CBSE Class 12 Biology 2026 - Set 57/7/1 - Compartment

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 3 Hours **Maximum Marks: 70**

General Instructions

(i) This question paper contains 33 questions. All questions are compulsory.

(ii) Question paper is divided into five sections – Sections A, B, C, D and E.

(iii) Section A – questions number 1 to 16 are Multiple Choice Type Questions. Each question carries 1 mark.

(iv) Section B – questions number 17 to 21 are Very Short Answer Type Questions. Each question carries 2 marks.

(v) Section C – questions number 22 to 28 are Short Answer Type Questions. Each question carries 3 marks.

(vi) Section D – questions number 29 and 30 are Case-Based questions. Each question carries 4 marks. Each question has subparts with internal choice in one of the subparts.

(vii) Section E – questions number 31 to 33 are Long Answer Type Questions. Each question carries 5 marks.

(viii) There is no overall choice. However, an internal choice has been provided in Sections B, D and E of the question paper. A candidate has to write answer for only one of the alternatives in such questions.

(ix) Kindly note that there is a separate question paper for Visually Impaired candidates.

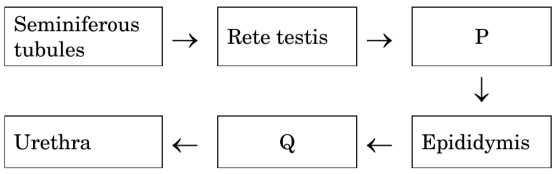
(x) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section A

1. The undifferentiated sheath that encloses the radicle and root cap in a monocot embryo, is known as :

(A) Coleoptile
(B) Coleorrhiza
(C) Epiblast
(D) Scutellum

2. The path of the sperm transport is shown below. Identify P and Q and select the correct option.



(A) P – Vasa efferentia, Q – Ureter
(B) P – Ejaculatory duct, Q – Vas deferens
(C) P – Vasa efferentia, Q – Vas deferens
(D) P – Vas deferens, Q – Vasa efferentia

3. Morgan hybridised *Drosophila* white-eyed and yellow-bodied female with red-eyed and brown-bodied male (wild type) and intercrossed their F_1 progeny. He observed that the two genes :

(A) Did not segregate independent of each other.
(B) Showed very low percentage of parental gene combinations.
(C) Segregated independently of each other.
(D) Showed very high percentage of recombinations.

4. Select the option that has only termination codons.

(A) UAA, UGA, UAG
(B) UAA, UUU, UGG
(C) UAA, UAG, UAC
(D) UUU, UCC, UGG

5. Choose the correct option that refers to adaptive radiation.

(A) Evolution of different species from a common ancestor to other geographical areas
(B) Migration of members of different species to a common geographical area
(C) Power of adaptation in an individual to a variety of environments
(D) Evolution by anthropogenic action

6. P and Q are required in the extension step of PCR to extend the primer sequences from the 3′ end of each primer. Choose the option which correctly fills the blanks P and Q.

(A) P – Ribonucleoside triphosphate, Q – DNA polymerase
(B) P – Deoxyribonucleotide triphosphate, Q – Thermolabile Taq-polymerase
(C) P – Deoxynucleotides, Q – Thermostable DNA-polymerase
(D) P – Deoxyribonucleoside monophosphate, Q – Thermostable DNA-polymerase

7. Identify the microbe that is responsible for producing large-holes in Swiss cheese.

(A) *Propionibacterium sharmanii*
(B) *Saccharomyces cerevisiae*
(C) *Penicillium notatum*
(D) *Acetobacter aceti*

8. Tetanus antitoxin, when injected into the human body, immediately provides which kind of immunity? Choose the correct option.

(A) Innate immunity
(B) Passive immunity
(C) Autoimmunity
(D) Active immunity

9. Cry proteins coded by the gene Cry IAb controls which one of the following pests?

(A) Cotton bollworm
(B) Corn borer
(C) Tobacco budworm
(D) Mosquito

10. If a new habitat is being colonized, out of the four processes affecting population growth, which are the two factors that contribute to an increase in population density?

(i) Immigration (ii) Natality (iii) Emigration (iv) Mortality

Options :

(A) (i) and (ii)
(B) (ii) and (iii)
(C) (iii) and (iv)
(D) (i) and (iv)

11. During the decomposition process, mineralisation by micro-organisms leads to the release of which nutrients into the soil (soil)?

(A) Inorganic nutrients from humus
(B) Both organic and inorganic nutrients from detritus
(C) Organic nutrients from humus
(D) Inorganic nutrients from detritus and formation of humus

12. Genetically modified tobacco plants were produced using *Agrobacterium* vectors. Which properties of *Agrobacterium* help in carrying nematode-specific genes into the host plant?

(A) Infectious for monocot plants; has Ti plasmid
(B) Infectious for dicot plants; has Ti plasmid
(C) Infectious for plants and animals; has Ti plasmid
(D) Infectious for monocots and dicots; has cry genes

13. **Assertion (A):** Apomictic embryos are genetically identical to the parent plant.

Reason (R): Apomixis is the production of seeds without fertilisation.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is *not* the correct explanation of the Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.

14. **Assertion (A):** Determining the sex of an unborn child followed by MTP is an illegal practice.

Reason (R): Amniocentesis is a practice to test the presence of genetic disorders.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is *not* the correct explanation of the Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.

15. **Assertion (A):** Mucosa-associated lymphoid tissues are specialised immune barriers located on the skin.

