

Botany MCQ Practice

+2 2nd Year (Class XII)

50 questions · 7 chapters · answers with explanations

How to use: attempt each chapter's questions without looking, then check the Answer Key at the end. Read the one-line explanation for every question you got wrong, and revise that topic in your notes.

Sexual Reproduction in Flowering Plants

- The exine of a pollen grain is made of
(a) cellulose
(b) sporopollenin
(c) pectin
(d) lignin
- A typical angiosperm embryo sac is
(a) 7-celled and 8-nucleate
(b) 8-celled and 8-nucleate
(c) 7-celled and 7-nucleate
(d) 6-celled and 8-nucleate
- The endosperm of angiosperms is
(a) haploid
(b) diploid
(c) triploid
(d) tetraploid
- Pollination in Vallisneria takes place by
(a) wind
(b) water
(c) insects
(d) birds
- Cleistogamous flowers are always
(a) cross-pollinated
(b) self-pollinated
(c) wind-pollinated
(d) insect-pollinated
- The innermost wall layer of the microsporangium that nourishes pollen is the
(a) endothecium
(b) tapetum
(c) epidermis
(d) middle layer
- Banana is an example of a
(a) false fruit
(b) parthenocarpic fruit
(c) aggregate fruit
(d) dry fruit
- The scutellum is the cotyledon of
(a) a dicot embryo
(b) a monocot (grass) embryo
(c) a gymnosperm
(d) a fern

Principles of Inheritance and Variation

- Mendel's monohybrid F_2 phenotypic ratio is
(a) 1 : 2 : 1
(b) 3 : 1
(c) 9 : 3 : 3 : 1
(d) 1 : 1

10. The F_2 phenotypic ratio of a dihybrid cross is
 (a) 3 : 1 (b) 1 : 2 : 1
 (c) 9 : 3 : 3 : 1 (d) 1 : 1 : 1 : 1
11. Red × white snapdragon gives pink F_1 . This shows
 (a) dominance (b) incomplete dominance
 (c) co-dominance (d) epistasis
12. ABO blood groups are an example of
 (a) incomplete dominance (b) co-dominance and multiple alleles
 (c) polygenic inheritance (d) linkage
13. A test cross is a cross between an F_1 and its
 (a) dominant parent (b) recessive parent
 (c) another F_1 (d) F_2
14. Haemophilia is a
 (a) sex-linked recessive disorder (b) autosomal dominant disorder
 (c) chromosomal disorder (d) viral disease
15. Down's syndrome is caused by trisomy of chromosome
 (a) 13 (b) 18
 (c) 21 (d) 23
16. Turner's syndrome has the karyotype
 (a) 47, XXY (b) 45, XO
 (c) 47, XYY (d) 46, XX

Molecular Basis of Inheritance

17. In DNA, adenine pairs with
 (a) guanine (b) cytosine
 (c) thymine (d) uracil
18. DNA replication is
 (a) conservative (b) semi-conservative
 (c) dispersive (d) random
19. Okazaki fragments are formed on the
 (a) leading strand (b) lagging strand
 (c) mRNA (d) tRNA
20. Which is a stop codon?
 (a) AUG (b) UAA
 (c) GUG (d) UUU
21. The start codon AUG codes for
 (a) valine (b) methionine
 (c) glycine (d) leucine
22. Removal of introns and joining of exons is called
 (a) capping (b) splicing
 (c) tailing (d) translation

