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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.

iii) Each question carries *one* mark.

14 × 1 = 14

1. Transgenic dicotyledonous plant is

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|------------------|--------------|
| a) Beta vulgaris | b) Asparagus |
| c) Oryza sativa | d) Zea mays. |

2. A typical chloroplast has

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|-------------------|--------------------|
| a) 40 to 60 grana | b) 30 to 40 grana |
| c) 10 to 20 grana | d) 50 to 70 grana. |

3. Bakanae disease in paddy is caused by

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|----------------------------|-----------------------|
| a) Abscisic acid | b) Phenyl acetic acid |
| c) Naphthalene acetic acid | d) Gibberellic acid. |

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4. Example for C_4 plant is
- a) wheat
 - b) potato
 - c) amaranthus
 - d) rice.
5. In Carolus Linnaeus system of classification the number of classes is
- a) 34
 - b) 24
 - c) 14
 - d) 10.
6. Binomial system was introduced by
- a) Carolus Linnaeus
 - b) Bentham
 - c) Gaspard Bauhin
 - d) Adolf Engler.
7. Plants having the flowers with hypogynous condition and superior ovary with two carpels only are placed in the taxon
- a) Thalamiflorae
 - b) Bicarpellatae
 - c) Inferae
 - d) Unisexuales.
8. The cell wall of parenchyma consists of
- a) cellulose and pectin
 - b) cellulose and lignin
 - c) hemicellulose and pectin
 - d) hemicellulose and lignin.
9. The cyanobacteria used for artificial inoculation of rice is
- a) E. coli
 - b) Bacillus
 - c) Nostoc
 - d) Pseudomonas.
10. *Cercospora personata* causes
- a) Tikka disease of groundnut
 - b) Citrus canker
 - c) Blast disease of rice
 - d) Tungro disease of rice.

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 × 5 = 20

25. Give an account of phylogenetic system of classification.
26. Explain the structure of sieve elements.
27. Write about the significance of mutation.
28. Explain the enzymatic method of isolation of protoplasts.
29. What are the differences between C₃ and C₄ pathways ?

al effects of ethylene.

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 *Datura metel* in technical terms.
33. Explain the anatomy of Dicot leaf.
34. Write an essay on transgenic plants.
35. Draw Krebs' cycle without explanation.

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PART - II (ZOOLOGY)

(Marks : 75)

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

ii) Choose and write the correct answer.

iii) Each question carries *one* mark.

16 × 1 = 16

1. The human hereditary disease caused due to defective autosomal dominant gene is
 - a) Sickle cell anaemia
 - b) Thalassemia
 - c) Huntington's chorea
 - d) SCID.
2. Dr. Ian Wilmut has produced a cloned sheep called Dolly by the method of
 - a) nuclear transplantation
 - b) cytoplasmic transplantation
 - c) chromosomal transplantation
 - d) organ transplantation.
3. The hazardous biomedical wastes are usually disposed of by means of
 - a) landfills
 - b) deep well injection
 - c) surface impoundments
 - d) incineration.
4. The genetically engineered bacteria that are capable of degrading oil spills are called
 - a) sulphur bacteria
 - b) ammonia bacteria
 - c) super bugs
 - d) rhizobium.
5. Vitamin A plays an important role in
 - a) Bone growth
 - b) Blood clotting
 - c) Visual perception
 - d) Energy production.
6. Which one of the following is an autoimmune disease ?
 - a) Myasthenia gravis
 - b) Diabetes
 - c) Stroke
 - d) AIDS.

7. Stones formed in the urinary bladder can be disintegrated by a treatment called
- a) Haemodialysis
 - b) Bypass surgery
 - c) Lithotripsy
 - d) Kidney transplantation.
8. At the termination of menstruation the corpus luteum is converted into a scar tissue called
- a) Corpus callosum
 - b) Corpus albicans
 - c) Corpus striatum
 - d) Endocrine tissue.
9. Which one of the following is draught breed of cattle ?
- a) Kangayam
 - b) Jersey
 - c) Sindhi
 - d) Ongole.
10. The vitamins found much in fish food are
- a) Vitamins A and D
 - b) Vitamins B₁ and B₆
 - c) Vitamins C and E
 - d) Vitamins K and E.
11. The instrument used for counting the blood cells is
- a) Haemocytometer
 - b) Sphygmomanometer
 - c) Electrocardiogram
 - d) Thermometer.
12. McDougall supported Neo-Lamarckism and proved the concept of
- a) direct action of environment on organism
 - b) learning is an acquired character
 - c) speed of learning is increased from generation to generation
 - d) variations are the raw materials for evolution.
13. Plague is caused by
- a) *Vibrio cholerae*
 - b) *Yersinia pestis*
 - c) *Plasmodium vivax*
 - d) *Trypanosoma gambiense*.

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. Explain briefly right and left brain concept.
30. Write the symptoms of AIDS, defined by WHO.
31. What are the symptoms of graft rejection ?
32. Mention the ethical problems of cloning.
33. Write a short note on Neo-Lamarckism.

SECTION - D

Note : i) Answer any *two* questions.

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

34. Explain the process of inspiration and expiration.
 35. Write an essay on menstrual cycle.
 36. What is known as energy crisis ? What are the steps taken to solve energy crisis ?
 37. Give an account of origin, distribution, characters and milk production of dairy breeds.
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