

PRACTICE Paper 01 (2020-21)

Class 12

Biology

Maximum Marks: 70

Time Allowed: 3 hours

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** has 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 and **Section—D** has 3 questions of 5 marks each.
- IV. There is no overall choice. However, internal choices have been provided in some questions. ***A student has to attempt only one of the alternatives in such questions. Wherever necessary, neat and properly labeled diagrams should be drawn.***

Section A

1. At what stage does the meiosis occur in an organism exhibiting the haploid life cycle and mention the fate of the products thus produced.
2. How many species will be produced from 10 primary spermatocytes and how many eggs will be produced from 10 primary oocytes?
3. Who first observed the X-chromosome? What was it called then?
4. State if the given statement is correct or not, if not then write the correct statement.
In E.T. techniques, embryos are always transferred into the uterus.
5. How does the increase and the decrease in the value of 'r' affect the population size?
6. How many kinds of phenotypes would you expect in F₂-generation in a monohybrid cross exhibiting codominance?
7. Mention two contrasting flower related traits studied by Mendel in pea plant experiments.
8. Name the respective forms in which the malarial parasite gains entry into
 - (i) Human body
 - (ii) Body of female anopheles
9. Name a molecular diagnostic technique to detect the presence of a pathogen in its early stage of infection.

10. Which one of the following is the baker's yeast used in fermentation? Write its function wrt its nutritional value.

Saccharum barberi, Saccharomyces cerevisiae, Sonalika

11. Assertion: An organism with a lethal mutation may not even develop beyond the zygote stage.

Reason: All types of gene mutations are lethal.

- The assertion is a true statement but the reason is false.
- Both assertion and reason are true and the reason is the correct explanation of the assertion.
- Both assertion and reason are true but the reason is not the correct explanation of the assertion.
- Both assertion and reason are false.

OR

Assertion: In human beings, 23 pairs of chromosomes are present in diploid cells.

Reason: 22 pairs of chromosomes are equal in male and female but a pair sex chromosome is different in them.

- Both assertion and reason are correct
- The assertion is correct but the reason is incorrect
- Both assertion and reason are incorrect
- The assertion is correct but reason does not explain the assertion

12. Assertion: Interferon are a type of antibodies produced by body cells infected by bacteria.

Reason: Interferon stimulate inflammation at the site of injury.

- Both Assertion and Reason are false
- Both Assertion and Reason are true and the Reason is the correct explanation of the Assertion
- Both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion
- The assertion is a true statement but the reason is false.

13. Assertion: Replication and transcription occur in the nucleus but translation occurs in the cytoplasm.

Reason: mRNA is transferred from the nucleus into the cytoplasm there ribosomes and amino acids are available for protein synthesis.

- Both Assertion and Reason are true
- Both Assertion and Reason are true
- Assertion is true, but Reason is false
- Both Assertion and reason are false

14. Assertion: India included in one of the 12 mega diversity countries of the world.

Reason: Probably more than 1,00,000 plant species and more than 3,00,000 animal species yet to be discovered and described from India.

- Assertion and reason both are correct statements and reason is correct explanation for assertion.
- Assertion and reason both are correct statements but reason is not correct explanation for assertion.

- c. Assertion is correct statement but reason is wrong statement.
- d. Assertion is wrong statement but reason is correct statement.

15. Read the following and answer any four questions:

For any species, the minimal requirement is one more species on which it can feed. Even a plant species, which makes its own food, cannot survive alone; it needs soil microbes to break down the organic matter in soil and return the inorganic nutrients for absorption. In nature, animals, plants and microbes do not and cannot live in isolation but interact in various ways to form a biological community. Even in minimal communities, many interactive linkages exist, although all may not be readily apparent. Interspecific interactions arise from the interaction of populations of two different species. They could be beneficial, detrimental or neutral neither harm nor benefit to one of the species or both. Interspecific interactions may result in mutualism, competition, parasitism, Predation, commensalism and amensalism.

i. Species interaction with negative influence on both is referred to as

- a. amensalism
- b. mutualism
- c. commensalism
- d. competition

ii. Which of the following exhibits mutualism?

- a. Mycorrhizae living on the roots of higher plants.
- b. Wasps pollinating fig inflorescence.
- c. Sea anemone often found on the shell of a hermit crab.
- d. All of these

iii. An interaction between two individuals where one is benefited while the other is neither benefited nor harmed is called

- a. predation
- b. symbiosis
- c. amensalism
- D. commensalism

iv. Which of the following is not an example of a prey-predator relationship?

- a. Tiger eating a deer
- b. Plant *Nepenthes* trapping an insect
- c. Bacteria decomposing organic matter
- d. Crocodile killing a man

iv. Assertion- The Abingdon tortoise in the Galapagos Islands became extinct within a decade after goats were introduced on the island.

Reason- Abingdon tortoise extinct due to the greater browsing efficiency of the goats.

