

## SAMPLE PAPERS

### **SUBJECT: BIOLOGY (044) PRACTICE PAPER - 1**

**MAX.TIME 3 Hrs**

**MAX MARKS -70**

#### ***General Instructions:***

- a. There are total 27 questions in five sections in the question paper. All questions are compulsory.
- b. Section A contains questions number 1 to 5, MCQ of one mark each.
- c. Section B contains questions number 6 to 12, short answer type-I questions of two marks each.
- d. Section C contains questions number 13 to 21, short answer type-II questions of three marks each.
- e. Section D contains questions number 22 to 24, case based short answer type-II questions of three marks each.
- f. Section E contains questions number 25 to 27, long answer type questions of five marks each.
- g. There is no overall choice in the question paper, however, an internal choice is provided in two questions of one mark, one question of two marks, one question of three marks and all the three questions of five marks. In these questions, an examinee is to attempt any one of the two given alternatives.

#### **SECTION - A**

1. The term 'gene' was first used by:
  - a. Mendel
  - b. Morgan
  - c. Lamarck
  - d. Johannsen

**OR**

The smallest unit of genetic material which produces a phenotypic effect on mutation is:

- a. Muton
  - b. Gene
  - c. Recon
  - d. Nucleic Acid
2. BOD of waste water is estimated by measuring the amount of:
  - a. Total organic matter
  - b. Biodegradable organic matter
  - c. Oxygen evolution
  - d. Oxygen consumption
3. Spermiation is the process of the release of sperms from:
  - a. Seminiferous tubules
  - b. Vas deferens
  - c. Epididymis
  - d. Prostate gland

4. An enzyme catalysing the removal of nucleotides from the ends of DNA is:
- a. Endonuclease
  - b. Exonuclease
  - c. DNA ligase
  - d. Hind – II
5. Palaeontological evidences for evolution refer to the:
- a. Development of embryo
  - b. Homologous organs
  - c. Fossils
  - d. Analogous organs

**OR**

Analogous organs arise due to:

- a. Divergent evolution
- b. Artificial selection
- c. Genetic drift
- d. Convergent

### **SECTION B**

6. Name the blank spaces a, b, c and d from the table given below:

Item	What it Represents in the Plant
(i) Pericarp	(i) <i>a</i>
(ii) <i>b</i>	(ii) cotyledon in seeds of grass family
(iii) Embryonal axis	(iii) <i>c</i>
(iv) <i>d</i>	(iv) remains of nucellus in a seed

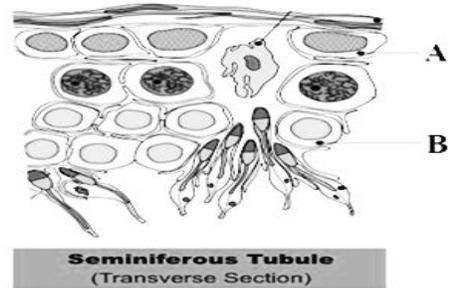
7. Would you consider the wings of butterfly and a bat as a homologous or analogous. Explain?
8. How does Darwin's theory of natural selection explain the appearance of new forms of life on earth?
9. Secondary immune response is more accelerated and intense than the primary immune response. Justify.
10. A patient who has been suffering from myocardial infarction is found to be having clots in the blood vessels. "Clot Buster" is used to dissolve the clots. Name the clot buster used to digest the clot and the micro-organism from which it is extracted also?
11. DNA being hydrophilic cannot pass through the cell membrane of the host cell. Explain how Recombinant DNA get introduces into the host cell to transform the latter.

12. What are interferons? Explain their role in providing immunity.

### SECTION – C

13. Refer to the given figure showing stages of spermatogenesis and answer the questions.

- What is the fate of part labeled as A.
- How does chromosome number change when 'A' changes to 'B'?



14. Differentiate between geitonogamy and xenogamy in plants. Which one between the two will lead to inbreeding depression and why?

**OR**

Mention the site in a flowering plant where the following development takes place.

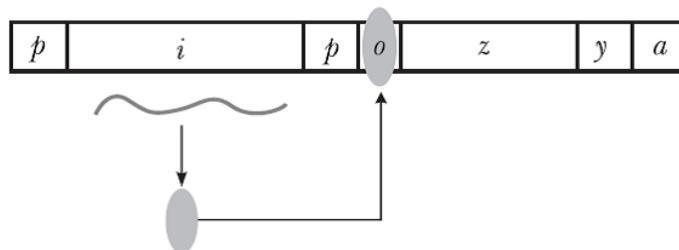
- Deposition of sporopollenin.
- Megasporogenesis.

15. Why RNA is not a suitable genetic material in comparison with DNA? Explain

16. Given below is a schematic representation of *lac* operon:

(a) Identify *i* and *p*.

(b) Name the 'inducer' for this operon and explain its role.



17.

- What is a satellite DNA? Discuss the role of this DNA in DNA fingerprinting.
- Expand VNTR and state how it is different from probe.

18. Name the kind of disease/disorder with any one symptom that occurs in human if:

- a) Mutation in the gene that codes for an enzyme phenylalanine hydrolase.
- b) There is an extra copy of chromosome 21
- c) The karyotype in XXY

19.

- a) On examining a patient, he had a mass of proliferating cells damaging the neighboring tissues also. The doctor explained the disease to the patient. Name the disease and its property?
- b) Madame Curie discovered Radium for the treatment of cancer. But she herself died of cancer. What could be the reason for her death?
- c) Can virus and genes also cause cancer?

20. Find out what the various components of the medium used for propagation of an explant.

21. Microbes can be used to decrease the use of chemical fertilizers and pesticides. Explain how this can be accomplished?

#### SECTION – D

22.

- a. Name the bacterium which produce toxin in cotton plant and what is the significance of that toxin?
- b. Why this toxin does not kill the bacterium?
- c. Name the gene that prevents cotton bollworms and corn bores pest to cause infection in the resistant plant.

23. Describe the role of heat, primers and bacterium *Thermusaquaticus* in the process of PCR ?

24. In India Malaria is prevalent in most of its part. Answer the following questions based on Malaria-

- a) What is causal pathogenic protozoan of Malignant Malaria
- b) In which form Malaria parasite enters in the human
- c) Which chemical is responsible for high recurring fever and chill during Malaria?

## SECTION – E

25.

- a) Give the term for period of growth before an organism attain sexual maturity.
- b) Define 'oestrus' and 'menstrual' cycles.
- c) What regulates the reproduction processes and the associated behavioral expressions in organisms?
- d) How are pollen stored in a pollen bank?
- e) What is colostrum?

**OR**

Differentiate between microsporogenesis and megasporogenesis. Which type of cell division occurs during these events? Name the structures formed at the end of these two events.

26. Why it is difficult to introduce rDNA in to a host cell? How it is made possible?

**OR**

One of the main objectives of biotechnology is to minimize the use of insecticides on cultivated crops. Explain with the help of a suitable example how insect resistant crops have been developed using techniques of biotechnology

27. Explain Hershey-chase experiment. What was proved through this experiment?

**OR**

- a) A true breeding pea plant, homozygous for inflated green pods (FFGG) if crossed with another pea plant with constricted yellow pods (ffgg). What would be the phenotype and genotype of F1 and F2 generation? Give the phenotypic ratio of F2 generation.
- b) State the generalization proposed by Mendel on the basis of  
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