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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.

 $14 \times 1 = 14$

1. Dr. M. S. Swaminathan Research Institute is situated at

a) New Delhi

b) Mumbai

c) Chennai

d) Lucknow.

2. The pentose phosphate pathway takes place in

a) chloroplast

b) peroxisome

c) mitochondrion

d) cytoplasm.

3. When the bulb of onion is cut, it releases a lacrymatory substance called

a) acalyphine

b) allicin

c) atropine

d) stramonium.

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a) Phosphoenol pyruvic acid b) Ribulose bisphosphate c) Oxaloacetic acid d) Pyruvic acid. 5. Nullisomy is represented by a) 2n - 1 b) 2n + 1 c) 2n + 2 d) 2n - 2. 6. The rice Tungro virus is transmitted by a) mosquitoes b) aphids c) leaf hoppers d) ants. 7. Agrobacterium tumefaciens causes a) Crown gall disease b) Tungro disease c) Tikka disease d) Blight disease. 8. The hormone which promotes positive geotropic growth in roots is a) auxin b) gibberellin c) ethylene d) cytokinin. 9. The companion cells are present in a) Bryophytes c) Gymnosperms d) Angiosperms. 10. The metacentric chromosomes are a) V-shaped c) J-shaped d) Circular. 11. Thespesia populnea is a	1041	1		2	u of C plante is	
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c) J-shaped d) Circular. 11. Thespesia populnea is a b) shrub) L-shaped	
11. Thespesia populnea is a b) shrub	#		Lehaned		Circular.	
b) shrub	1		The state of the s		the state of the last state of the state of	
a) life	ally a	a)	tree	1	o) shrub	
d) herb with bulb.				- 1	d) herb with bulb.	

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14. In Maize the hypodermis is made up of

- a) sclerenchymatous cells
- b) collenchymatous cells
- c) parenchymatous cells
- d) chlorenchymatous cells.

SECTION - B

Note: i) Answer any seven questions.

ii) Each question carries three marks.

- 15. What is soil reclamation?
- 16. With examples, write any three types of inflorescence seen in the plants of Euphorbiaceae.
- 17. Draw the structure of t RNA and label the parts.
- 18. Write the systematic position of potato family.
- 19. What is restriction endonuclease?
- 20. Draw the ground plan for T.S. of Sunflower stem and label the parts.
- 21. Write in three sentences about the mesophyll of dicot leaf.
- 22. What are insectivorous plants? Give an example.
- 23. Respiratory quotient of glucose in anaerobic respiration is infinity. Give reasons.
- 24. What is photophosphorylation?

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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.

 $4 \times 5 = 20$

- 25. Write the economic importance of members of Malvaceae.
- 26. Give a brief account on tikka disease of groundnut.
- 27. With the help of diagrams, describe the structure of polytene and lampbrush chromosomes.
- 28. Bring out any five significances of photosynthesis.
- 29. Explain the experiment to measure growth in length of a plant.
- 30. What is single cell protein? State any three uses of single cell protein.
- 31. With examples, explain the structure of concentric vascular bundles.

SECTION - D

- Note: i) Answer any two questions.
 - ii) Draw diagrams wherever necessary.
 - iii) Each question carries ten marks.

 $2 \times 10 = 20$

- 32. With the help of flowchart, discuss Bentham and Hooker's classification of plants.
- 33. Describe the reactions of Krebs cycle. (Explanation or flowchart)
- 34. Discuss the basic techniques of plant tissue culture. (Diagram not necessary)
- 35. With the help of diagram, describe the anatomy of dicot stem.

