

CLASS: XII

Model Examination – II - BIOLOGY

MARKS: 70

DATE:

CODE: 044

Time: 3Hrs

General instructions:

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
2. Section A contains question numbers 1 to 5; multiple choice questions of one mark each.
3. Section B contains question numbers 6 to 12, short answer type I questions of two marks each.
4. Section C contains question numbers 13 to 21, short answer type II questions of three marks each.
5. Section D contains question numbers 22 to 24; case- based short answer type questions of three marks each.
6. Section E contains question numbers 25 to 27, long answer type questions of five marks each.
7. There is no overall choice in the question paper. However, internal choices are provided in two questions of one mark, one question of two marks, two questions of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the two given question paper with the same question number.

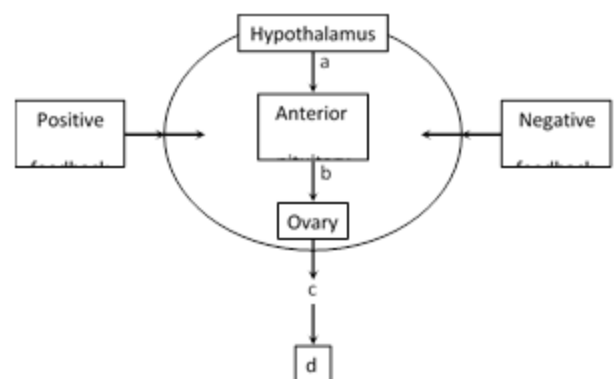
SECTION –A

1. Choose the correct combination of labelling the hormonal control of female reproductive system

- a. [a]-GnRH [b]-TSH [c]-LTH [d]-uterus
- b. [a]-GnRH [b]-LH/FSH [c]-estrogen or progesterone [d]-uterus
- c. [a]-GnRH [b]-STH [c]-LH [d]-uterus
- d. [a]-GnRH [b]-ACTH [c]-LH [d]-uterus

(OR)

The structure which differentiate gastrula from blastula



- a. 3 germ layers
- b. Micromeres
- c. Blastocoel
- d. None of these

2. One strand of the given segment of DNA codes for mRNA having the sequence AUC, GCG, UCA needed for synthesis of proteins. The strand by which DNA molecule will be responsible for the above mRNA sequence is

a. $\begin{array}{ccc} \text{ATC} & \text{GCC} & \text{ATU} \\ | & | & | \\ \text{TAG} & \text{CGG} & \text{TAG} \end{array}$

b. $\begin{array}{ccc} \text{AGA} & \text{GCG} & \text{GAT} \\ | & | & | \\ \text{TCT} & \text{CGC} & \text{CTA} \end{array}$

c. $\begin{array}{ccc} \text{TGA} & \text{CGC} & \text{TAG} \\ | & | & | \\ \text{ACT} & \text{GCG} & \text{ATC} \end{array}$

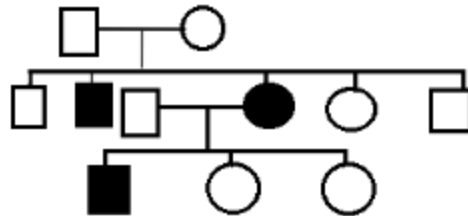
d. $\begin{array}{ccc} \text{TAG} & \text{CGC} & \text{AGT} \\ | & | & | \\ \text{ATC} & \text{GCG} & \text{TCA} \end{array}$

(OR)

Study the given pedigree chart what does it show?

a. Inheritance of a sex – linked inborn error of metabolism like phenylketouria

b. Inheritance of a condition like phenylketouria as an autosomal recessive trait.



c. The pedigree chart is wrong as this is not possible.

d. Inheritance of recessive sex- linked disease like haemophilia.

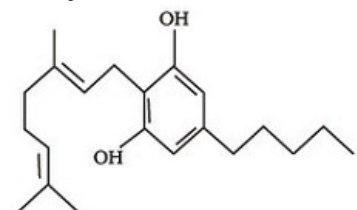
3. Which type of selection is industrial melanism observed in moth, Bistonbitularia?

