Chapter 1

Reproduction in Organisms

Solutions (Set-1)

SECTION - A

School/Board Exam. Type Questions

Very Short Answer Type Questions :

1. Mention the name of two groups where asexual reproduction is very common by cell division.

Sol. Monerans, Protists

2. Mention the type of bud and its position involved in vegetative propagation in *Bryophyllum*.

Sol. Adventitious bud, present at margins of leaf in notches.

3. Amongst the three phases of the life cycle of organisms _____ can be of variable durations in different organisms.

Sol. Vegetative, reproductive phase.

4. Name the specialised branches over which ♂ and ♀ gametes are produced in *Marchantia*.

Sol. ♂ – Antheridiophore ♀ – Archegoniophore

5. What is cell differentiation?

Sol. Cell differentiation helps groups of cells to undergo certain modifications to form specialised tissues and organs for an organism.

6. Mention the name of vegetative propagule through which *Dahlia* is cultivated.

Sol. *Dahlia* is cultivated through roots.

7. Does formation of zygote and embryo occurs in all the sexually reproducing organisms?

Sol. No, only zygote formation occurs in all the sexually producing organisms. In lower plants like algae, embryo formation is absent.

8. Give an example where transfer of pollen grains occurs to the stigma of same plant.

Sol. Pea

9. "Asexual reproduction is exhibited only by lower plants". This statement is true or false.

Sol. False, it also shown by higher plants. The type of asexual reproduction shown by higher plants is vegetative reproduction.

10. Staminate and pistillate flowers produce the _____ and _____ gametes respectively.

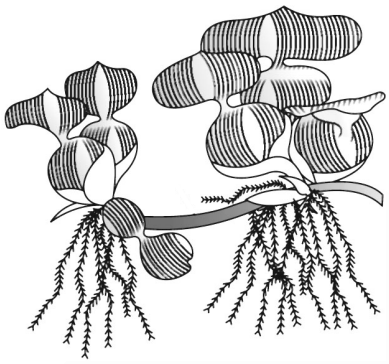
Sol. Male, female

Short Answer Type Questions :

11. Name the biological process which ensures continuity of species generation after generation. Mention its two broad categories.

Sol. Reproduction is a biological process in which an organism gives rise to young ones similar to itself. It is divided into two main types *i.e.*, asexual and sexual.

12. Which part of the given organism is used for vegetative propagation? Why this plant was introduced in India?



Sol. Part used for vegetative reproduction is offset. This plant was introduced in India because of the beautiful flowers and shape of leaves.

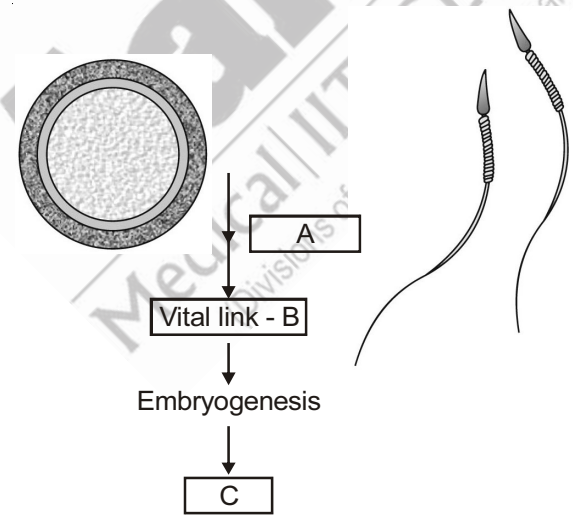
13. Which part of potato tuber and rhizome of ginger has the ability to form new plantlets?

Sol. Node present on these modified stems posses buds which can form new plantlets.

14. Why *Strobilanthus kunthiana* is called neelakuranji?

Sol. It produces blue colour flowers once in 12 years. Moreover it shows mass/gregarious flowering which make large tracks of hilly areas in Kerala, Karnataka and Tamil Nadu into blue stretches due to which it is known as neelakuranji.

15. Fill the vacant spaces in the below given flow chart w.r.t. events in sexual reproduction.



Sol. (A) – Fertilisation

(B) – Zygote

(C) – New individual

16. Explain sexuality in cucurbits.

Sol. Cucurbits are monoecious *i.e.*, they possess unisexual staminate and pistillate flowers on the same plant body.

17. What is the fate of zygote in plants showing haplontic life cycle?

Sol. In haplontic life cycle all the phases present are haploid except zygote. Diploid zygote work as meiocyte and after meiosis if forms haploid spores which can give rise to new individuals.

18. How gametes are transferred in bryophytes and pteridophytes?

Sol. In these groups flagellated male gametes are transferred through water agency.