23. Hershey and Chase used ^{35}S and ^{32}P to show that the genetic material is

(a) protein	(b) DNA
(c) RNA	(d) lipid

24. In the lac operon, the inducer is

(a) glucose	(b) lactose
(c) the repressor	(d) β -galactosidase

Microbes in Human Welfare

25. Curd is formed from milk by
- | | |
|-------------------|-------------------|
| (a) Lactobacillus | (b) Saccharomyces |
| (c) Penicillium | (d) Rhizobium |
26. The large holes in Swiss cheese are made by
- | | |
|-----------------------|---------------------------------|
| (a) Aspergillus niger | (b) Propionibacterium sharmanii |
| (c) Lactobacillus | (d) Streptococcus |
27. Penicillin was discovered by
- | | |
|-------------|-----------------------|
| (a) Waksman | (b) Alexander Fleming |
| (c) Pasteur | (d) Koch |
28. Citric acid is commercially produced by
- | | |
|-----------------------|-----------------------|
| (a) Aspergillus niger | (b) Acetobacter aceti |
| (c) Clostridium | (d) Rhizobium |
29. Statins, used to lower blood cholesterol, come from
- | | |
|------------------------|----------------------------|
| (a) Monascus purpureus | (b) Trichoderma polysporum |
| (c) Streptococcus | (d) Penicillium |
30. Biogas is mainly
- | | |
|-----------------------|--------------|
| (a) methane | (b) oxygen |
| (c) hydrogen sulphide | (d) nitrogen |
31. High BOD of water indicates
- | | |
|--------------------------|----------------------------|
| (a) clean water | (b) high organic pollution |
| (c) high oxygen in water | (d) low temperature |
32. Which is a free-living nitrogen-fixing bacterium?
- | | |
|-------------------|-----------------|
| (a) Rhizobium | (b) Azotobacter |
| (c) Lactobacillus | (d) E. coli |

Organisms and Populations

33. Organisms that can tolerate a wide range of temperature are
- | | |
|------------------|-----------------|
| (a) stenothermal | (b) eurythermal |
| (c) euryhaline | (d) stenohaline |
34. The logistic growth curve is
- | | |
|-------------------|------------------------|
| (a) J-shaped | (b) S-shaped (sigmoid) |
| (c) straight line | (d) bell-shaped |
35. The interaction in which both species benefit is
- | | |
|------------------|----------------|
| (a) commensalism | (b) mutualism |
| (c) parasitism | (d) amensalism |

36. An orchid growing on a mango branch is an example of
 (a) parasitism (b) commensalism
 (c) predation (d) competition
37. The cuckoo laying eggs in a crow's nest is
 (a) mutualism (b) brood parasitism
 (c) predation (d) commensalism
38. Gause's principle is about
 (a) predation (b) competitive exclusion
 (c) mutualism (d) population growth

Ecosystem

39. The pyramid of energy is
 (a) always upright (b) always inverted
 (c) upright or inverted (d) spindle-shaped
40. According to Lindeman's 10% law, the energy passed to the next trophic level is about
 (a) 1% (b) 10%
 (c) 50% (d) 90%
41. The pyramid of biomass in the sea is generally
 (a) upright (b) inverted
 (c) spindle-shaped (d) absent
42. Pioneer species on bare rock are usually
 (a) mosses (b) lichens
 (c) ferns (d) trees
43. NPP equals
 (a) $GPP + R$ (b) $GPP - R$
 (c) $R - GPP$ (d) $GPP \times R$
44. Phosphorus cycle is a
 (a) gaseous cycle (b) sedimentary cycle
 (c) water cycle (d) energy cycle

Biodiversity and Conservation

45. India's share of global species diversity is about
 (a) 2.4% (b) 8.1%
 (c) 25% (d) 50%
46. The main cause of biodiversity loss is
 (a) over-exploitation (b) habitat loss and fragmentation
 (c) co-extinction (d) alien species
47. The rivet popper hypothesis was given by
 (a) Alexander von Humboldt (b) Paul Ehrlich
 (c) Robert May (d) Darwin
48. Which is an example of ex situ conservation?
 (a) national park (b) seed bank
 (c) wildlife sanctuary (d) sacred grove

