

QB365

Important Question - Reproduction in Organisms

12th Standard CBSE

Biology

Reg.No. :

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Time : 01:00:00 Hrs

Total Marks : 50

Section - A

- 1) Which of the following statements is true of yeast?? 1
 - (a) The cell divides by binary fission. One of them develops into a bud.
 - (b) The cell divides unequally. The smaller cell develops into a bud.
 - (c) The cell produces conidia, which develop into a bud.
- 2) Which of the following statements is true of Hydra? 1
 - (a) It produces asexual gemmules
 - (b) It produces unicellular bud.
 - (c) It produces multicellular bud.
- 3) Which of the following statements is true of ginger? 1
 - (a) Germinating bud appears from the eye of the stem tuber.
 - (b) Germinating bud appears from the node of the rhizome
 - (c) Germinating bud appears from the notch of the leaf margin.
- 4) Which of the following statements true of date palm? 1
 - (a) It is monoecious producing both staminate flowers and pistillate flowers in the same plant.
 - (b) It is monoecious producing staminate flowers in one tree and pistillate flowers in another tree.
 - (c) It is dioecious producing staminate flowers in one tree and pistillate flowers in another tree.
- 5) Transverse binary fission occurs in 1
 - (a) Euglena
 - (b) Amoeba
 - (c) Hydra
 - (d) Paramecium
- 6) Which of the following animal is having longitudinal binary fission? 1
 - (a) Euglena
 - (b) Plasmodium
 - (c) Planaria
 - (d) Paramecium
 - (e) Hydra
- 7) Spermatids are transformed into spermatozoa by 1
 - (a) Spermiation
 - (b) Spermatogenesis
 - (c) Meiosis
 - (d) Spermatosis
 - (e) Spermiogenesis
- 8) Which of the following is a hermaphrodite? 1
 - (a) Ant
 - (b) Aphids
 - (c) Earthworms
 - (d) Cockroach
- 9) External fertilization occurs in majority of 1
 - (a) Algae
 - (b) Fungi
 - (c) Liverworts
 - (d) Mosses

- 10) Offsprings formed by sexual reproduction exhibit more variation than those formed by asexual reproduction because: 1
- (a) Sexual reproduction is a lengthy process
 - (b) Gametes of parents have qualitatively different genetic composition
 - (c) Genetic material comes from parents of two different species
 - (d) Greater amount of DNA is involved in sexual reproduction.

Section - B

- 11) Why are mosses and liverworts unable to complete their sexual mode of reproduction in dry conditions? Give reasons. 2
- 12) (a) State the difference between meiocyte and gamete with respect to chromosome number. 2
(b) Why is a whiptail lizard referred to as parthenogenetic?
- 13) The cell division involved in gamete formation is not of the same type in different organisms. Justify. 2
- 14) Why is it difficult to get rid of 'water hyacinth' from a water body? Name one abiotic component and one biotic component of the ecosystem that gets affected by its spread in the water body. 2
- 15) Unicellular organisms are immortal, whereas multicellular organisms are not. Justify. 2
- 16) (a) Name the organisms that reproduce through the following structures. (i) Conidia (ii) Zoospores (b) 2
Mention one similarity and one difference between these two reproductive structures.
- 17) Differentiate between gametogenesis and embryogenesis 2
- 18) Give reasons as to why cell division cannot be a type of reproduction in multicellular organisms. 2
- 19) In which the type of reproduction, do we associate the reduction division? Analyse the reasons for it. 2
- 20) In a developing embryo, analyse the consequences if cell divisions are not followed by cell differentiation 2