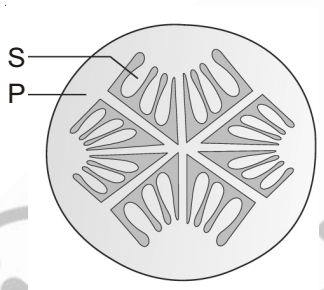
19. What is ploidy of gamete and meiocyte? Mention the number of chromosomes in meiocyte of rice and maize.

Sol. Gamete (n), Meiocyte (2n)

Rice – Meiocyte – 24

Maize – Meiocyte – 20

20. What does S and P represent in below diagram?



Labelled structures are formed at which stage of sexual reproduction?

Sol. S = Seed, P = Pericarp

These structures are formed as a result of post-fertilisation event.

Ovule $\longrightarrow$ Seed

Ovary wall $\longrightarrow$ Pericarp

21. Explain embryogenesis. Mention two main changes which occur in zygote during embryogenesis.

Sol. The process of development of embryo from zygote is called embryogenesis. Zygote undergoes cell division (mitosis) and cell differentiation.

22. Bryophytes, Pteridophytes, Algae, Fungi, Gymnosperms, Angiosperms

From the box given above, choose the groups in which zygote develops a thick resistant wall.

Sol. Algae, Fungi. It is resistant to desiccation and damage, which ensure survival of organisms during unfavourable condition.

23. Mention the carrier/medium of male gamete in the following groups.

a. Algae

b. Bryophytes

c. Gymnosperms

d. Angiosperms

Sol. a. Water

b. Water

c. Pollen

d. Pollen

24. Write appropriate answers for the life cycle of an alga having haploid body.
    (a) Type of division involved in forming gamete.
    (b) Ploidy of zygote and gamete.

Sol. (a) Mitosis
    (b) Zygote – 2n, gamete – n

25. (a) Mention three events involved in sexual reproduction.
    (b) Which event is involved in formation of vital link between two generations?

Sol. (a) Pre-fertilisation, fertilisation, post-fertilisation
    (b) Fertilisation – Zygote

26. Mention name of plants and their fruiting behaviour which can flower
    (a) After 50–100 years
    (b) Once in 12 years

Sol. (a) 50 - 100 years – Bamboo (monocarpic plant)
    (b) Once in 12 years – *Strobilanthus kunthiana* (perennial plant monocarpic)

27. Amongst two modes of reproduction which one is most common one and which one starts before onset of unfavourable conditions in algae and fungi?

Sol. Most common amongst two modes of reproduction is asexual one. During unfavourable condition there is shift to sexual one.

28. Mention name of four vegetative propagules with one example each.

Sol. (a) Rhizome – Ginger
    (b) Offset – *Eichhornia*
    (c) Tuber – Potato
    (d) Runner – Grasses

29. (a) Mention two groups where special asexual reproductive structures are formed.
    (b) Write names of two such structures with examples.

Sol. (a) Kingdom fungi and simple plants such as algae.
    (b) Conidia – *Penicillium* (fungi)
    Zoospores – *Chlamydomonas* (algae)

30. Give life span of
    (a) Banana tree
    (b) Rice plant
    (c) Rose
    (d) Banyan tree

Sol. (a) 25 years
    (b) 3-4 months
    (c) 5-7 years
    (d) 200 - 300 years

Long Answer Type Questions :

31. Mention the number of chromosomes in following structures of maize plant.
    (a) Zygote
    (b) Ovule
    (c) Sperm
    (d) Female gamete
    (e) Pollen

Sol. (a) 20
    (b) 20
    (c) 10
    (d) 10
    (e) 10

32. Give one word for each of the following statements.
    (a) Morphologically and genetically similar individuals.
    (b) Most vital event of sexual reproduction.
    (c) Morphologically distinct types of gametes.
    (d) Pattern of sexual reproduction in diverse types of organisms.
    (e) Motile asexual structures.

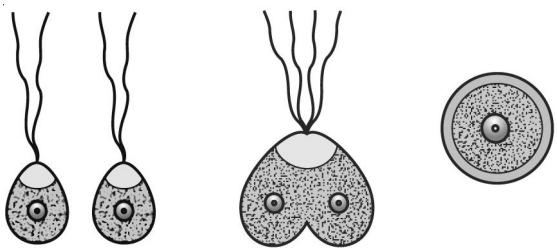
Sol. (a) Clone
    (b) Fertilisation
    (c) Heterogamete
    (d) Similar
    (e) Zoospores

33. (a) Arrange the following structures in their correct sequence.

(A) (B) (C)

    (b) Mention the name of structures/events A, B and C.
    (c) Mention the name of plant group in which these events are shown.