- a. Both Assertion and Reason are true and reason is the correct explanation of the Assertion
- b. Both Assertion and Reason are true but Reason is not the correct explanation of the Assertion
- c. Our Assertion is true but the Reason is false

d. Both the statements are false

16. Read the following and answer any four questions:

In angiosperm, the seed is the final product of sexual reproduction. It is described as a fertilized ovule. The seeds are formed inside the fruit. The seed consists of a seed coat, cotyledon, and the embryo axis. A mature seed is usually non - albuminous or albuminous. Integument of ovules harder as tough protective seed coat. Sometimes due to reduced water content, the general metabolic activity of the seed slows down and the seed enters a state of inactivity. In the mature plant, the fruit develops from the ovary they are called true fruit. The fruit is the result of fertilization. There are a few species in which fruit develops without fertilization. Bananas are such an example.

i. Which of the following have non-albuminous seed?

- a. Sunflower
- b. Groundnut
- c. Maize
- d. Barley

ii. The entry of oxygen and water in the seed during germination:

- a. micropyle
- b. chalazal
- c. epicotyl
- d. hypocotyl

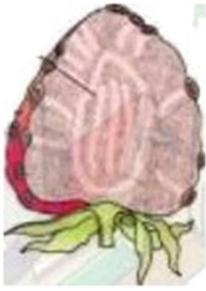
iii. The embryo enters the state of inactivity called:

- a. pericarp
- b. dormancy
- c. apomixis
- d. none of these

iv. The wall of the ovary develops into the wall of fruit called:

- a. scutellum
- b. pericarp
- c. plumule
- d. radicle

v. The figure given below represent



- a. true fruit
- b. parthenocarpic fruit
- c. false Fruit of apple
- d. false fruit of strawberry

Section B

17. Write the full form of the following:

- (i) MMR
- (ii) IVF
- (iii) ZIFT
- (iv) ART

18. If a father and son are both defective in red-green color vision, is it likely that the son inherited the trait from his father? Comment.

19. A farmer adds Azotobacter culture to the soil before sowing maize. How does it increase the yield of maize?

20. What are the advantages of the techniques of GM crops?

OR

Expand ELISA. On what principle is ELISA test based? List two ways by which an infection can be detected by this test.

21. Certain molecular processes are given in column (A). Provide the terms given to these processes in column (B), after selecting them from the terms: Recombination, gene regulation, prokaryotic, transcription, eukaryotic transcription, translation, replication, gene transfer, DNA fingerprinting.

Column A	Column B
i) DNA-DNA	
ii) DNA- hnRNA	
iii) hnRNA → Protein	
iv) Repressor Protein + Operator — No transcription	

22. How are DNA fragments visualized during gel-electrophoresis? What is elution?

OR

Both a winemaker and a molecular biologist who had developed a recombinant vaccine claim to be biotechnologists. Who in your opinion is correct?

23. What could be the possible explanation for greater vulnerability of amphibians to extinction as compared to other animal groups?

24. Why are herbivores considered similar to predators in the iconological context? Explain.

25. What do you mean by IUCN?

Section — C

26. Differentiate between Genotype and Phenotype.

27. In the medium where *E. coli* was growing, lactose was added, which induced the lac operon. Then why does lac operon shut down after some time after addition of lactose in the medium?

28. Do you consider passive smoking to be more dangerous than active smoking? Why?

29. Answer the following questions based on Meselson and Stahl's experiment.

- i. Write the name of the chemical substance used as a source of nitrogen in the experiment by them.
- ii. How did the scientists make it possible to distinguish the heavy DNA molecule from the light DNA molecule? Explain.
- iii. Write the conclusion the scientists arrived at after completing the experiment.

30. i. Name the causative agents of pneumonia and the common cold.

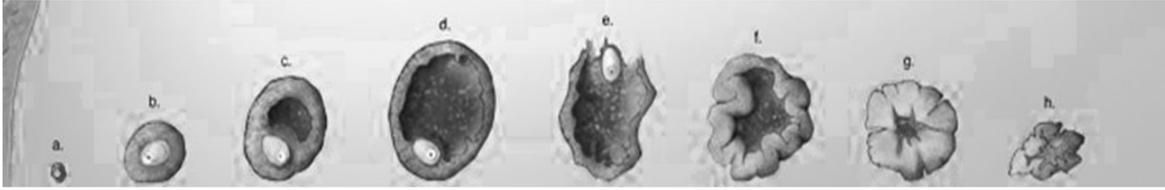
- ii. How do these differ in their symptoms?
- iii. Mention two symptoms common to both.

OR

Name an opioid drug and its source plant. How does the drug affect the human body?

Section- D

31. The following is the illustration of the sequence of ovarian events 'a' to 'h' in a human female:



- Identify the figure that illustrates corpus luteum and name the pituitary hormone that influences its formation.
- Specify the endocrine function of corpus luteum. How does it influence the uterus? Why is it essential?
- What is the difference between 'd' and 'e'?
- Draw a neat labelled sketch of mature oocyte.

OR

- Briefly explain the events of fertilisation and implantation in an adult human female.
- How does implantation lead to pregnancy?

32. Explain briefly about Restriction enzymes and DNA.

OR

For the selection of recombinants, insertional inactivation of the antibiotic marker has been superseded by insertional inactivation of a marker gene coding for a chromogenic substrate. Give reasons.

33. How do biofertilizers enrich the fertility of the soil?

OR

Explain the process of sewage water treatment before it can be discharged into natural water bodies. Why is this treatment essential?