



Scholars Den Mock Test: Sure Success Recipe

CBSE Class 12 Biology Solutions

SECTION-A

1. (c) Or (b) 2. (d) 3. (b) 4. (b) 5. (d) Or (a)

SECTION-B

6. - Cannabis sativa is the plant.
 - From the inflorescence.
 - They are used as ganja, hashish, marijuana or charas. (any two)
7. a - *Trichoderma polysporum*
 b - Immunosuppressive agent for organ transplant patients
 c - Yeast (Fungus)
 d - Blood cholesterol-lowering agent
8. (a) It helps in identifying the recombinants from the non-recombinants.
 (b) Presence of more than one recognition site will generate several segments and complicate gene cloning.

9. Differences:

| Narrowly Utilitarian Arguments | Broadly Utilitarian Arguments |
|--|--|
| – These arguments say that humans derive a number of direct economic benefits from nature. e.g. food, fibres, firewood, drugs, etc. | – These arguments say that biodiversity plays a major role in ecosystem services that nature provides. e.g. Oxygen produced during photosynthesis, pollination of crops (without which fruits and seed can not be produced), etc. |

Or

- The World Summit on Sustainable Development was held in 2002 in Johannesburg, South Africa; it was a follow-up of the Earth Summit.
 - Its objective was to achieve by 2010, a significant reduction in the current rate of loss of biodiversity at global, regional and local levels.
10. - In haploid organisms, meiosis occurs during development/germination of zygote.
 - Zygote is the only diploid stage (formed by the fusion of two haploid gametes) in the life-cycle that can undergo meiosis.
11. A - inducer B - β -galactosidase
 C - permease D - transacetylase
12. Gause's competitive exclusion principle states that two closely related species competing for the same resources can not co-exist indefinitely and the competitively inferior one will be eliminated, e.g. On the rocky sea coasts of Scotland, the larger and competitively superior barnacle *Balanus* dominates the intertidal area and excludes the smaller barnacle, *Chthamalus* from that zone.

SECTION-C

13. Fallopian tube
- Each fallopian tube is about 10-12 cm long and extends from the periphery of the ovary up to the uterus.
 - The part closer to the ovary, is called infundibulum; it is funnel-shaped and its edges are provided with finger like projections, called fimbriae.
 - The infundibulum leads into a wider part, called ampulla.
 - The last part is called isthmus; it has a narrow lumen and joins the uterus.

Or

- (a) - In sea grasses, the female flowers remain submerged in water.
 - The pollen grains are released inside the water.

- Pollen grains are long and ribbon-like; they are carried passively by water.
- Some of them reach the stigma and pollination is achieved.

(b) Guava and Mango.

14. - The symptoms include:
- (i) nausea, (ii) fatigue and (iii) heart palpitations
- The adaptations include:
- (i) increase in the breathing rate.
 - (ii) increase in the production of red blood cells.
 - (iii) decrease in the binding capacity of haemoglobin.

15. **Differences:**

| Homology | Analogy |
|--|--|
| <ul style="list-style-type: none"> - Homology refers to similarity in the basic anatomy of the structures in different groups of organisms, which may perform different functions. - It is the result of divergent evolution, <i>i.e.</i> the evolutionary process in which the same structure develops along different directions in different groups of organisms as adaptations to different needs. e.g. Thorns of <i>Bougainvillea</i> and tendrils of <i>Cucurbita</i>. | <ul style="list-style-type: none"> - Analogy refers to similarity in function of those structures, which are dissimilar in the basic anatomy, in different groups of organisms. - It is the result of convergent evolution, <i>i.e.</i> the evolutionary process in which anatomically different structures in different groups of organisms evolve towards the same function in similar habitats. e.g. Tubers of potato and those of sweet potato |