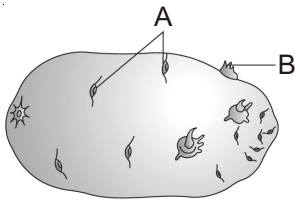
Sol. (a)



(B) (C) (A)

    (b) B – gametes → C – Fusion → A – zygote
    (c) Algae

34. Give correct answers for the given below questions.



(a) Identify the vegetative propagule.

(b) Label part A and B.

(c) This structure is involved in which type of reproduction?

(d) Do the progeny produced can be considered as clone?

(e) Mention name of two more underground vegetative propagules.

Sol. (a) Tuber of potato

(b) A – Eyes, B – Germinating eye buds

(c) Vegetative reproduction

(d) Yes, because for the formation of new individual there is involvement of one parent.

(e) Rhizome, Bulb

35. (a) Mention the terms used to denote bisexual condition and unisexual condition in lower plants.

(b) Compare *Marchantia* and *Chara* w.r.t. sexuality.

(c) Mention the factors that regulate the reproductive processes and the associated behavioural expression of organism.

(d) Explain senescent phase.

Sol. (a) Bisexual – Monoecious, homothallic

Unisexual – Dioecious, heterothallic

(b)

Marchantia	***Chara***
1. Dioecious	1. Monoecious
2. ♀ – Archegoniophore ♂ – Antheridiophore	2. ♀ – Oogonium ♂ – Antheridium

(c) Both external as well as internal factors control reproductive processes. In both plants as well as animals hormones are responsible for the transition between three phases of life cycle.

(d) Senescent phase involve concomitant changes in the body like slowing of metabolism, leading to senescence or old age ultimately leading to death.

36. (a) How can you justify inspite of having great variation in external, internal structure and physiology, sexual reproduction in organisms share a similar pattern?

(b) Give the name of events w.r.t. formation of following structures.

(i) Embryo

(ii) Fruit

(iii) Fusion of gamete

(iv) Gamete transfer

(v) Gamete formation

Sol. (a) In all the organisms three distinct stages are involved during sexual reproduction in a sequential manner *i.e.*,

(i) Pre-fertilisation

(ii) Fertilisation

(iii) Post-fertilisation

(b) (i) Post-fertilisation

(ii) Post-fertilisation

(iii) Fertilisation

(iv) Pre-fertilisation

(v) Pre-fertilisation

37. (a) Explain zygote formation.

(b) Features of zygote.

(c) Significance of zygote.

Sol. (a) The most vital event of sexual reproduction is fusion of gametes which results in the formation of zygote. This process is called fertilisation or syngamy.

(b) (i) Universally formed in sexually reproducing organisms.

(ii) Single celled

(iii) Diploid

(iv) Thin or thick-walled

(v) Can be formed inside or outside the body of organism.

(c) It contains all the genetical information for the formation of new individual so it is a vital link that ensures continuity of species between organisms of one generation and the next.

Thick walled zygote produced in algae and fungi is resistant to desiccation and damage, so helped the organism to tolerate adverse conditions.

38. Give five main distinguishing features of sexual reproduction.

Sol. a. Involves fusion of male and female gamete.

b. Resulting in formation of zygote which develops to form individual.

c. It can be uniparental or biparental.

d. Progeny produced through sexual reproduction shows variations which gives survival advantage.

e. Involves three events *i.e.*, pre-fertilisation, fertilisation and post-fertilisation.

39. Name few methods/structure through which asexual reproduction occurs. Explain two specialized asexual structures.

Sol. Methods/structures involved in asexual reproduction:

a. Binary fission

b. Budding

c. Zoospore

d. Conidia

e. Vegetative propagule (offset, tuber, bulbil, bulb, sucker)

Zoospore – Motile microscopic asexual structures produced in algae. Conidia – Non motile asexual structures produced in fungi.

40. (a) What is life span?

(b) Correlate life span, size, complexity of organism.

(c) Can certain organisms escape harsh reality of life *i.e.*, "Natural death"?

(d) Give life span of

(i) Banana

(ii) Banyan tree

(iii) Fruit fly

(iv) Butterfly

Sol. (a) Life span is the time period from birth to the natural death of an organism.

(b) Life span of an organism is not necessarily related with size or complexity of organism.

(c) Unicellular organisms as they mature they divide forming two daughter cells. So process of senescence or old age is absent.

(d) (i) 25 years

(ii) 200 - 300 years

(iii) 30 days

(iv) 1 - 2 weeks

41. Fill the correct options for following plants :

		Monoecious/Dioecious	Gamete transfer
(a)	*Chara*		
(b)	*Marchantia*		
(c)	Cucurbits		
(d)	Papaya		
(e)	Date palm		

Sol. (a) Monoecious Water

(b) Dioecious Water

(c) Monoecious Pollen

(d) Dioecious Pollen

(e) Dioecious Pollen

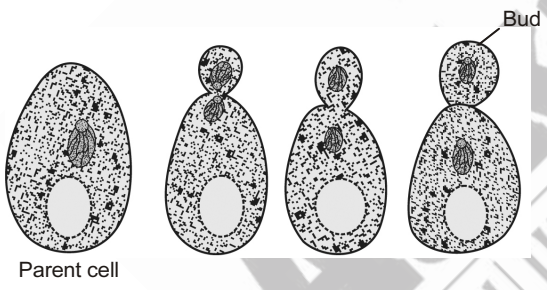
42. (a) Give one example of organism which reproduces through budding.