- a. Stabilizing
- b. Directional
- c. Disruptive
- d. Artificial

4. Identify the given drug and name the organ of the body which is affected by consumption of the given drug.

a. Cannabinoids - cardiovascular system

b. opioids - kidney



- c. Coca alkanoids – controls brain activity
- d. None of the above

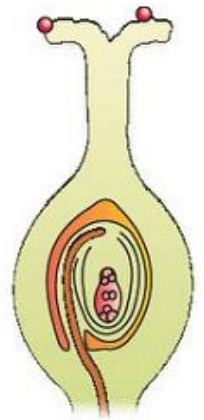
5. Match the following with correct combination:

[a] Hyaluronidase	(i) Acrosomal reaction
[b] Corpus luteum	(ii) Morphogenetic movements
[c] Gastrulation	(iii) Progesterone
[d] Capacitation	(iv) Mammary gland
[e] Colostrum	(v) Sperm activation

- a. [a]-(v), [b]-(ii), [c]-(iv), [d]-(i), [e]-(iii)
- b. [a]-(i), [b]-(iii), [c]-(ii), [d]-(v), [e]-(iv)
- c. [a]-(i), [b]-(ii), [c]-(iii), [d]-(iv), [e]-(v)
- d. [a]-(iv), [b]-(ii), [c]-(v), [d]-(iii), [e]-(i)

SECTION-B

6. In the given diagram given below, show the path of a pollen tube from the pollen on the stigma into the embryo sac. Name the components of egg apparatus.



OR

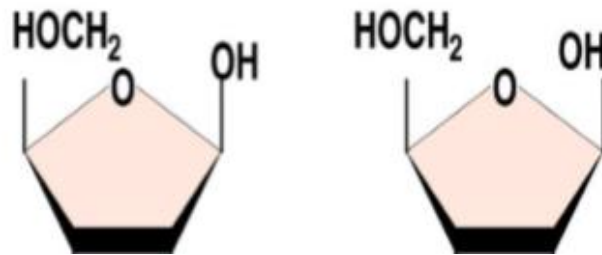
How does an encysted *Amoeba* reproduce on return of favourable conditions?

- 7. Contrast between Euchromatin and Heterochromatin
- 8. Where does peptide bond formation occur in a bacterial ribosome and how?
- 9. A pollen grain in angiosperm at the time of dehiscence from an anther could be 3 celled or 2-celled.Explain. How are the cells placed within the pollen grain when shed at a 2-celled stage?
- 10. Both Haemophillia and Thalassemia are blood related disorders in humans. Write their causes and the differences between the two. Name the category of genetic disorder they both come under

11. a. Mention the role of 'genetic mother' in MOET.

b. State the primary aim of the 'Assisted Reproductive Technology' (ART) programme

12. Carefully examine structures A and B of pentose sugar given below. Which one of the two is more reactive? Give reasons.



SECTION-C

13. The immune system of a person is suppressed. In the ELISA test, he was found to a pathogen.

a. Name the disease the patient is suffering from.

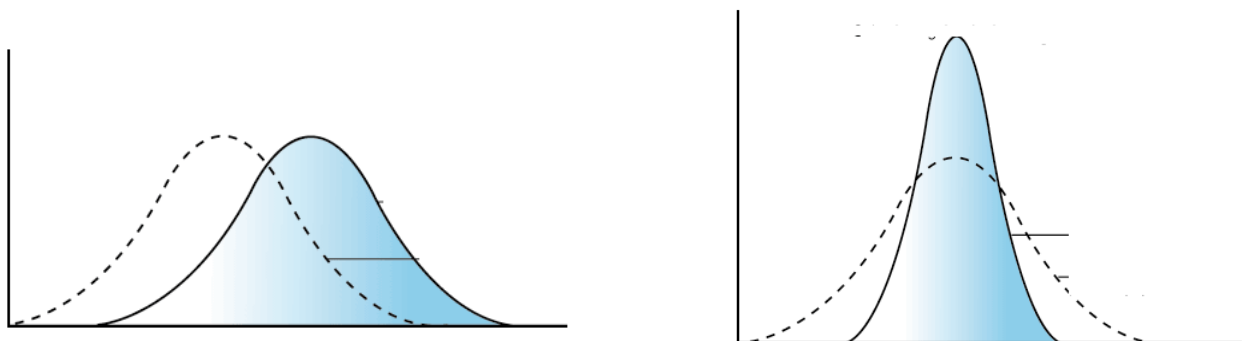
b. What is the causative organism?

c. Which cells of the body are affected by the pathogen?

14. How does gain or loss of chromosome(s) takes place in humans? Describe one example each of chromosomal disorder along with the symptoms involving an autosome and a sex chromosome.

15. "Apomixes is a form of asexual reproduction that mimics sexual reproduction in plants". Explain with the help of a suitable example.

16. Refer the graph and answer the questions that follow.



i. The graphs depict which type of natural selection?

ii. Explain the other two effects/ types of natural selection.

17. a. How is placenta formed in the human female?

b. Name any two hormones which are secreted by it and are also present in non- pregnant woman.