Section - C

- 21) You must have seen your mother adding 3-4 globules of yeast to the idli paste she has prepared. Similarly, brewing industry uses yeast in the manufacture of alcohol. 5
- (a) How does such a small amount of yeast added help to produce thousands of litres of alcohol? Explain how yeast multiplies so fast.
 - (b) Name the process carried out by yeast in these cases.
 - (c) What value is learnt from these?
- 22) Jagan has two mango trees in the backyard of his house, which yielded fruits for the first time during this summer. The fruits were small, fibrous and not so sweet. In the next house, where his friend Ajay lives, there is a mango tree, which yields fruits that are fleshy/juicy, very sweet and bigger in size. Ajay, a student of B.sc. (Botany) comes out with an idea and takes some branches from the jagan's garden to his garden and explains the procedure. 5
- (a) What method do you think Ajay has suggested for getting good quality fruits, on the trees of Jagan's house in a short period of time, i.e. during the next season?
 - (b) Describe how it is carried out to help jagan.
 - (c) What are its advantages over growing a mango tree with the seeds obtained from Ajay's garden?
 - (d) Mention the values expressed by Ajay in this case.
- 23) Differentiate between i) estrous and menstrual cycle ii) oviparity and viviparity. Give an example of each type 5

- 24) Mohan a class 8th student was reading a science chapter illustrating reproduction in animals and showcasing how higher animals like elephant, cat, dog and even humans reproduce and increase their population. He asked his father about it. His father explained the process of sexual reproduction to him and also appreciated him for his interest in the subject.
- i) How do higher animals reproduce?
- ii) Do these animals reproduce throughout their life? Justify.
- iii) Write the values portrayed by Mohan.

Section - A

- 1) (b) The cell divides unequally. The smaller cell develops into a bud. 1
- 2) (c) It produces multicellular bud. 1
- 3) (b) Germinating bud appears from the node of the rhizome 1
- 4) (c) It is dioecious producing staminate flowers in one tree and pistillate flowers in another tree. 1
- 5) (d) Paramecium 1
- 6) (a) Euglena 1
- 7) (e) Spermiogenesis 1
- 8) (c) Earthworms 1
- 9) (a) Algae 1
- 10) (b) Gametes of parents have qualitatively different genetic composition 1

Section - B

- 11) 2
- Mosses and liverworts show internal fertilisation.
 - They produce non-motile female gametes and motile male gametes.
 - They need water as the medium for transfer of male gametes to the female gametes; hence under dry conditions; they cannot complete their sexual reproduction.
- 12) (a) A meiocyte is diploid cell, while a gamete is haploid. 2
- (b) A whiptail lizard develops from the female gamete, without fertilisation; hence it is parthenogenetic.
- 13) 2
- In haploid organisms, showing haplontic life cycle, gamete formation involves only mitosis; the diploid zygote formed by the fusion of two haploid gametes, undergoes meiosis (zygotic meiosis).
 - In diploid organisms, showing diplontic or haplodiplontic life cycle, gamete formation involves meiosis (gametic meiosis) and haploid gametes are formed; the diploid zygote undergoes mitosis to form diploid individuals.

14)

2

- It is difficult to get rid of them because they propagate vegetatively at a rate faster than we could remove them.
- It drains oxygen from the water.
- It leads to fish mortality, i.e. death of fishes.

15)

2

- Since single-celled organisms reproduce by cell division (into two individuals), there is no natural death for them and hence, they are considered immortal.
- In multicellular organisms, reproduction occurs in specialised organs involving specialised cells; their body as a whole dies due to ageing and senescence.

16) (a) (i) Penicillium (ii) Chlamydomonas (b)

2

Zoospores	Conidia
- Zoospores are motile cells with flagella,	- Conidia are non-motile and dispersed by wind.
- Zoospores are produced endogenously, i.e. within zoosporangium.	- They are produced exogenously on the conidiosporangium

17)

2

Gametogenesis	Embryogenesis
- It is the process of formation of gametes,	- Embryogenesis is the process of development of zygote into an embryo.
- Gametogenesis may involve meiosis or mitosis.	- Embryogenesis often involves only mitosis.
- It always occurs inside the parent's body.	- It may occur outside the body of parent organism, as in oviparous animals.