(b) Give diagrammatic representation of this mechanism.

(c) Also differentiate it from binary fission (three points).

Sol. (a) Yeast – Unicellular fungi

(b)



(c)

Binary fission	Budding
1. No protuberance	1. Protuberance formed
2. Division equal	2. Division unequal
3. Shown by bacteria, *Amoeba*	3. Fungi

43. Mark true or false for the given below statements. Give **correct** explanation of false statements.

(a) Vegetative reproduction is a type of asexual reproduction.

(b) Axillary bud arises from notches of leaves in *Bryophyllum*.

(c) Hormones are responsible for transition in three phases of life cycle in plants only.

(d) Gametes are universally haploid.

(e) Sweet potato produces bisexual flowers.

Sol. (a) True

(b) False, these are adventitious buds.

(c) False, both plants and animals.

(d) True

(e) True

44. (a) What kind of development takes place in the zygote in organisms with haplodiplontic and haplontic life cycle?

(b) Name the plant groups which shows this life cycle pattern.

Sol. (a) In haplodiplontic life cycle, zygote will not undergo meiosis rather it shows mitosis forming multicellular diploid phase *i.e.*, sporophytic one. Sporophyte forms spore mother cells which work as meiocyte forming haploid spores. In haplontic life cycle, zygote undergoes meiosis forming haploid spores.

(b) Haplodiplontic life cycle – Bryophytes, pteridophytes

Haplontic life cycle – Most of algae

45. (a) Differentiate between monoecious and dioecious plant. Site three examples each.

(b) What terms are utilised for bisexual and unisexual condition in several fungi?

Sol. (a)

Monoecious	Dioecious
♂ and ♀ flowers on same plant body	♂ and ♀ flowers on different plant body
Cucurbits, Coconut, *Chara*	Papaya, Date palm, *Marchantia*

(b) Bisexual – Homothallic, monoecious

Unisexual – Heterothallic, dioecious

SECTION - B

Model Test Paper

Very Short Answer Type Questions :

1. Define clone.

Sol. Morphologically and genetically similar individuals.

2. Do higher plants also show asexual reproduction? If yes, then through which method?

Sol. Yes, vegetative propagation.

3. Site an example of organism which reproduces through budding and binary fission.

Sol. Budding – Yeast

Binary fission – *Amoeba*, Bacteria

4. Choose odd one w.r.t. structure produced in sexual reproduction

   Gamete, zygote, conidiospore, embryo

Sol. Conidiospore.

5. Name of juvenile phase in plants is _____.

Sol. Vegetative phase

6. Name the areas where *Strobilanthus kunthiana* flourish in India?

Sol. Hilly areas of Kerala, Karnataka, Tamil Nadu.

7. Mention name of an alga which forms isogametes.

Sol. *Cladophora* (alga)

8. Find the number of chromosomes in meiocyte of plant if gamete contain 21 chromosomes.

Sol. Meiocyte (2N) = 42

9. Syngamy in sexual reproduction is preceded by _____.

Sol. Gamete formation and transfer

10. Cell differentiation is part of which phase of sexual reproduction.

Sol. Embryogenesis (post-fertilisation event)

Short Answer Type Questions :

11. Among two categories of gamete which one is seen in majority of sexually reproducing organisms. In such organisms what ♂ and ♀ gamete is called?

Sol. Heterogametes are seen in majoritly of organisms.

♂ – Antherozoid or sperm

♀ – Egg or ovum

12. (a) What is interflowering period?

    (b) Name two plants showing this condition.

Sol. (a) It is a recovery phase between two flowering in polycarpic plant.

(b) Mango, Apple

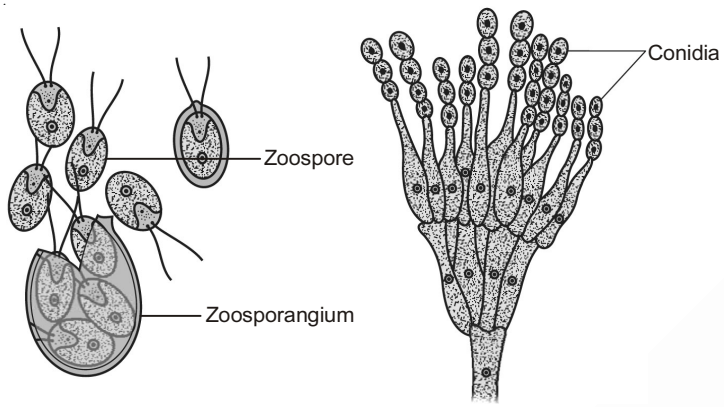
13. What are the advantages of asexual reproduction over sexual one?

