embryo, and a foetus?

(Hint: Zygote- It is a single cell formed by the fusion of male and female gametes

Embryo- When a zygote divides repeatedly to form a ball of hundred cells. Thus, an unborn baby at an early stage of development in the uterus is called an embryo.

Foetus- An unborn baby in the uterus at the stage when all the body parts can be identified.)

d) Can the process of a child changing into an adult be called metamorphosis?

(Hint: No, the process of a child changing into an adult cannot be called metamorphosis because the basic body structure does not change.)

2) a) Why are not all animals oviparous? Does vivipary offer any advantage to organisms? **(Hint: -All animals are not oviparous because being viviparous offers certain advantages over oviparous animals. Oviparous animals are those animals that reproduce by laying eggs and viviparous animals are those animals which reproduce by giving birth directly to the baby. After laying eggs, the mother needs to take care of the egg like by hatching it and saving it**

from predators. But in the case of a viviparous baby develops inside the mother's womb and takes nutrients from the mother and she does not worry about predators either.)

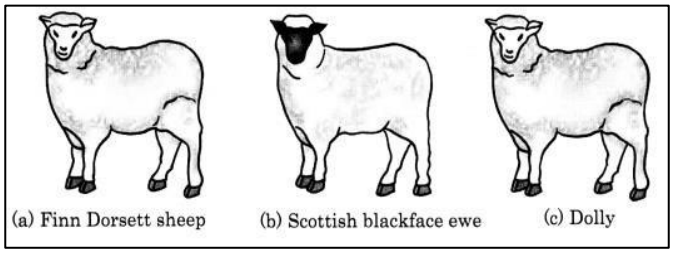
b) Why is it that dogs always produce several puppies whereas human beings usually produce only one child at a time? **(Hint: Dogs produce more than one egg at a time. Hence, more puppies are born to them at the same time. Whereas humans usually produce one egg at a time, hence produce only one child at a time)**

c)Under what circumstances can twins be born in humans? **(Hint: Twins are born when two eggs are produced and fertilised by two sperms or when a single zygote splits and forms two embryos)**

d) List the functions of the jelly cover around the frog's egg. **(Hint: There are lots of functions that the jelly in a frog's egg can provide. Firstly, it helps to keep the eggs together, or else they may float with water. Secondly, it acts as a protective covering so that the eggs do not die. Thirdly it protects the egg from any injury.)**

V. CASE STUDY- BASED QUESTIONS/ PASSAGE BASED QUESTIONS:

(a) Saima learned from her teacher that cloning is the production of an exact or a true copy of a cell, any other living part, or a complete organism by asexual reproduction. 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 the sheep named Dolly on July 5, 1996.



In the process of cloning Dolly, a cell was collected from the mammary gland of a female Finn Dorsett sheep. Meanwhile, an egg was obtained from a Scottish blackface ewe. The nucleus was removed from the egg. 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. This egg was implanted into the Scottish blackface ewe. The egg developed normally and finally, Dolly was born. The cloning of Dolly was a successful attempt. However, many clones often die soon after birth. Sometimes cloning also leads to certain abnormalities among clones. Unfortunately, Dolly died on 14th February 2003 due to a certain lung disease.

i)What is cloning? **(Hint: cloning is the production of an exact or a true copy of a cell, any other living part, or a complete organism by asexual reproduction.)**

ii)Name the first cloned animal**. (Hint: Dolly)**

iii)Who performed cloning for the first time? **(Hint: Ian Wilmut and colleagues)**
iv)State the disadvantage of cloning. **(Hint: Many clones often die soon after birth. Sometimes cloning also leads to certain abnormalities among clones.)**

(b) Animal A which is classified as an amphibian lays eggs in pond water. The hatching of its eggs produces a tailed form B which looks very different from animal A. The form B then undergoes a change C and then looks like the adult organism A
i) Identify animal A and form B. **(Hint: animal A -Frog and form B tadpole)**
ii) What is the change C known as and define C**. (Hint: Metamorphosis is the transformation of the larva into an adult through drastic changes)**

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