

CBSE
Class XII Biology
Sample Paper – 1

Time: 3 Hours

Total Marks: 70

General Instructions:

- (i) All questions are compulsory.
 - (ii) The question paper has four sections: Section A, Section B, Section C and Section D. There are 33 questions in the question paper.
 - (iii) Section A 14 questions of 1 mark each and 02 case-based questions. Section B has 9 questions of 2 marks each. Section C has 5 questions of 3 marks each. Section D has 3 questions of 5 marks each.
 - (iv) There is no overall choice in the question paper. However, internal choices are provided in some questions. A student has to attempt only one of the alternatives in such questions.
 - (v) Wherever necessary, neat and properly labelled diagrams should be drawn.
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Section A

1. Name the gland that secretes FSH. [1]
2. What is the significance of amniocentesis? [1]
3. What is the fate of secondary nucleus after fertilization? [1]
4. State the function of exine in the pollen grain. [1]
5. At which particular stage of chromosomes do errors like deletion of genes occur in an individual? [1]
6. In which part of the cell does the translation occur? [1]
7. Name the protein found in the DNA. Also mention the charge on it. [1]
8. Expand GEAC and ELISA. [1]
9. What type of cut ends are formed when both the strands of DNA is cleaved at exactly the same nucleotide position? [1]
10. What is the cause of altitude sickness at high altitudes? [1]
11. **Assertion:** In a person with AB blood group, the erythrocytes carry both A and B antigens on their surface. [1]
Reason: The alleles I^A and I^B , which produce AB blood group, are codominant and both are expressed.
 - a. Both assertion and reason are true, and reason is the correct explanation of the assertion.
 - b. Both assertion and reason are true, and reason is not the correct explanation of the assertion.
 - c. Assertion is true but reason is false.

d. Both assertion and reason are false.

OR

Assertion: Adenine cannot pair with cytosine.

Reason: Adenine and cytosine do not have a perfect match between hydrogen donor and hydrogen acceptor sites.

- a. Both assertion and reason are true, and reason is the correct explanation of the assertion.
- b. Both assertion and reason are true, and reason is not the correct explanation of the assertion.
- c. Assertion is true but reason is false.
- d. Both assertion and reason are false.

12. Assertion: The cut pieces of DNA are linked with plasmid DNA. [1]

Reason: Plasmid DNA fails to act as vectors.

- a. Both assertion and reason are true, and reason is the correct explanation of the assertion.
- b. Both assertion and reason are true, and reason is not the correct explanation of the assertion.
- c. Assertion is true but reason is false.
- d. Both assertion and reason are false.

13. Assertion: Chamaeleon can change its colour. [1]

Reason: It is a fashionable animal.

- a. Both assertion and reason are true, and reason is the correct explanation of the assertion.
- b. Both assertion and reason are true, and reason is not the correct explanation of the assertion.
- c. Assertion is true but reason is false.
- d. Both assertion and reason are false.

14. Assertion: Habitat loss and fragmentation cause driving animals and plants to extinction. [1]

Reason: The most dramatic examples of habitat loss come from tropical rain forests.

- a. Both assertion and reason are true, and reason is the correct explanation of the assertion.
- b. Both assertion and reason are true, and reason is not the correct explanation of the assertion.
- c. Assertion is true but reason is false.
- d. Both assertion and reason are false.

15. Read the following and answer any four questions from 15 (i) to 15 (v) given below:

[4]

The use of drugs and alcohol has been on the rise especially among the youth according to the latest surveys and statistics. This has become a cause of concern as it could result in many harmful effects. Proper education and guidance would enable youth to safeguard themselves against these dangerous behaviour patterns and follow healthy lifestyles.

There are many drugs, which are commonly abused are opioids, cannabinoids and coca alkaloids. Majority of these are obtained from flowering plants. However, some are obtained from fungi too.

