

**Nagaland  
Class XII  
Biology  
Sample Paper-1**

**Time allowed: 3 hours**

**Maximum Marks: 70**

**General Instructions:**

- i. Approximately 15 minutes is allotted to read the question paper and revise the answer.
- ii. All questions are compulsory. Marks are indicated against each question.
- iii. The question paper consists of two parts – Part A and Part B.  
Each part contains 14 questions.
- iv. Internal choice has been provided in some questions.
- v. Write the answers of Part A and Part B in separate answer books.  
Marks shall not be awarded if the answers of both the Part are written in one book nor marks awarded if answers of Part A are written in the answer book of Part B and vice-versa.

**N.B: Check that all pages of the question paper is complete as indicated on the top left side.**

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**PART - A**

1. In the embryo sac, how many nuclei differentiate to form the antipodal cells? [1]
  - (a) 1
  - (b) 2
  - (c) 3
  - (d) 4
  
2. Which of the following is not used for surface sterilisation of an explant, which is used for plant tissue culture? [1]
  - (a) Sodium hypochlorate
  - (b) Clorox water
  - (c) Methiolate
  - (d) UV radiation
  
3. Which of the following plants does not belong to the genus *Solanum*? [1]
  - (a) Tomato
  - (b) Potato
  - (c) Brinjal
  - (d) Spinach

4. Which of the following can convert sulphates to hydrogen sulphide? [1]  
(a) Aerobacter  
(b) Beggiatoa  
(c) Thiobacillus thiooxidans  
(d) Neurospora
5. Flavr Savr is genetically modified [1]  
(a) Tomato  
(b) Potato  
(c) Banana  
(d) Rice
6. A bilobed and dithecous anther has 100 microspore mother cells per microsporangium. How many male gametophytes can it produce? [2]
7. What is inbreeding in plants? What happens to the recessive alleles in this process? [2]
8. What is stratification in an ecosystem? Explain with an example. [2]
9. What is primary productivity? How is it different from net primary productivity? [3]
10. What is meant by monosporic development of female gametophyte?

**Or** [3]

Differentiate between microsporogenesis and megasporogenesis. What type of cell division occurs during these events? Name the structures formed at the end of these two events.

11. How are somaclones cultured from explants in *in vitro* conditions? Why are somaclones so called? [3]
12. Draw a labelled diagram of the sectional view of a mature pollen grain in angiosperms. Explain the functions of its different parts.

**Or** [5]

How are seeds advantageous to flowering plants?

13. How has the breeding programme helped in improving public nutritional health? State two examples in support of your answer.

**Or** [5]

Describe how do oxygen and chemical composition of detritus control decomposition

**14. Give reasons why**

- (i) Most zygotes in angiosperms divide only after certain amount of endosperm is formed.
- (ii) Groundnut seeds are exalbuminous and castor seeds are albuminous.
- (iii) Micropyle remains as a small pore in the seed coat of a seed.
- (iv) Integuments of an ovule harden and the water content is highly reduced as the seed matures.
- (v) Apple and cashew are not called true fruits.

**Or**

[5]

What is budding? Describe gemmulation in *Spongilla*.

**PART – B**

- 1. Funnel-shaped corolla is an adaptation of which type of flowers?** [1]
  - (a) Anemophilous flowers
  - (b) Hydrophilous flowers
  - (c) Entomophilous flowers
  - (d) Ornithophilous flowers
  
- 2. Triticale is produced by the crossing of** [1]
  - (a) Wheat and rye
  - (b) Wheat and maize
  - (c) Wheat and barley
  - (d) Rye and Maize
  
- 3. Cultivation of Bt cotton has been much in the news. The prefix Bt means** [1]
  - (a) "Barium treated" cotton seeds
  - (b) "Bigger thread" variety of cotton with better tensile strength
  - (c) Produced by "biotechnology" using restriction enzymes and ligases
  - (d) Carrying an endotoxin gene from *Bacillus thuringiensis*
  
