

## Biology

1. In a young anther, a group of compactly arranged homogenous cells were observed in the centre of each microsporangium. What is the name given to these cells?
2. Give the scientific name of a plant which came to India as a contaminant with imported wheat and causes pollen allergy.
3. Pollen grains of water pollinated species have a special characteristics for protection from water. What is that?
4. Why are pollen grains produced in enormous quantity in Maize?
5. In some species of Asteraceae and grasses, seed are formed without fusion of gametes. Mention the scientific term for such form of reproduction.
6. Arrange the following in correct developmental sequence :  
Male gamete, Potential pollen mother cell, sporogenous tissue, Pollen grains, Microspore tetrad.
7. If the diploid number of chromosomes in an angiospermic plant is 16. Mention number of chromosomes in the endosperm and antipodal cell.
8. Identify the sex of organism as male or female in which the sex chromosome are found as (i) ZW in bird (ii) XY in Drosophila (iii) ZZ in birds. (iv) XO in grasshopper.
9. Mention two differences between Turner's syndrome and Klinefelter's syndrome.
10. The human male never passes on the gene for haemophilia to his son. Why is it so?
11. Mention four reasons why Drosophila was chosen by Morgan for his experiments in genetics.
12. Differentiate between point mutation and frameshift mutations.
13. A woman with O blood group marries a man with AB blood group (i) work out all the possible phenotypes and genotypes of the progeny. (ii) Discuss the kind of dominance in the parents and the progeny in this case.
14. Explain the cause of Klinefelter's syndrome. Give any four symptoms shown by sufferer of this syndrome.
15. In Mendel's breeding experiment on garden pea, the offspring of F<sub>2</sub> generation are obtained in the ratio of 25% pure yellow pod, 50% hybrid green pods and 25% green pods State (i) which pod colour is dominant (ii) The Phenotypes of the individuals of F<sub>1</sub> generation. (iii) Workout the cross.
16. A dihybrid heterozygous round, yellow seeded garden pea (*Pisum sativum*) was crossed with a double recessive plant. (i) What type of cross is this? (ii) Work out the genotype and phenotype of the progeny. (iii) What principle of Mendel is illustrated through the result of this cross?
17. Some multinational companies and other organisations are using bioresources for commercial benefits, without proper authentication and compensation to concerned authorities.

- (a) Give the term for this unauthorised act.
- (b) Suggest any two ways to get rid of this.

18. A bacterium *Bacillus thuringiensis* produces a toxic protein named .cry protein. that is lethal to certain insects but not to bacterium

- (a) Why this toxin does not kill the bacteria?
- (b) What type of changes occur in the gut of insects on consuming this protein?
- (c) How man has exploited this protein for his benefit?

19. Who are generally the pioneer species in a Xerarch succession and in a Hyararch succession?

20. Which metabolic process causes a reduction in the Gross Primary Productivity?

21. What percentage of photosynthetically active radiation is captured by plants?

22. Name the pioners of primary succession in water.

23. Decomposition is faster if deteritus is rich in nitrogen and water soluble substance like sugars. When is the decomposition process slower?

24. If we count the number of insects on a tree and number of small birds depending on those insects as also the number of larger birds eating the smaller, what kind of pyramid of number would we get?

25. What is the shape of pyramid of biomass in sea? Why?

26. Give an example of an ecological pyramid which is always upright. Justify your answer.

27. Differentiate between primary succession and secondary succession. Which one occurs faster?

28. Gaseous nutrient cycle and sedimentary nutrient cycles have their reservoir. Name them. Why is a reservoir necessary?

29. Detrivores like earthworm are involved in the process of decomposition of dead plants and animals. Describe the different steps involved in the process of decomposition.

30. Landfills are not much a solution for getting rid of solid wastes. Why?

31. Electrostatic precipitator can remove over 99% particulate matter present in exhaust from a thermal power plant. How?

32. Why is a scrubber used? Which spray is used on exhaust gases passing through a scrubber?

33. There is a sharp decline in dissolved oxygen downstream from the point of sewage discharge. Why? What are its adverse effects?

34. Catalytic converters use expensive metals as catalysts. (a) Name the metals generally used. (b) What precaution should be observed while using catalytic converter.

35. What are e-wastes? Why are they creating more problem in developing countries in comparision to developed countries?

36. Water logging and salinity are some of the problems that have come in the wake of Green revolution. How does water logging create problems of salinity?
37. What is the relationship between BOD, micro-organisms and amount of biodegradable matter?
38. Deforestation is creating a lot of problems in the environment. List the consequences of deforestation.
39. Enlist four harmful effects caused to the humans living in areas having polluted air. Suggest two measures to reduce air pollution.
40. People have been actively participating in the efforts for the conservation of forests.
- (i) Name the award instituted in respect of Amrita Devi to promote such efforts. (ii) Name the movement launched to protect the trees by hugging them. (iii) Name the step Government of India has undertaken in 1980's to work closely with the local communities for protecting and managing forests.
41. Pollutant released due to human activities (like effluents from industries and homes) can radically accelerate the ageing process of the water body. (a) Explain how does this process occurs during natural ageing of lake. (b) Give the term used for accelerated ageing of water bodies. Also give the term used for the natural ageing of lake.
42. In Arcata, the town's people have created an integrated waste water treatment process within a natural system. A citizen group called FOAM helps in upkeep of this project. (a) What are the main steps in waste water management done in this way? (b) 'Ecosan' in Kerala and Sri Lanka is also an initiative for water conservation. How?
43. What are the contribution of Ahmed Khan in Bangalore and Ramesh Chandra Dagar in Sonapat?
44. Landfill sites are getting filled very fast due to large amount of garbage generation. Also underground water resources may get polluted due to seepage of chemicals.
45. Name two alcoholic drinks produced in each of the following ways. (i) by distillation and (ii) without distillation.
46. Lactic Acid Bacteria (LAB) is commonly used in the conversion of milk into curd. Mention any two other functions of LAB that are useful to humans.
47. How do mycorrhizae function as biofertilisers? Explain with example.
48. Cyanobacteria (Nostoc, Anabaena) are used as biofertilisers in certain crop fields. Name such one crop. Also, mention the names of two other microorganisms which perform the same function.
49. Which Ministry of Govt. of India had initiated Ganga Action Plan and Yamuna Action Plan? What are the objectives of these plans?

50. What is biochemical oxygen demand (BOD) test? At what stage of Sewage treatment this test is performed? BOD level of three samples of water labelled as A, B and C are 30 mg/ L, 10mg/L and 500 mg/L respectively. Which sample of water is most polluted?