

**B**

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### **Part III — BIOLOGY**

( New Syllabus )  
( English Version )

Time Allowed : 3 Hours ]

[ Maximum Marks : 150

*N. B. :* Candidates should answer **Part - I** ( Botany ) & **Part - II** ( Zoology ) in separate answer-books.

#### **PART - I ( BOTANY )**

( Marks : 75 )

#### **SECTION - A**

*Note :* i) Answer *all* the questions.

ii) Choose and write the correct answer.

iii) Each question carries *one* mark. 14 × 1 = 14

1. The alcoholic beverage prepared by the fermentation of rice in Japan is called
  - a) Bran
  - b) Beer
  - c) Sake
  - d) Wine.
2. Which of the following bacteria oxidizes ammonia to nitrite ?
  - a) Nitrosomonas
  - b) Rhizobium
  - c) Clostridium
  - d) E. Coli.
3. The strongest pain killer obtained from opium poppy is
  - a) Quinine
  - b) Digoxin
  - c) Morphine
  - d) Ephedrine.

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4. The leaves and roots of the plant of Euphorbiaceae used in the treatment of leprosy and snakebite is
- a) *Phyllanthus amarus*                      b) *Jatropha gossypifolia*  
c) *Aloe vera*                                      d) *Jatropha curcus.*
5. The botanist who introduced binomial system is
- a) Adolf Engler                                      b) Gaspard Bauhin  
c) Carolus Linnaeus                                d) George Bentham.
6. Root hairs are originated from
- a) trichoblasts                                      b) endodermis  
c) hypodermis                                        d) pericycle.
7. The term 'chromosome' was introduced by
- a) Bridges    b) Fleming  
c) Balbiani    d) Waldeyer.
8. Restriction enzymes are synthesized by
- a) bacteria    b) yeast  
c) eukaryotic cells                                    d) viruses.
9. The meristem that is present along the longitudinal axis of stem and root is called
- a) procambium                                        b) apical meristem  
c) phellogen                                         d) intercalary meristem.
10. Photoperiodic response in flowering was first observed in
- a) Wheat    b) Maryland Mammoth  
c) Oats     d) Chrysanthemum.
11. Anthers are monothealous in
- a) Liliaceae    b) Malvaceae  
c) Euphorbiaceae                                    d) Solanaceae.

12. Lethal mutation is observed in
- |          |               |
|----------|---------------|
| a) Pisum | b) Sorghum    |
| c) Cicer | d) Mirabilis. |
13. Which one of the following processes is employed to introduce a foreign gene into a cell ?
- |                    |               |
|--------------------|---------------|
| a) Electrollysis   | b) Photolysis |
| c) Electroporation | d) Ligation.  |
14. During cyclic electron transport which one of the following is produced ?
- |                                    |
|------------------------------------|
| a) $\text{NADPH}_2$ only           |
| b) ATP only                        |
| c) $\text{NADH}_2$ only            |
| d) both ATP and $\text{NADPH}_2$ . |

### SECTION - B

Note : i) Answer any seven questions.

ii) Each question carries three marks.

7 × 3 = 21

15. Define tautonym. Give example.
16. What are brachysclereids ? Give example.
17. Draw the structure of chromosome and label its parts.
18. Name the enzymes involved in the making of a DNA hybrid.
19. Explain respiratory quotient.
20. Mention any two unique facets of Bio-potency.
21. What is photolysis of water ?
22. Draw the diagram of bicollateral vascular bundle.
23. Mention the binomials of three medicinal plants in Solanaceae.
24. Define 'bolting'.

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**SECTION - C**

*Note :* i) Answer any *four* questions including Question No. **25** which is compulsory.

ii) Draw diagrams wherever necessary.

iii) Each question carries *five* marks. 4 × 5 = 20

25. State the importance of herbarium.
26. Write any five outcomes of application of plant tissue culture.
27. Explain Ganong's respiroscope experiment.
28. Write a short note on vernalization.
29. Draw and label the parts of a transverse section of a dicot leaf.
30. Write a short note on gene mutation.
31. Write any five aims of plant breeding.

**SECTION - D**

*Note :* i) Answer any *two* questions.

ii) Draw diagrams wherever necessary.

iii) Each question carries *ten* marks. 2 × 10 = 20

32. Describe *Allium Cepa* in technical terms.
33. Describe the primary structure of a monocot stem.
34. Give an account of single cell protein.
35. Describe the light reactions of photosynthesis.