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PART - II (ZOOLOGY)

(Marks : 75)

SECTION - A

Answer all questions. Note: i)

- ii) Choose and write the correct answer.

		iii) Each question			;
1.	Th	e chromosomes 4 and 5 belong			
	a)	A	b)	B and the second	
	c)	C	d)	D.	
2.	In	Proteomics, the amino acid sequ	ences	are read by	
	a)	Haemocytometer	b)	Glucometer	
	c)	Thermometer	d)	Sequenators.	
3.	Wh	nich of the following gases destro	ys ozo	one layer faster ?	
	a)	Chlorofluorocarbons	b)	Hydrochlorofluorocarbons	
	c)	Both (a) and (b)	d)	Sulphur dioxide.	
4.	Wh	ich of the following provides abo	ut 95	% of all commercial energy in the world?	
	a)	Sunlight	b)	Nuclear energy	
	c)	Petroleum, natural gas and co	al d)	Water power.	
5.	The	gall stones are formed of			
	a)	calcium	b)	growing infected tissue	
*	c)	cholesterol	d)	sodium crystals.	
6.	Ure	a biosynthesis takes place in			
	a)	pancreas	b)	kidney	
	c)	liver	d)	stomach.	

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7.	Whi	ch is called artificial kidney?		-THAT
	a)	Donor kidney	b)	Dializer
	c)	Tissue-matched kidney	d)	Preserved kidney.
8.	Exc	essive exposure to UV-rays can	cause	
	a)	vomiting	b)	redness of eyes
	c)	colour change	d)	skin cancer.
9.	Wh	nich one of the following is an exa	ample	for contagious disease in cattle?
	a)	Constipation	b)	Milk fever
	c)	Cowpox	d)	Diarrhoea.
10	. Th	e air breathing fish among the fo	ollowir	ng is
	a)	Mrigal	b)	Mullet
	c)	Rohu	d)	Cat fish.
11	. Th	ne diluting fluid used to count RI	BC is	Verch of the following gases destro
	a)			Hayem's solution
	c)		d)	Lymphatic fluid.
12	2. W	hich one of the following is cons	idered	as raw materials for evolution?
	a)	Nucleur energy	b)	
	c)	Change of environment	d)	Natural selection.
13	3. W	Thich one of the following is a pro	otozoa	n disease ?
	a	growing infected, disease	b)	
	c		d)	
1	4. T	he more promising chemotherap	eutic	agent for treating viral disease is
		a) Tetracycline	b	
		e) Interferon	d) Anthramycin.

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male are the olling. Com

- 15. Pain during urination and a yellow discharge from the urethra of male are the symptoms of
 - a) gastroenteritis

b) venereal syphilis

c) plague

- d) gonorrhea.
- 16. Graft between identical twins is called
 - a) Xenograft

b) Allograft

c) Autograft

d) Isograft.

SECTION - B

Note: i) Answer any eight questions.

ii) Each question carries three marks.

 $8 \times 3 = 24$

- 17. What is obesity?
- 18. What is corpus luteum?
- 19. Write the symptoms of cholera.
- 20. What is meant by Chicken Embryo Technique?
- 21. Name the five classes of immunoglobulins.
- 22. Mention any two uses of Karyotyping of human chromosomes.
- 23. What is a database in bio-informatics?
- 24. Define cloning.
- 25. List out the names of two bio-reserves in Tamil Nadu.
- 26. How will you identify a healthy cattle?
- 27. What are the advantages of artificial insemination?
- 28. Define 'Gene pool' .

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SECTION - C

- Answer any three questions including Question No. 31 which is compulsory.
 - Each question carries five marks. ii)

 $3 \times 5 = 15$

- 29. Draw the V.S of human eye and label the parts.
- 30. Write the symptoms of AIDS, defined by WHO.
- 31. Give an account of immunodeficiency diseases.
- 32. What are the uses of recombinant DNA technology?
- 33. Write a detailed account on Population Genetics.

SECTION - D

Answer any two questions. Note: i)

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

- 34. Enumerate the events involved in the function of the human heart.
- 35. Define bone fracture and explain the different types of bone fracture.
- 36. Write an essay on common diseases of cattle.
- 37. How will you manage hazardous wastes?