Sol. Advantages :

1. Large number of progeny is produced
2. Simple process
3. Use less energy

14. Give schematic representation of zoospore and conidia formation.

Sol.



15. Mention two main features of gamete.

Sol. Two main features are

(i) Universally haploid

(ii) Can be produced through mitosis or meiosis.

(iii) They are sex cells.

16. Name the most invasive aquatic weed. Is it an exotic species?

Sol. The most invasive aquatic weed is Water hyacinth. Yes, it is an exotic weed introduced in India for its beautiful flowers and shape of leaves.

17. Can you differentiate between flowering pattern of bamboo and *Strobilanthus*?

Sol.

Bamboo	***Strobilanthus***
Flowers after 50 - 100 years	Flowers once in 12 years

18. Synchrony between release of ♂ and ♀ gametes is present in which type of fertilisation? What are disadvantages of this fertilisation?

Sol. In external fertilisation great synchrony is there in release of gametes. Disadvantage is that the offsprings are extremely vulnerable to predators threatening their survival upto adulthood.

19. Mention about the motile nature of gametes shown in majority of organisms as well as in angiosperms.

Sol. Majority of organisms : ♂ gamete – motile, ♀ gamete – non-motile

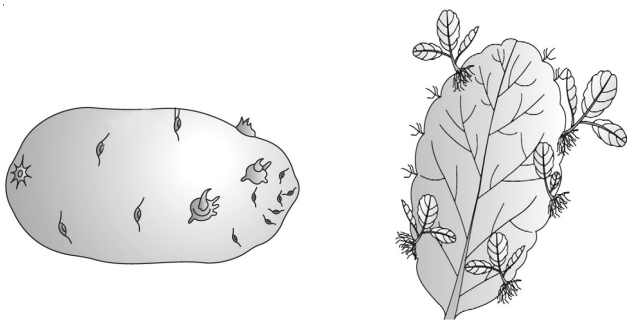
Angiosperms : ♂ gamete – non-motile, ♀ gamete – non-motile

20. Is embryogenesis universal feature in all sexually reproducing organisms? Justify.

Sol. No, it is not a universal feature in all sexually reproducing organisms. In lower plants like algae embryo formation is absent.

Long Answer Type Questions :

21. (a) Compare below given structures w.r.t. type of bud, presence, method of reproduction involved.



(b) Mention name of two vegetative propagules which are sub-aerial.

(c) Define life span.

(d) Give two special features about life spans with explanation.

(e) Give life span of : Banana tree, Banyan tree.

Sol. (a)

Tuber	Leaf
1. Axillary bud	1. Adventitious bud
2. Potato	2. *Bryophyllum*
3. Vegetative reproduction	3. Vegetative reproduction

(b) Runner, offset

(c) The period from birth to natural death of an organism represents its life span.

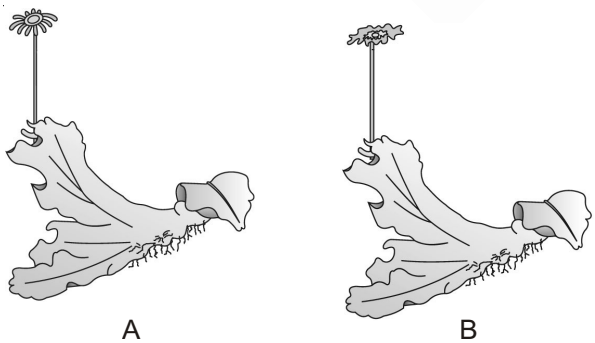
(d) The life span shows variation from few days to as long as few thousand years. Few days – fruit fly, peepal tree – few thousand years.

Life spans of organisms are not necessarily correlated with the sizes. For example, mango tree has life span of 200 years and peepal tree of 2500 years.

(e) Banana tree – 25 years

Banyan tree – 300 years

22. (a) Give four differences between the below given thalli of *Marchantia*.



A B

(b) Categorise the given below features into the three events of sexual reproduction.