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**PART - II ( ZOOLOGY )**

( Marks : 75 )

**SECTION - A**

Note : i) Answer all questions.

ii) Choose and write the correct answer.

iii) Each question carries one mark.

16 × 1 = 16

1. The chromosome 6 to 12 that belongs to the group classified by Karyotyping in man is
  - a) D
  - b) C
  - c) A
  - d) B.
2. Proteins are linear chain molecules made up of units called
  - a) fatty acids
  - b) citric acids
  - c) amino acids
  - d) nitric acids.
3. Ozone loss was first detected in the stratosphere over the
  - a) Atlantic Ocean
  - b) Antarctic Ocean
  - c) Pacific Ocean
  - d) Indian Ocean.
4. India's first power plant generating electricity from ocean energy is commissioned at
  - a) Tamil Nadu
  - b) Gujarat
  - c) Kerala
  - d) Andhra Pradesh.
5. The daily secretion of saliva ranges from
  - a) 1000 - 1500 ml
  - b) 1000 - 1700 ml
  - c) 1000 - 1800 ml
  - d) 1000 - 1900 ml.
6. The smallest leucocytes are
  - a) Eosinophils
  - b) Neutrophils
  - c) Lymphocytes
  - d) Monocytes.

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7. Alzheimer's disease is associated with
- a) inflammation of meninges
  - b) bleeding of brain vessels
  - c) spinal cord malfunctions
  - d) atrophy of cerebral cortex.
8. The percentage of urea in urine is
- a) 2%
  - b) 2.5%
  - c) 2.7%
  - d) 2.8%.
9. The fully formed bird emerges out of the egg after a hatching period of
- a) 19 – 20 days
  - b) 21 – 22 days
  - c) 20 – 21 days
  - d) 23 – 24 days.
10. The scientific name of *Tilapia* is
- a) *Channa Striatus*
  - b) *Oreochromis Mossambicus*
  - c) *Channas Channas*
  - d) *Catla Catla*.
11. Polycythemia is an indication of
- a) decreased WBC
  - b) decreased RBC
  - c) increased RBC
  - d) increased WBC.
12. Prodigality of nature is otherwise called as
- a) over production
  - b) struggle for existence
  - c) natural selection
  - d) survival of the fittest.
13. Paraviruses may have
- a) 1 – 2 genes
  - b) several hundred genes
  - c) 3 – 4 genes
  - d) several thousand genes.
14. The bacterial disease caused by *Yersinia Pestis* is
- a) Typhoid
  - b) Cholera
  - c) Plague
  - d) Gastroenteritis.

15. Some of the antifungal antibiotics are
- a) Miconazole and Imidazole
  - b) Amantidine and Cycloguanasine
  - c) Anthramycin and Sibomycin
  - d) Tomaymycin and Nystatin.
16. Plastic surgery is an example for
- a) Isograft
  - b) Allograft
  - c) Xenograft
  - d) Autograft.

**SECTION - B**

Note : i) Answer any *eight* questions.

ii) Each question carries *three* marks.

$8 \times 3 = 24$

17. What is Kwashiorkor ? Mention its symptoms.
18. What is Cataract ? Mention its types.
19. Mention any two pathogenic protozoans.
20. Define Cell Mediated Immunity ( CMI ).
21. Write a short note on haplotype.
22. Write any two uses of Karyotyping of Human Chromosomes.
23. What is Protein Data Bank ?
24. What is non-biodegradable waste ? Give an example.
25. Define Biodiversity.
26. Mention any two symptoms of Milk fever.
27. What is Computed Tomography Scan ?
28. State Germplasm theory.

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**SECTION - C**

Note : i) Answer any *three* questions including Question No. **31** which is compulsory.

ii) Each question carries *five* marks. 3 × 5 = 15

29. Give an account of origin and conduction of heartbeat.
30. Write a note on control and management of AIDS.
31. Draw a labelled diagram of Immunoglobulin ( IgG ).
32. Write a note on scope of Bio-informatics.
33. What are the three types of selection processes in Natural Selection ? Explain.

**SECTION - D**

Note : i) Answer any *two* questions.

ii) Each question carries *ten* marks. 2 × 10 = 20

34. Enumerate the various eye defects. Comment on corrective measures.
35. Comment on various schemes suggested by the National Family Welfare Programmes and their importance.
36. Write an essay about Fresh Water Management.
37. Give an account of the structural aspects of fish farm and explain any two edible fishes of Tamil Nadu.