18. Explain the role of lactose as an inducer in a *lac* operon

19. a. State the conclusions Mendel arrived at on dominance of traits on the basis of monohybrid crosses that he carried out in pea plant.

b. Why a recessive allele is unable to express itself in a heterozygous state.

20. Represent schematically the life cycle of a malarial – parasite

21. A polypeptide consists of 14 different amino acids.

i) How many base pairs must be there in the processed mRNA that codes for this polypeptide?

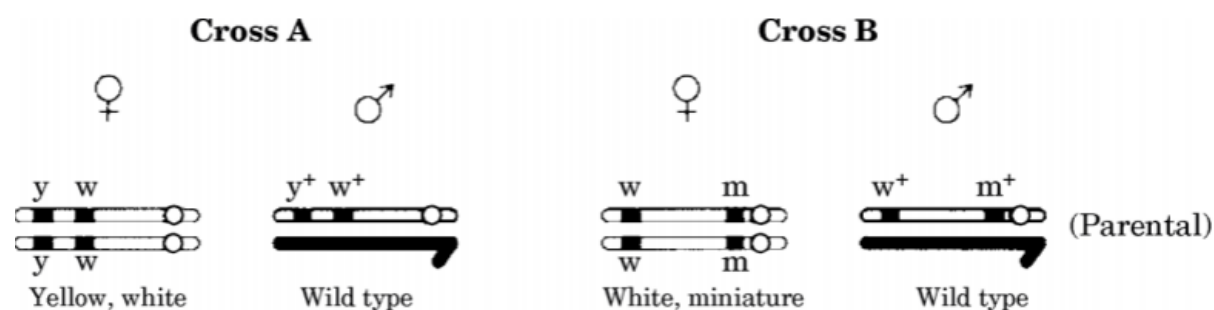
ii) How many different types of tRNA are needed for the synthesis of this polypeptide?

SECTION-D

22. Study the table given below and identify (i), (ii), (iii) and (iv)

Amino acid	Phe	Val
DNA Code in Gene	AAA	CAC
Codon in mRNA	(i)	(ii)
Anticodon in tRNA	(iii)	(iv)

23. Study the figures given below and answer the question.

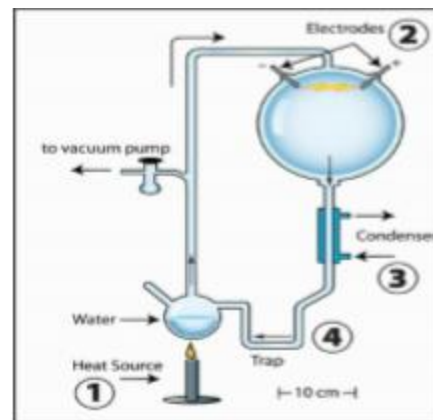


Identify in which of the crosses is the strength of linkage between the gene higher. Give reasons in support of your answer.

24. a. State the hypothesis which S.L. Miller tried to prove in the laboratory with the help of the set up given above.

b. Name the organic compound observed by him in the liquid water at the end of his experiment.

c. A scientist simulated a similar set up and added CH_4 , NH_3 and water vapour at 800°C . Mention the important component that is missing in his experiment?



SECTION-E

25. a. Explain the different ways apomictic seeds can develop. Give an example of each.

b. Mention one advantage of apomictic seeds to farmers.

c. Draw a labelled mature stage of a dicotyledonous embryo

OR

a. How does Darwin's concept of evolution differ from that de Vries?

b. List the four factors that disturb the Hardy Weinderg equilibrium.

c. According to de-Vries what is saltation?

26. a. Describe the various steps of Griffith's experiment that led to the conclusion of the 'Transforming Principle'.

b. How did the chemical nature of the Transforming Principle' get established?

OR

Certain phenotypes in human population are spread over a gradient and reflect the contribution of more than two genes. Mention the term used for the type of inheritance? Describe it with the help of an example in human population.

27. Summarize the process by which the sequence of DNA bases in Human Genome Project was determined using the method developed by Frederick Sanger. Name a free living non-pathogenic nematode Whose DNA has been completely sequenced.

OR

a. Identify (i), (ii), (iii), (iv), (v) and (vi) in the given table.

Syndrome cause	Characteristics of affected individual	Sex male/ female/ both
Down's Trisomy of 21	(i)	(ii)
(iii) XXY	Overall masculine development	(iv)
Turner's 45 with XO	(V)	(vi)

b. i. What are mutant and mutagen?

ii. Mention the schematic diagram of mutation.

iii. Categorize the different types of mutation with example.