Zygote formation, Pollination, Transfer of male gamete, Cell differentiation, Syngamy, Fruit formation, Embryogenesis, Egg formation, Meiosis (haplontic life cycle)

Sol. (a)

	Female thallus (A)		Male thallus (B)
1.	Bear archegoniophore	1.	Anthrediophore
2.	Possess archegonia	2.	Antheredia
3.	Form egg	3.	Form sperm
4.	Gametes produce in less number	4.	Gametes produced in large number

(b). (i) Pre-fertilisation – Pollination, Transfer of male gamete, Egg formation

(ii) Fertilisation – Zygote formation, Syngamy

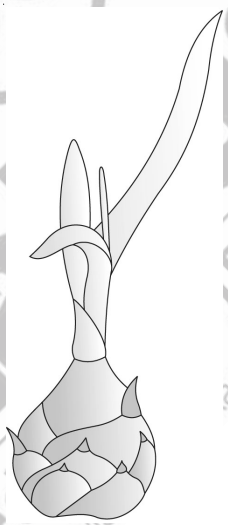
(iii) Post-fertilisation – Cell differentiation, Fruit formation, Embryogenesis, Meiosis (haplontic life cycle)

23. (a) (i) For which of the following organisms there is no natural death?

Bacteria, Unicellular alga, Protists, *Marchantia*, *Amoeba*

(ii) For above given organisms site main mode of reproduction involved.

(b) For the given below structure give five points.



Sol. (a) (i) For Bacteria, Unicellular algae, Protists, *Amoeba*, there is no natural death.

(ii) Bacteria – Asexual

Unicellular alga – Asexual

Protists – Asexual

Marchantia – Sexual

Amoeba – Asexual

(b) (i) Bulbil

(ii) Seen is *Agave*

(iii) Vegetative propagule

(iv) Produce clone

(v) Large size bud

24. (a) (i) Site examples of lower plants showing monoecious and dioecious condition.

(ii) In these organisms at which stage meiosis occurs.

(iii) Mention type of life cycle.

(b) Mention the ploidy of main body in the following.

(i) Bryophytes

(ii) Pteridophytes

(iii) Gymnosperms

(iv) Angiosperms

(v) Most of algae

Sol. (a) (i) Monoecious – *Chara*

Dioecious – *Marchantia*

(ii) *Chara* – Zygotic meiosis

Marchantia – Sporic meiosis

(iii) *Chara* – Haplontic life cycle

Marchantia – Haplodiplontic life cycle.

(b) (i) n

(ii) 2n

(iii) 2n

(iv) 2n

(v) n

25. Give appropriate answers for life cycle sequence for bamboo.

Juvenile → [A] → Senescence

(a) What does A represent?

(b) What is so unusual about flowering phenomenon?

(c) Mention its category w.r.t. flowering, fruiting pattern.

(d) Can we say it shows clear cut distinction between three phases of its life cycle?

(e) What is the other name of juvenile phase in this plant?

Sol. (a) Reproductive phase

(b) 50–100 years

(c) Monocarpic, as it flower and fruit once during life time.

(d) Yes, as interflowering period is absent.

(e) Vegetative phase

26. (a) Which mode of reproduction is responsible for creating genetic variations in progeny?

(b) How is it possible?

(c) Only sexual mode of reproduction is present in most of the plants. Is this statement true or false? Justify it.

(d) Amongst two modes of reproduction which one is slow?

Sol. (a) Sexual reproduction is responsible for creating genetic variations.

(b) New organism produce, inherits chromosomes contributed from two different gametes as well as there is involvement of meiosis resulting in generation of variations.

(c) Both asexual and sexual reproduction are exhibited by higher plants. The type of asexual reproduction which is present is vegetative propagation where vegetative or somatic parts of plant can give rise to new individual.

(d) Sexual reproduction is a slow process.

❑ ❑ ❑

Solutions (Set-2)

Objective Type Questions

(Life Span, Basic Features of Reproduction, Types of Reproduction, Asexual Reproduction)

1. Arrange the following w.r.t. increasing life span : Rose, Fruit fly, Rice

(1) Fruit fly, Rice, Rose (2) Rose, Rice, Fruit fly

(3) Rice, Rose, Fruit fly (4) Fruit fly, Rose, Rice

Sol. Answer (1)

Fruit fly $\rightarrow$ 2 Weeks Rice$\rightarrow$ 3-4 Months

Rose $\rightarrow$ 5-7 Years Fruit fly < Rice < Rose

2. Which of the following factor(s) is/are responsible for how organism reproduces?

(1) Organisms habitat (2) Internal physiology

(3) Environmental factors (4) More than one option is correct

Sol. Answer (4)

Organism habitat is responsible because if organism will live in nutrient deficient condition it will promote sexual reproduction.

- Environmental factor also decides that how organism reproduce.
- Internal physiology is also responsible.

3. Process of reproduction which results in production of identical offsprings is

(1) Complex, fast (2) Simple, slow (3) Fast, simple (4) Fast, elaborate

Sol. Answer (3)

Binary fission, vegetative propagation, asexual reproduction will produce clones so it is fast and simple.