Reason (R): MALT constitutes about 50 percent of the lymphoid tissue in a human body.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is *not* the correct explanation of the Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.

16. **Assertion (A):** Vector DNA and foreign DNA are cut by the same restriction enzyme.

Reason (R): Vector DNA and foreign DNA, cut with same enzyme, produces complementary sticky ends.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is *not* the correct explanation of the Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.

Section B

17(a). How is it possible in *Oxalis* and *Viola* plants, to produce assured seed sets even in the absence of pollinators?

OR

17(b). Write the ploidy of the cells of the nucellus, MMC (Megaspore Mother Cell), the functional megaspore and female gametophyte.

18. How can childless couples get help by the following assisted reproductive technologies?

(a) GIFT

(b) ICSI

19(a). Name the scientist who proposed the central dogma in molecular biology. Give its schematic representation.

OR

19(b). Write four criteria to be fulfilled by a molecule to act as a genetic material.

20. (a) Define stratification in an ecosystem.

(b) How is stratification represented in a forest ecosystem?

21(a). (i) Name the source plant of heroin drug. How is it obtained from the plant?

(ii) Write the effects of heroin on the human body.

OR

21(b). What is 'withdrawal syndrome'? List any two symptoms it is characterised by.

Section C

22. (a) Draw a diagram of L.S. of an anatropous ovule of an angiosperm. Label the following parts :

(i) Nucellus

(ii) Outer integument

(iii) Antipodal cells

(iv) Polar nuclei

(b) How does endosperm in angiosperms become triploid?

23. Define test cross. How does test cross help to determine the genotype of an individual? Explain with the help of an example.

24. Explain the Hardy-Weinberg principle with the help of an algebraic equation.

25. (a) How does the human body respond to an allergen? Which type of antibody is produced during allergic reactions?

(b) Name the types of drugs that help in reducing the symptoms of allergic reactions.

(c) Name the chemicals released in the body during an allergic reaction.

26. Explain any three different approaches used in the treatment of a person suffering from Adenosine Deaminase deficiency.

27. (a) Name the type of interaction seen in each of the following examples.

(i) An orchid growing on branch of mango tree

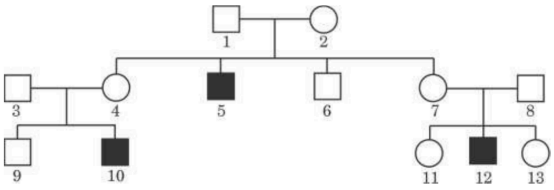
(ii) Wasp pollinating fig inflorescence

(b) Also explain the above interactions shown by (i) and (ii).

28. 'Indo-Burma' is considered as a hotspot. What is meant by the term 'hotspots' in biodiversity? List two criteria used for determining a 'hotspot'. Name any two hotspots of India.

Section D

29(a). Haemophilia is a sex-linked recessive disease. Study the pedigree analysis given below showing the inheritance of the disease in a family and answer the questions that follow :



Analyse the given pedigree chart to explain why Haemophilia is considered a sex-linked recessive disorder.

29(b). (i) The possibility of a human female becoming a haemophilic is extremely rare. Explain.

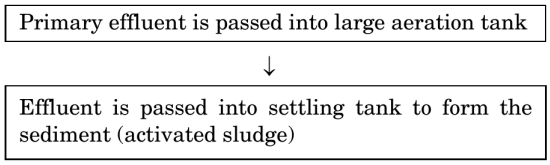
(ii) Why do the sons of a haemophilic father never suffer from this disease?

29(c)(i). Write the possible genotype of the individuals 2 and 5.

OR

29(c)(ii). Why is haemophilia categorised as a Mendelian disorder?

30(a). Sewage is generated in large quantities in the urban areas. It is treated in sewage treatment-plants (STPs) to make it less polluted before discharging into any natural water body. Observe the flow chart given below and answer the questions that follow :



Name the two products obtained after primary treatment of sewage.

30(b). What happens to the activated sludge when it is passed into an anaerobic sludge digester? Explain.

30(c)(i). Name the two groups of microbes present in the primary effluent after it is passed into large aeration tanks.

OR

30(c)(ii). Define BOD. What happens to the BOD when organic matter present in the wastewater increases?

Section E

31(a). Draw a flow chart to show hormonal control of the human male reproductive system.

OR

31(b). Explain the changes that the primary oocyte undergoes while in different follicular stages before ovulation.

32(a). (i) How and why is charging of tRNA essential in the process of translation?

(ii) State the function of ribosome as a catalyst in translation in bacteria.

(iii) Explain the process of binding of ribosomal units to mRNA during protein synthesis.

(iv) Where are untranslated regions located in mRNA? Mention their role.

OR

32(b). (i) State the arrangement of different genes, that in bacteria is referred to as 'operon'.

(ii) Draw a schematic labelled illustration of *lac* operon in a switched on state.

(iii) Describe the role of lactose in *lac* operon.

33(a)(I)(i). State the role of selectable markers in rDNA technology.

33(a)(I)(ii). Name two such selectable markers which are considered to be useful for *E. coli* cloning vector.

33(a)(I)(iii). State two significances of 'Ori' in *E. coli* cloning vector.

33(a)(II). How have biotechnologists effectively used *Agrobacterium tumefaciens* in plants and retroviruses in animals? Explain.

OR

33(b). Name and describe the technique that helps in separation and isolation of DNA fragments after cutting of DNA by restriction endonucleases.

- End of Question Paper -