16. Steps in Inbreeding.

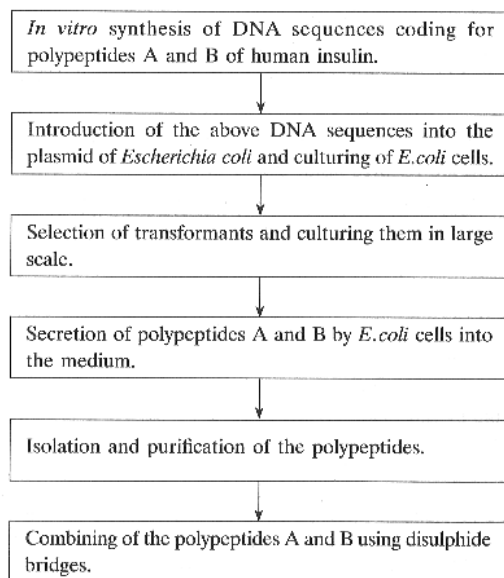
- Superior males and superior females of the same breed are identified and mated in pairs.
- The progeny obtained from such matings are evaluated and superior males and females are identified for further mating.

Advantages

- (i) Inbreeding exposes the harmful recessive alleles, that are eliminated by selection.
- (ii) It is necessary to evolve a pure line of the animal.
- (iii) It helps in the accumulation of superior genes. (any two)

17. (a) Vehicular air pollution in Delhi was reduced by
- (i) use of compressed natural gas (CNG) instead of diesel/petrol.
 - (ii) phasing out the old and inefficient vehicles.
 - (iii) use of catalytic converters in the vehicles and use of unleaded petrol.
 - (iv) adhering to Euro II or Bharat II norms.
- (b) Otherwise lead will inactivate the catalyst.

18. Production of Insulin.



19. (a) The trait is autosomal dominant.
 (b) Female - Aa; Male - aa.
 (c) Female - Aa; Male - Aa.

Or

| (a) | Klinefelter's syndrome | Turner's syndrome |
|-----|---|---|
| | <ul style="list-style-type: none"> – It is due to an extra X-chromosome in a male. – The male shows more feminine characters. | <ul style="list-style-type: none"> – It is due to monosomy of X-chromosome in a female. – The female has under developed female secondary sexual character. |

- (b) A test cross with a pea plant bearing white flowers.

| 20. | Active Immunity | Passive Immunity |
|-----|---|---|
| | <ul style="list-style-type: none"> – When antibodies are produced by our B-cells in response to the antigen, it is called active immunity. – It lasts for longer (even life-time). <i>e.g.</i> immunity against polio, chickenpox, etc., developed by vaccination. | <ul style="list-style-type: none"> – When preformed antibodies are injected into the body for defence, it is called passive immunity. – It lasts for shorter periods. <i>e.g.</i> immunity developed against rabies, tetanus, etc. |

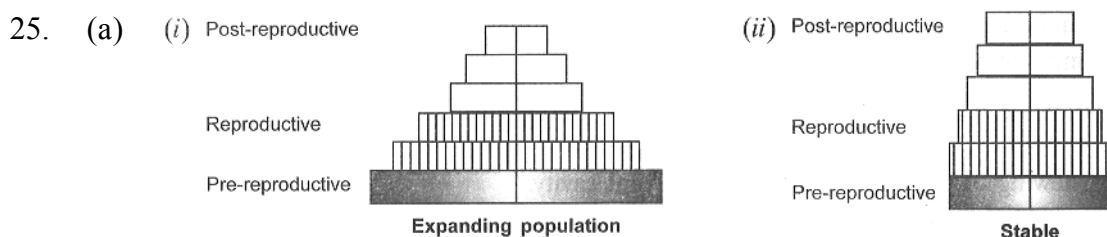
21. (a) CO₂ is added through:
 (i) burning of fossil fuels (ii) forest fires
 (iii) volcanic activity (iv) respiration of all organisms.
 (b) Secondary succession refers to the ecological succession that takes place in a region where life existed in the past, but got wiped out completely.

SECTION-D

22. (a) - It was called soluble RNA (sRNA).
 - It is transcribed by RNA polymerase III.
 (b) - Crick called it an adapter
 - Since tRNA on one hand binds to a specific amino acid and on the other hand reads the codon of the amino acid bound to it through its anticodon, it is called an 'adapter'
 (c) - Its secondary structure has a clover-leaf-shape.
 - In actual structure, it looks like an inverted L.

