



PRE BOARD EXAMINATION

STD XII

BIOLOGY (044)

Maximum Marks: 70

13-1-16

Time allowed: 3hrs

General Instructions:

- (i) There are a total of 26 questions and five sections in the question paper. All questions are compulsory.
- (ii) Section A contains question number 1 to 5, Very short answer type questions of 1 mark each.
- (iii) Section B contains question number 6 to 10, Short answer type I questions of 2 marks each.
- (iv) Section C contains question number 11 to 22, Short answer type II questions of 3 marks each.
- (v) Section D contains question number 23, Value based question of 4 marks.
- (vi) Section E contains question number 24 to 26, Long answer type questions of 5 marks each.
- (vii) There is no overall choice in the question paper, however, an internal choice is provided in one question of 2 marks, one question of 3 marks and all three questions of 5 marks. In these questions, an examinee is to attempt any one of the two given alternatives.

SECTION A

1. Meiosis is an essential event in the sexual life of any organism. Give two reasons. (1)
2. How does a degenerate code differ from an unambiguous code? (1)
3. Write the hypothetical proposals put forth by Oparin and Haldane. (1)
4. Write the function of RNA polymerase II. (1)
5. "Man can be a primary as well as a secondary consumer." Justify the statement. (1)

SECTION B

6. Suggest two advantages to a farmer for using apomictic seeds of hybrid varieties. (2)
7. When does a geneticist need to carry out a test cross? How is it carried? (2)
8. Differentiate between outbreeding and outcrossing. (2)

OR

- a) Patients who have undergone myocardial infarction are given clot buster. Mention the clot buster administered and its microbial source.
- b) A person recuperating from illness is advised to have curd regularly. Why?
9. When you go for a trek or trip to any high altitude places, you are advised to take it easy and rest for the two days. Comment, giving reasons. (2)
10. What is joint forest management? How can it help in conservation of forests? (2)

SECTION C

11. Draw a labeled diagram of a human sperm. Label only those parts along with their functions, that assist the sperm to reach and gain entry into the female gamete. (3)

12. a) In the table given below, select and enter one correct device out of the following:

Oral pills, Condom, Copper T, Saheli, Diaphragm, Tubectomy, Cervical cap

Method of birth control	Device
Barrier	
IUCD	
Surgical Technique	
Administering hormones	

b) Why is MTP legalized in India? (3)

13. (a) Name the kind of diseases / disorders that are likely to occur in humans if (3)

(i) mutation in the gene that codes for an enzyme phenylalanine hydrolase occurs,

(ii) there is an extra copy of chromosome 21,

(iii) the karyotype is XXY.

(b) Mention any one symptom of the diseases / disorders named above.

14. How was a heavy isotope of nitrogen used to provide experimental evidence to semi-conservative mode of DNA-replication? (3)

15. Explain convergent evolution with the help of two examples. (3)

16. Cow dung and water is mixed and the slurry is fed into the biogas plant for digestion by microbes. The person performing the process shares that there is no need to provide inoculum for it. Why? What is the role of microbes at the source? Under which conditions will they be most active and effective? (3)

17. a) Explain the process by which a bacterial cell is made 'competent'. Why is it essential to make the bacterial cell 'competent' in recombinant DNA technology?

b) Name the host cells in which micro-injection technique is used to introduce an alien DNA. (3)

18. Prepare a flow chart in formation of recombinant DNA by the action of restriction endonuclease enzyme EcoRI (3)

OR

a) A multinational company (XYZ) marketed a medicine extracted from medicinal herbs grown in the sprawling fields in a foreign country. This herb is found only in our country. And no compensation was paid or permission taken from relevant authority.

i) What is the term used to refer to such an act committed by the multinational company?

ii) Justify the meaning of the term.

iii) What has our government done to prevent such deeds?

iv) Name the Indian variety of rice patented by an American company?

19. One of the major contributions of biotechnology is to develop nematode resistant varieties of tobacco plants. Explain how it has been made possible. (3)

20. Justify the importance of decomposers in an ecosystem. (3)

21. Differentiate between mutualism, parasitism and commensalism. Provide one example for each of them. (3)

22. Compare narrowly utilitarian and broadly utilitarian approaches to conserve biodiversity, with the help of suitable examples. (3)

SECTION D

23. A son persuades his father to replace his old mobile phone with the latest model launched in the market. He also shares the latest features it has and explains how it can be of help to him in the modern technological world. Father is reluctant in buying a new one and tries to explain about its environmental impact. How do you think, the biologist father has tried to convince his son? Justify the arguments of father and son both, by mentioning positive aspects of the behaviour displayed by both of them in the situation concerned (three each). (4)

SECTION E

24. (a) Explain the events after the pollination leading to the formation of a seed in angiosperms.

(b) Mention the ploidy levels of the cells of different parts of an albuminous seed. (5)

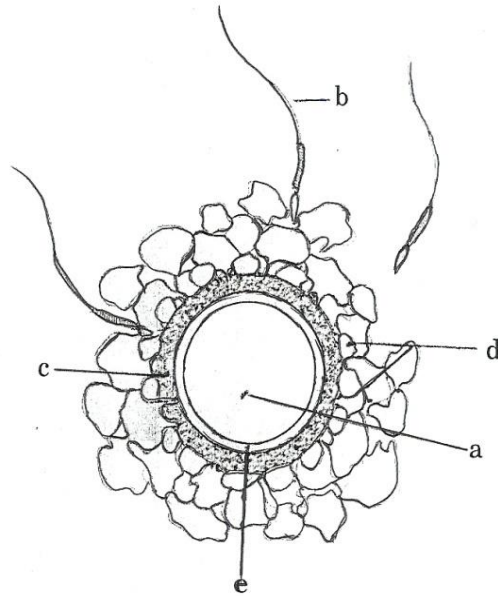
OR

Study the illustration given below and answer the following questions:

(i) Identify a,b,c,d and e

(ii) State the function of 'c'.

(iii) Explain the role of hormones in the formation and release of 'b'.



25. (a) State and explain the law of segregation as proposed by Mendel in monohybrid cross.
- (b) Write the Mendelian F₂ phenotypic ratio in a dihybrid cross. State the law that he proposed on the basis of this ratio. How is this law different from the law of segregation. (5)

OR

- (a) Describe the experiment which demonstrated the existence of “transforming principle”.
- (b) How was the biochemical nature of this “transforming principle” determined by Avery, Macleod and McCarty ?
26. Under polio prevention programme, infants in India were given polio vaccines on a large scale at regular intervals to eradicate polio from the country.
- (a) What is a vaccine? Explain how does it impart immunity to the child against the disease.
- (b) With the help of an example each, differentiate between active and passive immunity. (5)

OR

What are biofertilizers? Describe their role in agriculture. Why are they preferred to chemical fertilizers?

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