KSEAB PYQ K (2024)

Kannada

BOTANY

1. The function of Tapetum in microsporangium is:
(A) It nourishes the developing pollen grains
(B) Helps in dehiscence of anther to release the pollen
(C) Helps in protection
(D) Helps in division

2. Which pollination brings genetically different types of pollen grains to the stigma?
(A) Geitonogamy
(B) Xenogamy
(C) Autogamy
(D) Both a) and b)

3. In human males, XY type of sex determination is:
(A) Homogametic
(B) Heterogametic
(C) Both a) and b)
(D) Isogametic

4. In Griffith's experiment, mice infected with the _____ A _____ die from pneumonia infection, but mice infected with _____ B _____ don't develop pneumonia.
(A) A → S-Strain; B → S-Strain
(B) A → S-Strain; B → R-Strain
(C) A → R-Strain; B → S-Strain
(D) A → R-Strain; B → R-Strain

5. Which micro-organism is useful in the production of citric acid?
(A) *Acetobacter aceti*
(B) *Penicillium notatum*
(C) *Aspergillus niger*
(D) *Clostridium butylicum*

6. Population density increases as:
(A) Natality and Emigration increases
(B) Mortality and Emigration increases
(C) Natality and immigration decreases
(D) Natality and immigration increases

7. Net Primary Productivity (NPP) is equal to:
(A) GPP
(B) GPP + R
(C) GPP / R
(D) GPP – R

8. The species confined to a particular region and not found anywhere else are called as:
(A) Sacred species
(B) Endemic
(C) Extinct
(D) Vulnerable

9. If more than one embryo occurs in a seed then it is known as _____.

10. Haploid-diploid sex determination system is seen in _____.

11. Natural Indicator of Industrial Pollution is _____.

12. Parasites that feed on the external surface of the host organism are called _____.

13. Write the karyotype and symptoms of Klinefelter's syndrome.

14. Define BOD. Mention its significance.

15. What is meant by Decomposition and Detritus?

16. (A) Differentiate between false fruit and true fruit.
(B) What is meant by Parthenocarpic fruit?

17. Write any three criteria that a molecule has to fulfill to act as a genetic material.

18. Construct an upright pyramid of biomass.

19. What is Alien species invasion? Give two examples.

20. What is Incomplete dominance? Mention one example, write the schematic representation of the same.

21. List any five salient features of the Human Genome Project.

22. (A) Draw the schematic structure of a transcription unit.
(B) Write the difference between point mutation and frame shift mutation.

23. Describe the 'Role of Microbes as Biofertilisers'.

24. What is Mutualism? Mention any four examples of Mutualism.

25. Pollen-Pistil interaction is a dynamic process involving pollen recognition followed by promotion or inhibition - Explain.

26. Name the genetic disorder in which clotting of blood is affected. Write the features of this genetic disorder.

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Hint & Solution

1. (A)
The tapetum is the innermost wall layer of the microsporangium. Its primary role is to provide nourishment to the developing pollen grains. It is rich in food materials and enzymes.

2. (B)
Xenogamy involves the transfer of pollen grains from the anther of one plant to the stigma of a different plant of the same species. Since two different plants are involved, it results in genetic variation.

3. (B)
Human males produce two different types of gametes (sperms carrying either an X or a Y chromosome), making them heterogametic.

4. (B)
The S-strain (Smooth) of Streptococcus pneumoniae is virulent and causes death, while the R-strain (Rough) is non-virulent.

5. (C)
Aspergillus niger, a fungus, is widely used in the industrial-scale production of citric acid.

6. (D)
Natality (birth rate) and immigration (entry of individuals from outside) both add individuals to a population, thereby increasing its density.

7. (D)
NPP represents the remaining organic matter available to consumers after the producers (plants) have used some of the Gross Primary Productivity (GPP) for their own respiration (R).

8. (B)
Endemic species are restricted to a specific geographical area and are not found naturally in any other part of the world.

9. ( )
Polyembryony

10. ( )
Honey bee

11. ( )
Lichen

12. ( )
Ectoparasite

13. ( )
Karyotype: 44 + XXY (Total 47 chromosomes). Symptoms: Overall masculine development with feminine features (like enlarged breasts/gynaecomastia) and sterility.

14. ( )
BOD (Biochemical Oxygen Demand) is the amount of oxygen required by microbes to break down organic matter in water. Significance: Higher BOD indicates higher organic pollution and lower dissolved oxygen levels in the water.

15. ( )

Decomposition: The process by which decomposers break down complex organic matter into simpler inorganic substances.

Detritus: Refers to dead organic remains such as fallen leaves, bark, flowers, and dead animal remains, including fecal matter.

16. ( )

(A) False Fruit: Develops from the ovary along with other floral parts like the thalamus (e.g., Apple).

True Fruit: Develops only from the ovary after fertilization (e.g., Mango).

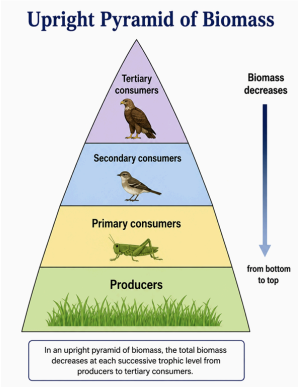
(B) A fruit that develops without fertilization is called parthenocarpic; they are usually seedless (e.g., Banana).

17. ( )

1. Ability to replicate. 2. Chemical and structural stability. 3. Scope for slow changes (mutations) required for evolution. 4. Ability to express itself as "Mendelian characters."

18. ( )

An upright pyramid shows the highest biomass at the producer level (base), which decreases at each subsequent trophic level: Primary Consumers → Secondary Consumers → Tertiary Consumers.



19. ( )

1. Nile perch in Lake Victoria.
2. Invasive weeds like Water Hyacinth or Lantana.