23. The ploidy levels of the cells are as follows:
- Zygote: It is diploid ($2n$) as it is formed by the fusion of two haploid gametes.
 - Primary endosperm nucleus (PEN): It is triploid ($3n$) as it is formed by triple fusion, i.e. two polar nuclei and a male gamete fuse to form PEN.
 - The degenerating antipodals and synergids are haploid, as the embryo sac is formed by the functional megaspore (n) that is a product of meiosis in the megaspore mother cell.
24. (a) Similarity:
- Both of them have multicarpellary pistil, i.e. the pistil consists of many carpels.
- Difference:
- In *Papaver*, the ovary is syncarpous, i.e. all the carpels are fused together.
 - In *Michelia*, the ovary is apocarpous, i.e. the carpels remain free from one another.
- (b) The gynoecium/pistil consists of:
- (i) stigma, (ii) style and (iii) ovary

SECTION-E



- (b) (i) a-Exponential growth curve
b-Logistic growth curve.
- (ii) Logistic growth curve (b) is considered more realistic, because the resources are finite and become limiting sooner or later.
- (iii) K stands for carrying capacity, the maximum number of individuals of a population, that the given environment can sustain.

Or

- (a) Deforestation and massive burning of fossil fuels by humans influence the carbon cycle.

(b)

| Climax community | Seral communities |
|---|---|
| <ul style="list-style-type: none"> - It is the community established as a final stage of succession. - It is in equilibrium with the environment and does not change unless there is a change in the environment. | <ul style="list-style-type: none"> - The individual transitional communities, are called seral communities. - There is a change in the species diversity, number of organisms and increase in biomass in the successive stages. |

- (c) Importance of phosphorus in living organisms:
- Phosphorus is a constituent of biomembranes.
 - It is also a component of nucleic acids.
 - It is needed for making shells, bones and teeth in animals.
 - It is a constituent of cellular energy currency. (any two)

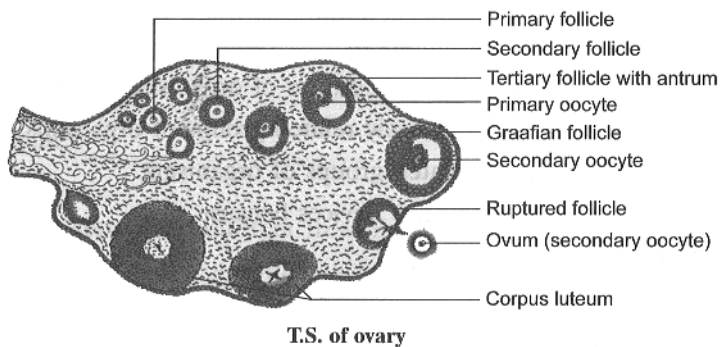
26. (a) Following are the inbreeding devices:
- There is synchrony between pollen release and stigma-receptivity; i.e. the anthers and pistil mature simultaneously.
 - The anthers and stigma lie close to each other in such a way that pollen from the anther can fall on the stigma.
 - Cleistogamous flowers (the bisexual flowers which do not open at all) are produced by some plants; this ensures autogamy.

(b) **Differences:**

| False fruits | Parthenocarpic fruits |
|--|---|
| <ul style="list-style-type: none">- They are formed after fertilisation.- A part of the flower other than the ovary contributes to fruit formation. e.g. apple/strawberry | <ul style="list-style-type: none">- They are formed without fertilisation.- The fruit is formed from the ovary only. e.g. banana |

Or

(a)



(any six)

- (b) Sertoli cells; they are located on the inner lining of seminiferous tubules.
- (c) - LH-surge refers to a very high (maximum) level of LH during the middle of menstrual cycle.
- It occurs around the 14th day of menstrual cycle, just before ovulation.

27. **Cancer-Diagnosis**

Cancer can be diagnosed/detected by:

- Biopsy and histopathological studies of the tissue.
- Blood and bone marrow tests for increased cell counts as in leukaemia.
- Use of techniques like radiography, Magnetic Resonance Imaging (MRI) and computed tomography (CT) for cancer of internal organs.
- Use of antibodies against cancer-specific antigens.
- Applying principles of molecular biology to detect genes in individuals with inherited susceptibility to certain types of cancer.

Or

Successful bee keeping

- It requires the following considerations:

- Knowledge of the nature and habits of bees.
- Selection of suitable location of keeping beehives.
- Catching and hiving of swarms.
- Management of beehives at different seasons.
- Handling and collection of honey and beeswax.