49. Which is NOT a biodiversity hotspot in India?

(a) Western Ghats

(c) Indo-Burma

(b) Himalaya

(d) Thar Desert

50. The Earth Summit on biodiversity (1992) was held in

(a) Johannesburg

(c) Kyoto

(b) Rio de Janeiro

(d) Paris

Answer Key with Explanations

Sexual Reproduction in Flowering Plants

1. (b) sporopollenin — The most resistant organic material known.
2. (a) 7-celled and 8-nucleate — Egg apparatus (3), antipodals (3) and one central cell with two polar nuclei.
3. (c) triploid — Male gamete (n) + two polar nuclei (n + n).
4. (b) water — Female flowers reach the water surface on long stalks.
5. (b) self-pollinated — They never open. Example: Viola, Oxalis.
6. (b) tapetum — Tapetal cells are rich in cytoplasm.
7. (b) parthenocarpic fruit — It develops without fertilisation, so it is seedless.
8. (b) a monocot (grass) embryo — Grass embryos have one shield-shaped cotyledon.

Principles of Inheritance and Variation

9. (b) 3 : 1 — 3 dominant : 1 recessive.
10. (c) 9 : 3 : 3 : 1 — Due to independent assortment.
11. (b) incomplete dominance — The heterozygote is intermediate.
12. (b) co-dominance and multiple alleles — I^A and I^B are co-dominant; three alleles exist.
13. (b) recessive parent — It reveals whether the F_1 is heterozygous.
14. (a) sex-linked recessive disorder — The gene is on the X chromosome.
15. (c) 21 — Total chromosome number 47.
16. (b) 45, XO — Sterile females.

Molecular Basis of Inheritance

17. (c) thymine — A=T with two hydrogen bonds; G≡C with three.
18. (b) semi-conservative — Proved by Meselson and Stahl using ^{15}N .
19. (b) lagging strand — DNA polymerase works only $5' \rightarrow 3'$.
20. (b) UAA — UAA, UAG and UGA are stop codons.
21. (b) methionine — It also signals the start of translation.
22. (b) splicing — It happens in eukaryotic hnRNA.
23. (b) DNA — Only ^{32}P (DNA) entered the bacteria.
24. (b) lactose — Lactose binds and inactivates the repressor.

Microbes in Human Welfare

25. (a) Lactobacillus — Lactic acid bacteria also add vitamin B_{12} .
26. (b) Propionibacterium sharmanii — The bacterium releases a lot of CO_2 .
27. (b) Alexander Fleming — From the mould Penicillium notatum.
28. (a) Aspergillus niger — A fungus.
29. (a) Monascus purpureus — They inhibit an enzyme of cholesterol synthesis.
30. (a) methane — Produced by methanogens such as Methanobacterium.
31. (b) high organic pollution — More organic matter needs more oxygen to break down.
32. (b) Azotobacter — Rhizobium is symbiotic in legume root nodules.

Organisms and Populations

33. (b) eurythermal — Eury = wide.
34. (b) S-shaped (sigmoid) — Growth slows near the carrying capacity K.
35. (b) mutualism — Example: lichens, mycorrhiza.
36. (b) commensalism — The orchid benefits; the mango is unaffected.
37. (b) brood parasitism — The crow raises the cuckoo's young.
38. (b) competitive exclusion — Two species competing for the same resource cannot coexist forever.

Ecosystem

39. (a) always upright — Energy is lost at every trophic level.
40. (b) 10% — So food chains are short.
41. (b) inverted — Small phytoplankton biomass supports larger fish biomass.
42. (b) lichens — They make the first soil.

43. (b) $GPP - R = \text{Net}$ = gross productivity minus respiration losses.
44. (b) sedimentary cycle — Rocks are its main reservoir.

Biodiversity and Conservation

45. (b) 8.1% — India has only 2.4% of the world's land area.
46. (b) habitat loss and fragmentation — It is first in the "Evil Quartet".
47. (b) Paul Ehrlich — Losing species weakens ecosystems like losing rivets weakens a plane.
48. (b) seed bank — Conservation outside the natural habitat.
49. (d) Thar Desert — India's hotspots: Western Ghats and Sri Lanka, Indo-Burma, Himalaya.
50. (b) Rio de Janeiro — It produced the Convention on Biological Diversity.