A

3539

Register Number

Part III — BIOLOGY

(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. Polyarch xylem condition is found in

a) Monocot stem b) Monocot root

c) Dicot stem d) Dicot root.

2. Lamp brush chromosome is observed in

a) *Drosophila* b) *Maize*

c) *Acetabularia* d) *Yeast.*

3. Nullisomy is represented by

a) $2n-1$ b) $2n+1$

c) $2n+2$ d) $2n-2$.

[Turn over

4. The two protoplasts are fused with a fusogen called

a) Polyethylene glycol b) Polyvinyl chloride

c) Polyethane glycol d) Phosphoric ethane.

5. Fungus Pyricularia oryzae belongs to the class

a) Basidiomycetes

b) Schizomycetes

c) Deuteromycetes

d) Ascomycetes.

6. Quinine is derived from

a) *Papaver somniferum* b) *Cinchona officinalis*

c) *Digitalis* d) *Ephedra sinica.*

7. The term 'biosystematics' is coined by

a) Bentham and Hooker

b) Camp and Gily

c) Engler and Prandtl

d) Carolous Linnaeus and Darwin.

8. An example for cladode is

a) *Euphorbia tirucalli* b) *Jatropha curcus*

c) *Ricinus communis* d) *Phyllanthus emblica.*

9. Solanaceae is placed under the order

a) Malvales b) Polemoniales

c) Unisexuals d) Ranales.

10. The cell wall of parenchyma is made up of

a) Cellulose b) Hemicellulose and Pectin

c) Lignin d) Pectin.

11. A toxic protein called delta endotoxin is insecticidal and it is produced by

a) *Escherichia coli* b) *Streptomyces griseus*

c) *Bacillus thuringiensis* d) *Bacillus lactii.*

12. The essential element for the formation of chlorophyll is

a) Mn b) Mg

c) Fe d) Cl.

13. Glucose is phosphorylated to glucose-6-phosphate by the enzyme

a) Aldolase b) Enolase

c) Pyruvic kinase d) Hexokinase.

14. Example for a long day plant is

a) Maize b) Wheat

c) Sunflower d) Tobacco.

SECTION – B

Note : i) Answer any *seven* questions.

ii) *Each* question carries *three* marks. $7 \times 3 = 21$

15. Explain author citation with example.

16. Write the systematic position of Musaceae.

17. Draw Brachysclereids and label the parts.

18. What are called passage cells ? Mention their function.

19. Draw and label the polytene chromosome.

20. List down any three Biotechnology centres in India.

21. State the condition under which cyclic photophosphorylation occurs.

22. Explain total parasite plant with an example.

23. Write the role of aconitase in Kreb's cycle.

24. Define Biomedicine.

SECTION – C

Note : i) Answer any *four* questions including Question No. **29** which is compulsory.

ii) Draw diagrams wherever necessary.

iii) Each question carries *five* marks. $4 \times 5 = 20$

25. Give an account of economic importance of Malvaceae members.

26. List down the anatomical differences between monocot root and dicot root.

27. Write the significances of mutation.

28. Write about the electroporation and gene gun methods of introducing foreign genes into plants.

29. Explain the structure of chloroplast with diagram.

30. Explain the test tube funnel experiment to demonstrate that oxygen is evolved during photosynthesis.

31. Write any five benefits of biofertilizers.

SECTION – D

Note : i) Answer any *two* questions.

ii) Draw diagrams wherever necessary.

iii) Each question carries *ten* marks. $2 \times 10 = 20$

32. Describe *Datura metal* in technical terms. Draw floral diagram and write floral formula.

33. Describe the primary structure of a monocot stem.

34. Explain the process of Glycolysis giving flowchart or explanation.

35. a) Write the significance of pentose phosphate pathway. 5

b) Write a short note on insectivorous plant. 5

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. $16 \times 1 = 16$

1. Kala-azar is caused by

a) *Plasmodium vivax* b) *Leishmania tropica*

c) *Trypanosoma gambiens* d) *Leishmania donovani.*

2. Enterotoxin is produced by

a) *Yersinia pestis* b) *Vibrio cholerae*

c) *Plasmodium vivax* d) *Ascaris lumbricoides.*

3. How many genes are found in Para virus ?

a) 1 - 2 genes b) Hundreds of genes

c) 3 - 4 genes d) Thousands of genes.

4. Thymus growth occurs up to

a) 17 years b) 12 years

c) 5 years d) 30 years.

5. 'Milk fever' in cows is normally due to

a) inability to assimilate calcium from the feed

b) starvation

c) overfeeding

d) parasitic infection.

6. The blood pressure is measured by

a) Manometer b) Haemocytometer

c) Sphygmomanometer d) Parameter.

7. The litter bed of poultry has the thickness of

a) 5 to 7.5 cm b) 4 to 6.5 cm

c) 5.5 to 6 cm d) 4.5 to 5 cm.

8. Who developed the concept of genetic drift ?

a) Lamarck b) H.J. Müller

c) Sewall Wright d) G.H. Hardy.

9. An example for structural protein is

a) hormones b) muscles

c) blood d) enzymes.

10. Haematoma is formed during

a) heart attack b) digestion

c) bone fracture d) urination.

11. Which one of the following is not an example for acquired local hypopigmentation ?

a) Radiation dermatitis b) Leprosy

c) Healing of wounds d) Addison's disease.

12. Conditioned reflex was first demonstrated by

a) O. Hertwig

b) Ivan Pavlov

c) T.H. Morgan

d) B. Sumner.

13. The term "Super bugs" refers to

a) arthropods b) insects

c) beetles d) genetically engineered bacteria.

14. 'Bubble boy syndrome' is a

a) severe combined immunodificiency disease

b) sickle cell anaemia

c) thrombosis

d) malaria.

15. The military related wastes are disposed by

a) deep well injection b) surface impoundments

c) land-fills d) incineration.

16. Which is commonly considered as a biologist's paradise ?

a) Gulf of Mannar Biosphere Reserve

b) Nilgiri Biosphere Reserve

c) Nanda Devi

d) Andaman and Nicobar.

SECTION – B

Note : i) Answer any *eight* questions.

ii) Each question carries *three* marks. $8 \times 3 = 24$

17. Mention the different types of Hernia.

18. Write three phases of Menstrual cycle.

19. Write notes on Gastroenteritis.

20. Write any three unique features of specific immunity.

21. What are the main functions of free antibodies ?

22. Differentiate somatic cell gene therapy from germ line cell gene therapy.

23. What are the uses of transfected cells ?

24. What are the merits of cloning ?

25. What are the effects of ozone depletion ?

26. Write any three advantages of artificial insemination in cattle.

27. Write the disadvantages of an autoanalyser.

28. Define First law of Lamarck. Write one example.

SECTION – C

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

ii) Each question carries *five* marks. $3 \times 5 = 15$

29. Describe the mechanism of blood clotting.

30. Write short notes on any two viral diseases in man.

31. Describe the structure of immunoglobulin with a diagram.

32. What is a 'Glowing Coal' ? What are the uses of it ?

33. Describe the modern concept of natural selection.

SECTION – D

Note : i) Answer *any two* questions.

ii) Each question carries *ten* marks. $2 \times 10 = 20$

34. Explain the process of pulmonary respiration with the help of diagram.

35. Explain the structure and functions of thyroid gland with diagram.

36. "Global warming is the direct result of Greenhouse effect". Discuss the statement. What related problems do we foresee ?

37. What is CT scanner ? Write the advantages and uses of CT scanner.