

**B****4339**Register  
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**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.  $14 \times 1 = 14$ 

- The percentage of nucleic acid present in the yeast is
  - 6 - 10%
  - 4 - 6%
  - 4 - 10%
  - 8 - 10%.
- Which of the following is a total parasite ?
  - Cuscuta
  - Viscum
  - Drosera
  - Monotropa.
- Optimum temperature for  $C_3$  pathway is
  - $30^\circ\text{C}$  to  $45^\circ\text{C}$
  - $20^\circ\text{C}$  to  $25^\circ\text{C}$
  - $15^\circ\text{C}$  to  $20^\circ\text{C}$
  - $10^\circ\text{C}$  to  $25^\circ\text{C}$ .

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4. Positive geotropism is induced by
- |                          |                       |
|--------------------------|-----------------------|
| a) ABA and Auxin         | b) Ethylene and Auxin |
| c) Auxin and Gibberellin | d) Ethylene and ABA.  |
5. Infraclass includes
- |             |              |
|-------------|--------------|
| a) 6 orders | b) 4 orders  |
| c) 3 orders | d) 5 orders. |
6. Malvaceae is placed in the series
- |                  |                 |
|------------------|-----------------|
| a) Thalamiflorae | b) Infraclass   |
| c) Heteromerae   | d) Disciflorae. |
7. Three stamens are reduced to staminodes in
- |                             |                                |
|-----------------------------|--------------------------------|
| a) <i>Solanum nigrum</i>    | b) <i>Schizanthus pinnatus</i> |
| c) <i>Datura stramonium</i> | d) <i>Petunia hybrida</i> .    |
8. Polyarch xylem is found in
- |                 |                  |
|-----------------|------------------|
| a) Monocot leaf | b) Dicot leaf    |
| c) Dicot stem   | d) Monocot root. |
9. *Acalypha indica* belongs to the family
- |              |                  |
|--------------|------------------|
| a) Malvaceae | b) Euphorbiaceae |
| c) Rutaceae  | d) Rubiaceae.    |
10. Citrus canker is caused by
- |                                |                               |
|--------------------------------|-------------------------------|
| a) <i>Cercospora personata</i> | b) <i>Digitaria marginata</i> |
| c) <i>Xanthomonas citri</i>    | d) <i>Acacia nilotica</i> .   |
11. Vascular bundles of leaf are
- |                          |                        |
|--------------------------|------------------------|
| a) collateral and closed | b) collateral and open |
| c) radial and closed     | d) radial and open.    |

12. Which biochemical mutant failed to synthesize certain amino acids ?
- a) *Sorghum*    b) *Neurospora*  
c) *Cicer arietinum*     d) *Cicer gigas.*
13. The four main histones present in DNA are
- a) H<sub>2</sub>A, H<sub>2</sub>B, H<sub>3</sub> and H<sub>4</sub>  
b) HA, H<sub>2</sub>B, H<sub>3</sub>C and H<sub>4</sub>  
c) H<sub>2</sub>A, H<sub>2</sub>B, H<sub>3</sub> C and H<sub>4</sub> D  
d) H<sub>2</sub>, H<sub>5</sub>, H<sub>3</sub> and H<sub>4</sub>.
14. A toxic protein called delta endotoxin is insecticidal and it is produced by
- a) *E. coli*    b) *Streptomyces griseus*  
c) *Bacillus thuringiensis*                                      d) *Bacillus lactii.*

#### SECTION - B

Note : Answer any seven questions.

7 × 3 = 21

15. What are the three classes of seeded plants ?
16. Write the botanical names of (a) Tapioca and (b) Castor.
17. Define Eustele.
18. Draw and label Brachysclereid.
19. Draw and label the structure of chromosome.
20. What is inoculation ?
21. What is C<sub>2</sub> cycle ?
22. What are the three stages of sigmoid curve ?
23. What is photolysis of water ?
24. What is Bio-medicine ?

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## SECTION - C

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

ii) Draw diagrams wherever necessary.  $4 \times 5 = 20$

25. Give any 5 importances of Herbarium.
26. Explain different types of meristems based on their positions. Draw diagram.
27. Explain Frederick Griffith experiment in *Diplococcus pneumoniae*.
28. Give an account of SCP.
29. Differentiate between cyclic photophosphorylation and non-cyclic photophosphorylation.
30. Describe Kuhne's fermentation experiment with a diagram.
31. Write any five aims of plant breeding.

## SECTION - D

Note : i) Answer any two questions.

ii) Draw diagrams wherever necessary.  $2 \times 10 = 20$

32. Describe *Datura metel* in technical terms. Draw floral diagram and write the floral formula.
33. Explain vascular tissue system with diagrams.
34. a) What is the role of Bt-toxin in crop protection against pest ?  
b) Write any five applications of plant tissue culture.
35. Explain Calvin's Cycle ( explanation or flow-chart ).