18)

2

- (i) In multicellular organisms, cells/ tissues are specialised for various functions; the function of reproduction is performed by one group of specialised cells.
- (ii) Not all cells of a multicellular organism retain the power of division at maturity; the cells which retain the power of division are localised and they alone can help in reproduction.

19)

2

- Reduction division or meiosis is associated with the sexual reproduction. Sexual reproduction involves fusion of gametes to form zygote that grows to form the offspring.
- (i) Fusion of gametes causes doubling of chromosomes. Therefore, the gametes must be haploid.
 - (ii) Haploid gametes are formed from diploid cells. This is possible only through meiosis.
 - (iii) Reduction division maintains the constancy of chromosome number in the organisms generation after generation.

20)

2

Cell differentiation is a must for formation of tissues and organs. In the absence of cell differentiation, the developing embryo will become a mass of similar cells. There would not be any plumule, radicle, cotyledons or embryo axis. A new plant will not be formed from such an embryo.

Section - C

21)

5

(a) Yeast multiplies by budding very fast. In yeast, the cell division is unequal and results in a large cell and a small cell, called bud which remains attached to the large cell; the bud gets separated and grows into an adult yeast.

- The yeast cells secrete enzymes to produce alcohol.

(b) It carries out the process of fermentation.

(c) Mother shows how to make use of the natural processes and to live with nature and to appreciate how such microbes are useful to us; try to help others.

22)

5

(a) Grafting a branch from the tree of Ajay's house on a tree of Jagan's garden can be done.

(b) - The part of the graft that forms the upper part is called scion and the part of the graft that becomes the supporting portion (the root and base), is called stock.

- The scion is selected from a superior quality plant (juicy, larger mango fruits) while the stock belongs to the plant to be improved.

- The scion and stock should be of same diameter and slant cuts are made on both the branches.

- The scion is kept on the stock, covered with grafting clay and polythene; it is tied well and arrangement of water supply/ moisturising is made.

- After a few weeks, you will see buds and leaves appearing on scion.

(c) - The mango tree will start producing flowers and fruits very early, may be in the next season itself. - Many branches can be grafted on the tree with poor quality mangoes.

- When grown from a seed it takes many years for the tree to produce fruits. - Sometimes the plant produced from the seed may not be of the same quality, as sexual reproduction results in variation.

(d) Values for friendship and generosity.

QUESTIONS BANK 365
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23) Difference between i) estrous and menstrual cycle are as follows:

estrous cycle	menstrual cycle
the cyclic change in the activities of ovaries and accessory ducts as well as hormones during the reproductive phase of non-primate mammals is called oestrus cyclic	The cyclic changes in the activities of ovaries and accessory ducts as well as hormones during the reproductive phase of primate mammals is called menstrual cycle.
Female show strong irresistible sexual urge.	Female do not show irresistible sexual urge.
There is heat production at the time of ovulation and copulation occurs only at that period.	There is no heat period and population can occur during any time of the cycle.
The shedding of endometrium and bleeding does not occur e.g. cows, sheep, rats, deer, dogs, tigers, etc	The shedding of endometrium and bleeding occur. e.g. monkeys, apes, humans, etc.

ii) Difference between i) oviparity and ii) vivipary are as follows:

oviparity	vivipary
In oviparity, female animals lay eggs.	In vivipary, female animals give birth to young ones
The development of zygote takes place outside the female's body.	The development of zygote takes place inside the female's body.
Female lay eggs in a safe place in the environment, but the chance of survival are less. e.g. all birds, most of the reptiles and egg laying mammals.	Female deliver young ones and the chance of survival are more. e.g. mammals except monotremes (egg-laying mammals)

24)

i) Higher animals reproduce through sexual reproduction, i.e. through a fusion of gametes to form a new cell called zygote that develops into a new individual.

ii) No, the animals reproduce only during a certain period of their life, i.e. the reproductive phase.

iii) Mohan is an intelligent, observant, inquisitive and fast learner.