- (i) Natural cannabinoids are obtained from the inflorescences of the plant:
- Cannabis sativa*
 - Erythroxylum coca*
 - Atropa*
 - Belladonna*
- (ii) Which of the following is the main component of opium?
- Heroin
 - Morphine
 - Methadone
 - Codeine
- (iii) Which of the following is a white, crystalline powder obtained from the acetylation of morphine?
- Heroin
 - Morphine
 - Methadone
 - Codeine
- (iv) Drugs like barbiturates, amphetamines, benzodiazepines, lysergic acid diethyl amides (LSD), and other similar drugs, that are normally used as medicines to help patients cope with
- Digestive disorders
 - Heart ailments
 - Mental illness
 - Urinary infection
- (v) **Assertion:** Tobacco has been used by human beings for more than 400 years.
Reason: It is smoked, chewed or used as a snuff.

- a. Both assertion and reason are true, and reason is the correct explanation of the assertion.
- b. Both assertion and reason are true, and reason is not the correct explanation of the assertion.
- c. Assertion is true but reason is false.
- d. Both assertion and reason are false.

16. Read the following and answer any four questions from 16 (i) to 16 (v) given below:

[4]

Haemophilia is sex linked recessive disease, which shows its transmission from unaffected carrier female to some of the male progeny has been widely studied. In this disease, a single protein that is a part of the cascade of proteins involved in the clotting of blood is affected. Due to this, in an affected individual a simple cut will result in non-stop bleeding.

The heterozygous female (carrier) for haemophilia may transmit the disease to sons. The possibility of a female becoming a haemophilic is extremely rare because mother of such a female has to be at least carrier and the father should be haemophilic.

- (i) The _____ for haemophilia may transmit the disease to sons.
 - a. heterozygous female
 - b. homozygous female
 - c. heterozygous male
 - d. None of these

- (ii) Which of the following diseases could be avoided by analysing the pedigree of the parents?
 - a. Amoebiasis
 - b. Klinefelter's syndrome
 - c. Haemophilia
 - d. Poliomyelitis

- (iii) Why do generally human males suffer from haemophilia?
 - a. Men possess single X chromosome
 - b. Men possess single Y chromosome
 - c. Men possess two Y chromosomes
 - d. Men possess two XX chromosomes

- (iv) In _____, an affected individual a simple cut will result in non-stop bleeding.
 - a. Sickle cell anaemia
 - b. Phenylketonuria
 - c. Down's syndrome
 - d. Haemophilia

- (v) The possibility of a female becoming a haemophilic is extremely rare. What condition/s makes a female child haemophilic?
- Father should be normal and mother should be haemophilic.
 - Father should be haemophilic and mother should be a carrier.
 - Mother should be normal and father should be haemophilic.
 - Both father and mother should be normal.