**PART - II ( ZOOLOGY )**

( Marks : 75 )

**SECTION - A****Note :** i) Answer all questions.

ii) Choose and write the correct answer.

16 × 1 = 16

1. The autosomal dominant gene causes

- |                        |                         |
|------------------------|-------------------------|
| a) Sickle cell anaemia | b) Thalassemia          |
| c) Agammaglobulinemia  | d) Huntington's Chorea. |

2. The cloned sheep was produced by

- |                       |               |
|-----------------------|---------------|
| a) Barbara Meclintock | b) Ian Wilmut |
| c) Herbert Bayer      | d) R. Briggs. |

3. Cyanides are broken by

- |                   |                              |
|-------------------|------------------------------|
| a) Super bug      | b) <i>Gibberella usarium</i> |
| c) <i>E. coli</i> | d) Rhizobium bacteria.       |

4. Which one of the following is not a greenhouse gas ?

- |             |                   |
|-------------|-------------------|
| a) Methane  | b) Carbon dioxide |
| c) Hydrogen | d) Nitrous oxide. |

5. Which is related with Down's syndrome ?

- |            |              |
|------------|--------------|
| a) Amnesia | b) Alzheimer |
| c) Anaemia | d) Albinism. |

6. Hypoparathyroidism results in

- |              |             |
|--------------|-------------|
| a) Cretinism | b) Tetany   |
| c) Myxedema  | d) Ketosis. |

7. The amount of urea excreted in urine in a day is
- a) 40 gm
  - b) 50 gm
  - c) 20 gm
  - d) 25 gm.
8. Calcium ion needed for muscle contraction is released from
- a) blood
  - b) protoplasm
  - c) synovial membrane
  - d) sarcoplasmic reticulum.
9. Which of the following is an exotic species ?
- a) Sindhi
  - b) Haryana
  - c) Ongole
  - d) Ayreshire.
10. Carps with pharyngeal teeth belongs to which order ?
- a) *Siluriformes*
  - b) *Perciformes*
  - c) *Channiformes*
  - d) *Cypriniformes*.
11. Instrument used to count the blood cells after proper dilution is
- a) Manometer
  - b) Haemocytometer
  - c) Sphygmomanometer
  - d) Barometer.
12. The book 'Process of Organic Evolution' was written by
- a) Dobzhansky
  - b) G. L. Stebbins
  - c) Hardy-Weinberg
  - d) Hugo de Vries.
13. Black water fever is due to
- a) *P. vivax*
  - b) *P. malariae*
  - c) *P. ovale*
  - d) *P. falciparum*.

14. The disease caused by *Treponema Pallidum* is
- a) Gonorrhoea
  - b) Syphilis
  - c) Pneumonia
  - d) Cholera.
15. The Anti-retroviral drug given for AIDS is
- a) Ampicillin
  - b) Anthromycin
  - c) Azidothymidine
  - d) Interferon.
16. Which of the following is an auto-immune disease ?
- a) SCID
  - b) Multiple Sclerosis
  - c) Cancer
  - d) Asthma.

**SECTION - B**

Note : Answer any *eight* questions.

8 × 3 = 24

17. What is Rheumatic arthritis ?
18. Write any three functions of Cerebrospinal fluid.
19. What is proteomics ?
20. What is continuous cell line culture ?
21. What is anaphylaxis ?
22. What is phagocytosis ? Mention the most important phagocytes.
23. Write the symptoms of sickle cell anaemia.
24. Write any three uses of Recombinant DNA technology.
25. What are ozone depleting substances ?
26. What is milk fever ? What are its symptoms ?
27. What is artificial pacemaker ?
28. How does allopatric species differ from sympatric species ?

**SECTION - C**

*Note :* Answer any *three* questions including Question No. 31 which is compulsory. 3 × 5 = 15

29. Explain the eye defects — short sight and long sight.
30. Mention the steps involved in the preparation of bacteriological media.
31. What are the symptoms of Allograft rejection ? Write down the measures adopted in clinical field to prevent graft rejection.
32. What is database ? What are its types ?
33. Describe Sewall-Wright effect.

**SECTION - D**

*Note :* Answer any *two* questions. 2 × 10 = 20

34. Write an essay on Vitamins.
  35. What is meant by Diabetes mellitus ? Describe its symptoms, types and causes.
  36. Give an account on importance of biodiversity conservation, consequences of losing biodiversity and strategies that are adopted to conserve biodiversity.
  37. Describe P, Q, R, S, T waves.
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