4. Asexual reproduction is common in

(1) Single celled organisms (2) Organisms having simple organisation

(3) Aquatic plants (4) More than one option is correct

Sol. Answer (4)

Asexual reproduction takes place in organisms like bacteria, protista and algae.

5. For which of the following organisms there is no natural death?

(1) Bacteria reproducing by sporulation (2) Yeast reproducing by budding

(3) Unicellular organisms reproducing by spores (4) Unicellular organisms reproducing by binary fission

Sol. Answer (4)

Bacteria are called nearly immortal because the cell does not die but undergoes binary fission.

6. Cell division itself is a mode of reproduction in

(1) *Amoeba*, *Penicillium* (2) *Chara*, Bacteria

(3) *Chlamydomonas*, *Penicillium* (4) *Amoeba*, Bacteria

Sol. Answer (4)

Cell division itself is mode of reproduction in unicellular organism like *Amoeba* and Bacteria.

7. During budding in yeast

(1) Cytokinesis is unequal (2) Identity of parent is lost

(3) Clones are produced (4) More than one option is correct

Sol. Answer (4)

Because yeast reproduce by asexual method to produce clone.

8. Most common asexual structure produced in algae is

(1) Thick walled (2) Multicellular (3) Flagellated (4) Produced in chains

Sol. Answer (3)

Zoosperes possess flagella.

9. In which of the following plants root bud is involved in vegetative propagation?

(1) Sugarcane (2) Banana (3) Ginger (4) *Dahlia*

Sol. Answer (4)

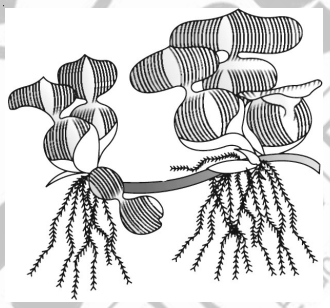
Sugarcane $\rightarrow$ Segment of stem with atleast one node

Banana $\rightarrow$ Rhizome

Ginger $\rightarrow$ Rhizome

Dhalia $\rightarrow$ Root buds

10. Choose **incorrect** option for given below organism



(1) Scourge of the water bodies (2) Reproduction through offset

(3) Found in running water (4) Drains oxygen from water

Sol. Answer (3)

Found in stagnate two water.

11. For commercial propagation of banana and ginger which of the following parts are utilised respectively?

(1) Rhizome, Sucker (2) Rhizome, Tuber (3) Tuber, Bulb (4) Sucker, Rhizome

Sol. Answer (4)

Rhizome is used in ginger and banana.

12. Offsprings produced through which of the following processes/structures represent clone?

(1) Gametic fusion (2) Syngamy

(3) Vegetative propagule (4) More than one option is correct

Sol. Answer (3)

Vegetative propagule produce offspring.

13. "Vegetative reproduction is also a type of asexual reproduction." Which of the following statements justify this?

(1) Involvement of one parent (2) Gametes are not involved

(3) Does not involve meiosis (4) More than one option is correct

Sol. Answer (4)

All statements (1), (2) and (3)

14. Choose **incorrect** match

(1) Bulbil – *Agave* (2) Sucker – Pineapple

(3) Tuber – *Bryophyllum* (4) Runner – Grasses

Sol. Answer (3)

Bryophllum → Leaf tips possess new plants.

15. Which of the following vegetative propagule represents large size fleshy bud?

(1) Bulbil (2) Bulb (3) Sucker (4) Rhizome

Sol. Answer (1)

16. Choose odd one w.r.t. vegetative propagule involved in cultivation in following plants

(1) Banana (2) Ginger (3) *Bryophyllum* (4) Potato

Sol. Answer (3)

Banana, Ginger, Potato → Stem modified

Bryophyllum → Leaf

(Sexual Reproduction, Events in Sexual Reproduction)

17. In all the sexually reproducing organisms, events involved are

(1) Same, sequential (2) Same, non-sequential

(3) Different, sequential (4) Different, non-sequential

Sol. Answer (1)

Same sequential

Ist Pre-fertilization → Fertilization → Post-fertilization

18. Choose odd one w.r.t. sexuality

(1) Coconut (2) Cucurbits (3) *Chara* (4) Papaya

Sol. Answer (4)

Papaya is unisexual

19. What would be the number of chromosomes in the meiocyte and gamete of onion respectively?

(1) 24, 12 (2) 34, 17 (3) 16, 8 (4) 14, 17

Sol. Answer (3)

n = 16 → gametes

2n = 32 → Meiocytes

20. Majority of sexually reproducing organisms form

(1) Isogametes (2) Homogametes

(3) Heterogametes (4) More than one option is correct

Sol. Answer (3)

Heterogamates ⇒ Oogamous reproduction

21. *Chara* possess

(1) Sex organs above nodes (2) Multicellular and jacketed sex organs

(3) ♂ structure – Globule, ♀ – Nucule (4) Both (2) & (3)