Section B

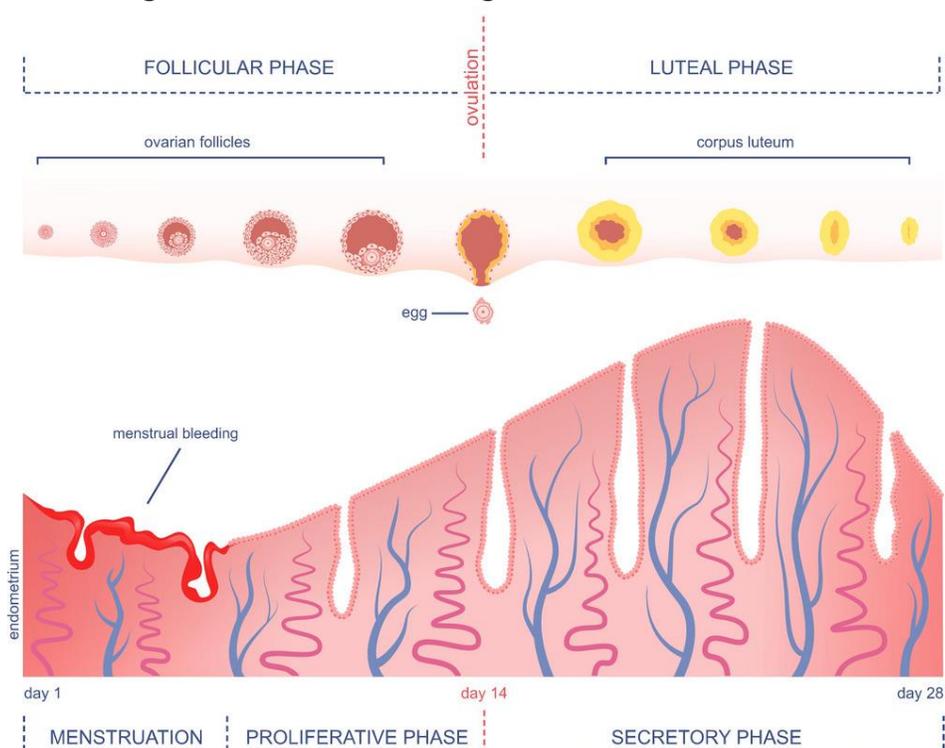
17. How is *Bryophyllum* cultivated? [2]
18. What will be the genotypes of the parents if the offspring had phenotypes in the following proportion? [2]
- 9:3:3:1
 - 1:1:1:1 (use the symbols Aa and Bb)
19. Name any two species of fungus which are used in the production of antibiotics. [2]
20. Explain any two methods of vectorless gene transfer. [2]
- OR**
- How has recombinant technology helped in large scale production of vaccines? Explain giving one example.
21. *Bacillus thuringiensis* produces insecticidal protein. Why does this toxin not kill *Bacillus*? [2]
22. Before integrating DNA with bacterial plasmid, bacterial cells are treated with calcium. Why? [2]
- OR**
- Name the vectors and enzymes used in recombinant DNA technology.
23. What is IUCN Red List? Give its main aim. [2]
24. Name and explain the type of interaction between big trees and certain species of wasps. [2]
25. What is parasitism? Give an example. [2]

Section C

26. Differentiate between spermatocytes and oocytes. [3]
27. During his studies on genes in *Drosophila* which were sex-linked, T. H. Morgan found that F₂-population phenotypic ratios deviated from the expected 9:3:3:1. Explain the conclusion he arrived at. [3]
28. List some symptoms of drug addicts. [3]
29. How does the RNA interface help in developing resistance in tobacco plant against nematode infection? [3]
30. What are positive interactions in a biotic community? Give their kinds. Explain any one of them. [3]

Section D

31. (a) With reference to the below schematic representation of menstrual cycle answer the following questions: [5]
- (i) What is proliferative phase? For how many days does it last?
- (ii) What changes occur in uterus during menstruation?



- (b) Name any two copper-releasing IUDs.
- (c) Explain how they act as effective contraceptives in human females.

OR

Write the function of the following:

[5]

- (a) Corpus luteum
- (b) Endometrium
- (c) Acrosome
- (d) Sperm tail
- (e) Fimbriae

32.

[5]

- (i) A phenomena in which more than two alleles exist at a given locus of a chromosome in individuals. Mention the name of the phenomena and explain with the help of an example.
- (ii) What is codominance? Which blood group is an example of codominance?

OR

Explain the structure of transfer RNA. What are its main sites? Also, draw its diagram to show its sites.

33. In agriculture, there is a method of controlling pests that relies on natural predation rather than introduced chemicals. [5]

- (i) What any two advantages of Biological control over chemical control?
- (ii) Why are chemical pesticides not preferred by the farmers in controlling pests?
- (iii) Name the main sources of biofertilizers.
- (iv) What are biofertilizers?
- (v) Name the two elements which are made available of biofertilizers.

OR

- (a) Name the stage of *Plasmodium* which gains entry into the human body.
- (b) Trace the stages of *Plasmodium* in the body of female *Anopheles* after its entry.
- (a) Explain the cause of periodic recurrence of chill and high fever during malarial attack in humans.