

Guru Gobind Singh Public School
Sector V/B, B.S. City

Class: XII

Subject: Biology Assignment 2018

1. In the whiptail lizards only females are born generation after generation. There are no males. How is this possible?
2. Coconut palm is monoecious while date palm is dioecious. Why are they called so?
3. What is self-incompatibility? Why does self-pollination not lead to seed formation in self-incompatible species?
4. Name the blank spaces A, B, C and D from the table given below:

Item	What it represents in the plant?
1. Pericarp	A
2. B	Cotyledon in seeds of grass family
3. Embryonal axis	C
4. D	Remains of nucellus in a seed

5. Banana is a perthenocarpic fruit where as orange show polyemryony. How are they different from each other with respect to seeds?
6. i) Draw a labeled diagram of L.S. of embryo of grass (any six labels)
ii) Give reason for each of the following.
(a) Anthers of angiosperm flower are described as dithecous.
(b) Hybrid seeds have to be produced year after year.
7. i) Trace the developments of megaspore mother cell up to the formation of a mature embryo sac in a flowering plant.
ii) Draw a labeled diagram of the structure of a mature dicote embryo.
8. i) Give a schematic representation showing the events of spermatogenesis in human male.
ii) Describe the structure of human sperm.
9. Show diagrammatically the stages of embryonic development from zygote upto implantation in human female.
10. Why is 'Saheli' considered to be an improved form of oral contraceptive for human female?
11. a) Draw a diagrammatic sectional view of human ovary showing different stages of oogenesis along with corpus luteum.
b) Where is morula formed in human? Explain the process of its development from zygote.
12. i) Draw a labeled diagram of the human female reproductive system.
ii) Enumerate the event in the ovary of a human female during-

- (a) Follicular phase b) Luteal phase of menstrual cycle
13. i) Draw a schematic diagram of a human sperm and label the cellular components Give the functions of any three parts.
ii) Where are the sperm needs found embedded to survived after spermatogenesis.
 14. Describe the role of FSH, LH, Estrogen and progesterone during menstrual cycle in human female.
 15. Why is the human placenta referred to as haemochorial type? Name the hormone it secretes to facilitate parturition.
 16. Write the cause and any two characteristics of following chromosomal abnormalities.
(i) Down's Syndrome (ii) Turner's Syndrome (iii) Klinefelter's Syndrome
(ii) A relevant portion of β -chain of haemoglobin of a normal human is given below-
 17. The codon for the sixth amino acid is GAG. The sixth codon GAG mutates to GAA as a result of mutation 'A' and mutation 'B' result GUG. Haemoglobin structure did not change as mutation A but haemoglobin structure changed due to mutation B leading to sickle shaped RBCs. Explain giving reason how could mutation B change the structure of haemoglobin not mutation A.
 18. A garden pea plant bearing terminal, violet flowers when crossed with another pea plant bearing axial violet flowers, producing axial violet flowers and axial white flowers in the ratio of 3:1. Work out the cross showing the genotypes of parent pea plant and their progeny.
 19. In a cross between a true breeding red flowered and true breeding white flowered snapdragon plant, the F_1 plants produced pink flowers. Name and explain the types of inheritance.
 20. (a) What do you mean by polygenic inheritance. How polygenic inheritance is different from monogenic inheritance.
(b) Differentiate between haemophilia and thalassemia.
(c) What is pleiotropy? How phenylketonuria is a good example of pleiotropy?
 21. How did Hershey and Chase arrive at the conclusion that DNA is genetic material.
 22. Describe Meselson and Stahl's experiment to prove that DNA replication is semiconservative.

23. a) State the 'central dogma' as proposed by Francis crick. Are there any exceptions to it? Support your answer with a reason and an example.
- b) Explain how the biochemical characterization (nature) of 'Transforming Principle' was determined, which was not defined from Griffith's experiment.
24. (a) Why is DNA Molecule a more stable genetic material than RNA? Explain.
- (b) The length of DNA molecule in a typical mammalian cell is calculated to be approximately 2.2 metres. How is the packaging of this long molecule done to accommodate it within the nucleus of the cell?
25. One of the condons of mRNA is AUG. Draw the structure of tRNA adapter molecule for this codon. Explain the uniqueness of this tRNA.
26. How does the Hardy-Weinberg's expression ($p^2+2pq+q^2=1$) explain that genetic equilibrium is maintained in population.
27. Stanley-Miller performed an experiment by recreating in the lab the probable conditions of the atmosphere of the primitive earth-
- What was the purpose of the experiment.
 - In what form was the energy supplied for the chemical reaction to occur?
 - What is biogenesis?
 - Give a diagrammatic representation of Miller' experiment.
28. (a) At what ends do capping and tailing of hnRNA occurs respectively?
- (b) What is hnRNA? Explain the changes hnRNA undergoes during its processing to form mRNA.
29. Nematode specific genes are introduced into the tobacco plants using Agrobacterium vectors to develop resistance in tobacco plants against nematodes. Explain the events that occurs in tobacco plant to develop resistance.
30. Write the scientific name of the soil bacterium which produces cry proteins. How are these proteins useful in agriculture.
31. How did an American company Eli Lilly use the knowledge or r-DNA technology to produce human insulin.
32. What is somatic hybridization? Explain the various steps involved in the process. Mention any two uses of somatic hybridization.
33. What is meant by plant tissue Culture? Write a short note on meristem culture.
34. (a) What is the programme called that is involved in improving success rate of production of desired hybrid and herd size of cattle?

- (b) Explain the method used for carrying this programme for cows.
35. Name the genus to which baculoviruses belong. Describe their role in the integrated pest management programmes.
 36. How do organisms cope with stressful external environmental conditions which are localized or of short duration?
 37. Determination of Biological Oxygen Demand (BOD) can help in suggesting the quality of a water body. Explain.
 38. Name the type of cells the AIDS virus first enters into after getting inside the human body. Explain the sequence of events that the virus undergoes within these cells to increase their progeny.
 39. Name the infective stage of plasmodium which Anopheles mosquito takes in along with the blood meal from an infected human. Why does the infection cause fever in humans? Give a flow chart of the part of the life-cycle of this parasite passed in the insect.
 40. Draw a neat and a well labeled diagram of a carbon cycle of an ecosystem.
 41. DNA being hydrophilic cannot pass through the cell membrane of a host cell. Explain how does recombinant DNA get introduced into the host cell to transform the letter.
 42. Differentiate between J-shape curve and S-shape curve. Write the equation for both curve.
 43. The clown fish lives among the tentacles of sea anemone. What is this interaction between them called and why?
 44. What is primary productivity? In what units would you express productivity? Explain the difference between net primary productivity and gross primary productivity.
 45. What is ecological succession on bare rock called? Name the first and the last but one succession stages in it. Explain how the climax community gets established in this succession.

46. Differentiate between in situ and ex situ approaches of conservation of biodiversity.
47. What is Area-Species relationship. Write the equation of Area-Species relationship.
48. What is meant by ozone shield? Name two gases that can cause damage to this shield. Give one harmful effect of this damage each on plants and animals.
49. Draw a labelled schematic sketch of replication fork of DNA. Explain the roll of the enzymes involved in DNA replication.
50. What does the lac operon consist of? How is the operator switch turned on and off in the expression of genes in this operon? Explain.