- 4. A plant drug used for the treatment of blood pressure and schizophrenia is** [1]
  - (a) Reserpine
  - (b) Taxol
  - (c) Morphine
  - (d) Vincristine
  
- 5. Greenhouse gases are capable of absorbing** [1]
  - (a) Short wave infrared radiation
  - (b) Long wave infrared radiation
  - (c) Short wave radio waves
  - (d) Long wave radio waves

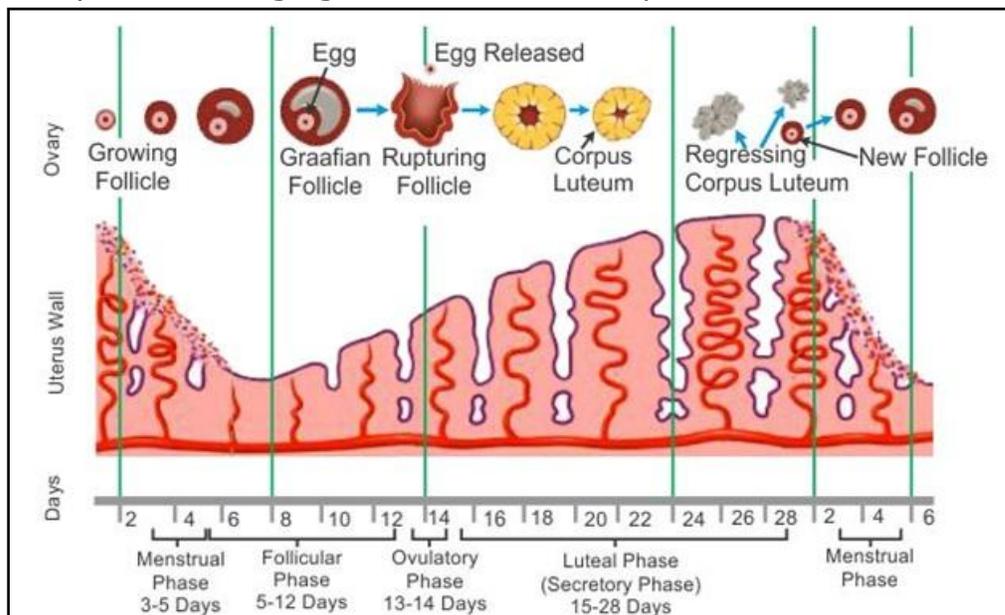
6. What is parturition? Which hormones are involved in it? [2]
7. A low level of expression of lac operon occurs all the time. Can you explain the logic behind this phenomenon? [2]
8. Why Cro-magnon man is called the extinct representative of modern man? [2]
9. What do you understand by differential reproduction and reproductive isolation? In what context are these terms used? [3]
10. Differentiate between S-shaped and J-shaped growth curve.

**Or** [3]

How does a transgenic organism differ from the rest of its population? Give any two examples of such organisms for human advantage

11. Mention the phenomenon of sex determination in the following cases: [3]
  - (a) Male *Drosophila* - XY
  - (b) Female fowl - ZW
  - (c) Male grasshopper - XO

12. Study the following figure and answer the questions that follows:



Why is corpus luteum important even though it is the remains of a ruptured follicle?

(b) On the basis of the differing levels of hormones at various stages, can you say which hormone should be used as a birth control pill and how does it act?

- (c) How is estrogen related to menstrual cycle?
- (d) How does FSH and LH regulate the menstrual cycle?

**Or**

- (a) How is activated sludge produced during sewage treatment?
- (b) Explain how this sludge is used in biogas production. [5]

**13.** What is adaptation? Describe the adaptations of plants and animals in the desert

**Or** [5]

State and explain the factors affecting allele frequency in populations

**14.** Explain the efforts for the conservation of biodiversity at international level.

**Or** [5]

- (a) Draw a labelled longitudinal view of an albuminous seed.
- (b) How are seeds advantageous to flowering plants?