CBSE Class 12 Biology 2026 - Set 57/7/3 - 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. Identify the disease which is an inborn error of metabolism and is also inherited as an autosomal recessive trait.

(A) Thalassemia
(B) Haemophilia
(C) Down syndrome
(D) Phenylketonuria

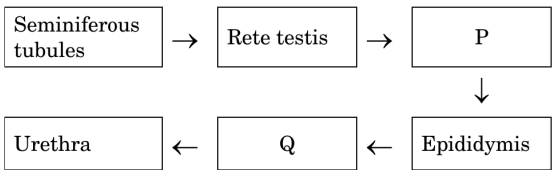
2. The undifferentiated sheath that encloses the radicle and root cap in a monocot embryo, is known as :

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

3. 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

4. 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

5. Endosperm is completely consumed by the developing embryo in which of the following plants? Choose the correct option.

(A) Castor and Coconut
(B) Coconut and Groundnut
(C) Groundnut and Pea
(D) Castor and Pea

6. Biocontrol agents like Dragonflies are used to get rid of which of the following pests/insects?

(A) Aphids
(B) Mosquitoes
(C) Caterpillar of butterflies
(D) Cotton bollworms

7. Which of the following options correctly depicts the recognition site for EcoRI?

(A)
$$\begin{array}{l} G-A-A\overset{\downarrow}{-}T-T-C \\ C-T-T-A-A-G \\ \qquad\qquad\uparrow \end{array}$$

(B)
$$\begin{array}{l} G-T-C\overset{\downarrow}{-}G-A-C \\ C-A-G-C-T-G \\ \qquad\qquad\uparrow \end{array}$$

(C)
$$\begin{array}{l} G\overset{\downarrow}{-}T-C-G-A-C \\ C-A-G-C-T-G \\ \qquad\qquad\uparrow \end{array}$$

(D)
$$\begin{array}{l} G\overset{\downarrow}{-}A-A-T-T-C \\ C-T-T-A-A-G \\ \qquad\qquad\uparrow \end{array}$$

8. The human protein which is being obtained from transgenic animals and is used to treat emphysema is :

(A) Alpha-lactalbumin
(B) Thyroxine
(C) α-1-antitrypsin
(D) Insulin

9. *Gambusia* is a fish which is being introduced into ponds in order to check vector-borne diseases. Select the option that indicates the correct disease.

(A) Ascariasis
(B) Malaria
(C) Amoebiasis
(D) Typhoid

10. Which type of interaction is being shown in the figure given below?



(A) Parasitism
(B) Commensalism
(C) Predation
(D) Amensalism

11. Which one of the following fish is being illegally introduced for aquaculture purposes and is posing a threat to the indigenous catfishes in our rivers?

(A) *Clarias gariepinus*
(B) Nile perch
(C) Climbing perch
(D) *Protopterus*

12. 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

13. **Assertion (A):** Blastocyst becomes embedded in the endometrium of the uterus.

Reason (R): The morula divides and transforms into blastocyst.

(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):** The two chains of DNA have antipolarity.

Reason (R): In one chain of DNA, ribose sugar at the 5′ end consists of a free phosphate moiety, while at the other end, the ribose sugar has a free 3′-OH group.

(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):** ELISA is based on the principle of antigen antibody interaction.

Reason (R): ELISA can detect the proteins/glycoproteins only when present in high concentration.

(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). (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

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

20. If a person is having karyotype 47, XXY, name the genetic disorder he is suffering from. Write down symptoms of such a genetic disorder.

21(a). Construct a pyramid of biomass starting with Phytoplanktons and label three trophic levels. Is the pyramid upright or inverted?

OR

21(b). Differentiate between grazing food chain and detritus food chain.

Section C

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

23. (a) Draw a labelled diagram of a human sperm. (Label any four parts)

(b) Define spermiogenesis and spermiation.

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

25. What are sacred groves? Name any four sacred groves and mention the places where they are found in India.

26. (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.

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

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

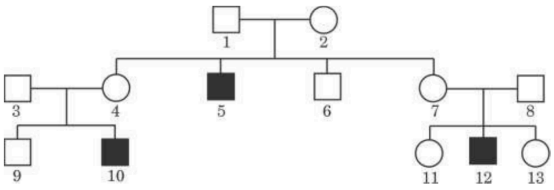
(i) An orchid growing on branch of mango tree

(ii) Wasp pollinating fig inflorescence

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

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 :

Primary effluent is passed into large aeration tank

↓

Effluent is passed into settling tank to form the sediment (activated sludge)

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

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

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

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

OR

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

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

OR

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

- End of Question Paper -