Sol. Answer (4)

Chara contains multicellular jacketed sex organs

♂ – Globule ♀ – Nucule

22. Give the ploidy of following structures in angiospermic plants.

Zygote, Endosperm, Ovum

(1) n, n, 2n (2) 2n, 2n, n (3) 2n, 3n, n (4) 2n, n, 2n

Sol. Answer (3)

2n → Zygote

3n → Endosperm

n → Ovum

23. From the given below processes how many are associated with post-fertilisation event?

(1) Syngamy, gamete transfer

(2) Gametogenesis, cell division

(3) Cell differentiation, gametic fusion

(4) Embryogenesis, PEN formation

Sol. Answer (4)

Embryogenesis → Embryo formation

P ∈ N → Fromed by triple fusion

24. In flowering plants, zygote is formed

(1) Inside ovule (2) Inside archegonium

(3) In water (4) More than one option is correct

Sol. Answer (1)

Zygote formed inside ovule

25. Which of the following feature is universal in all sexually reproducing organisms?

(1) Embryo formation (2) Gametic meiosis (3) Zygote formation (4) Pollen grain transfer

Sol. Answer (3)

2n → Zygote

Formed by gametic union

26. Arrange the following plants w.r.t. increasing number of chromosome

Rice, Maize, Apple

(1) Maize, Rice, Apple
(2) Apple, Rice, Maize
(3) Apple, Maize, Rice
(4) Rice, Maize, Apple

Sol. Answer (1)

Maize $\rightarrow$ 2n $\rightarrow$ 20

Rice $\rightarrow$ 2n $\rightarrow$ 24

Apple $\rightarrow$ 2n $\rightarrow$ 34

27. *Strobilanthus kunthiana*

(1) Shows flowering once in 12 months
(2) Transformed hilly tracks of Kerala, Karnataka, Tamil Nadu into blue stretches
(3) Showed flowering during November-December 2006
(4) An annual plant

Sol. Answer (2)

28. In fungi homothallic term is used to represent

(1) Dioecious condition
(2) Unisexual condition
(3) Bisexual condition
(4) More than one option is correct

Sol. Answer (3)

Homothallic – Bisexual

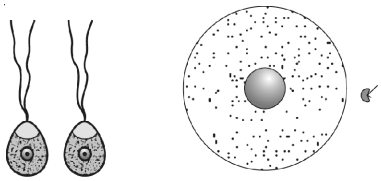
29. Thick walled resistant zygote can be produced in the life cycle of

(1) Algae, fungi
(2) Bryophytes, pteridophytes
(3) Gymnosperms, algae
(4) Angiosperms, fungi

Sol. Answer (1)

Algae and fungi

30. Given figures labelled by A & B represent



	A	B
(1)	Isogametes of *Rhizopus*	Heterogametes of *Fucus*
(2)	Isogametes of *Cladophora*	Heterogametes of *Fucus*
(3)	Isogametes of *Rhizopus*	Heterogametes of angiosperms
(4)	Isogametes of *Chara*	Heterogametes of *Synchytrium*

Sol. Answer (2)

Isogany in *Ulothrix*

Heterogametes / Oogamy – *Fucus*, *Chara*

Isogametes in *Rhizopus*

31. Self fertilisation is seen in

(1) Unisexual flower of papaya
(2) Bisexual flower of pea
(3) Unisexual flower of date palm
(4) Bisexual flower of coconut

Sol. Answer (2)

Bud pollination in pea.

32. Choose **incorrect** option w.r.t. transition after fertilisation in angiosperms

(1) Zygote ⟶ Embryo
(2) PEN ⟶ Endosperm
(3) Ovary ⟶ Fruit
(4) Integument ⟶ Pericarp

Sol. Answer (4)

PEC → Primary endosperm cell → Endosperm

33. Choose correct sequence for different stages in the life cycle of rice.

(1) Juvenile phase → Recovery phase →Flowering phase → Senescence
(2) Juvenile phase → Interflowering phase → Reproductive phase
(3) Juvenile phase → Reproductive phase → Senescence
(4) Juvenile phase → Senescence → Interflowering phase

Sol. Answer (3)

34. Choose **odd** one w.r.t. flowering and fruiting pattern

(1) Rice, Wheat (2) Marigold, Maize (3) Pea, Rice (4) Mango, Apple

Sol. Answer (4)

35. Choose **odd** one w.r.t. medium through which male gametes are transferred?

(1) Algae, Bryophytes
(2) Pteridophytes, Algae
(3) Simple plant, Bryophytes
(4) Gymnosperms, Angiosperms

Sol. Answer (4)

Gametes transfer by pollen tube in Gymnosperm and Angiosperm.

❑ ❑ ❑