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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. 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.

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4.	The	e two protoplasts are fused with	a fus	sogen called
	a)	Polyethylene glycol	b)	Polyvinyl chloride
	c)	Polyethane glycol	d)	Phosphoric ethane.
5.	Fui	ngus Pyricularia oryzae belongs	to the	class
	a)	Basidiomycetes		
	b)	Schizomycetes		Allowed: 3 Hours )
y.	c)	Deuteromycetes		
	d)	Ascomycetes.		
6.	Qui	inine is derived from		separate answer noots,
	a)	Papaver somniferum	b)	Cinchona officinalis
	c)	Digitalis	d)	Ephedra sinica.
7.	The	e term 'biosystematics' is coined	by	
	a)	Bentham and Hooker	OITO	
	b)	Camp and Gily		
	c)	Engler and Prandtl		til Choose a
	d)	Carolous Linnaeus and Darwin	ņ.	III Sach que
8.	An	example for cladode is		Polytacch sytem condition is foursi
	a)	Euphorbia tirucalli	b)	Jatropha curcus
	c)	Ricinus communis	d)	Phyllanthus emblica.
9.	Sola	naceae is placed under the ord	er	Lamp brush chromosome is obse
	a)	Malvales	b)	Polemoniales
	c)	Unisexuals	d)	Ranales.
10.	The	cell wall of parenchyma is mad	e up o	Millisoniy is represented by 1
	a)	Cellulose	b)	Hemicellulose and Pectin
	c) ·	Lignin	d)	Pectin.

11.	A tox	cic protein called delta endotoxin	is in	secticidal and it is produced by	
	a)	Escherichia coli	b)	Streptomyces griseus	
	c)	Bacillus thuringiensis	d)	Bacillus lactii.	
12.	The	essential element for the formati	on of	chlorophyll is	
	a)	Mn	b)	Mg	
	c)	Fe	d)	Cl.	
13.	Glud	cose is phosphorylated to glucose	e-6-p	hosphate by the enzyme	
	a)	Aldolase	b)	Enolase	
. maj	c)	Pyruvic kinase	d)	Hexokinase.	
14.	Exa	mple for a long day plant is		Simen into hands	
	a)	Maize	b)	Wheat	
	c)	Sunflower	d)	Tobacco.	
	4.5			durtag photosynthesis.	
		SEC	TION	B - B	
		Note: i) Answer any sever	que		
		ii) Each question car	ries	three marks. $7 \times 3 = 21$	
15.	Exp	olain author citation with example	e. 170	Note: 1) Answer cay hup	
16.	Wri	te the systematic position of Mu	sacea	e. Hay old ward M. 7	
		w Brachysclereids and label the			
		at are called passage cells? Me			
		aw and label the polytene chrom			
	List down any three Biotechnology centres in India.				
21	which evolic photophosphorylation occurs.				
22		plain total parasite plant with an		PORT STRAIGHT IN STREET STREET	
		ite the role of aconitase in Kreb'	s cyc	le. a) Write, the algorificance of pont sel	
				b) Write a short note on inacctivere	
24	. De	fine Biomedicine.		The population of the second o	

#### 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.
- 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.

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b) Write a short note on insectivorous plant.

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## PART - II (ZOOLOGY)

( Marks : 75 )

### SECTION - A

Note: i) Answer all questions.

- Choose and write the correct answer. ii)
- Each question carries one mark. iii)

- Kala-azar is caused by 1.
- Plasmodium vivax b) Leishmania tropica
  - Trypanosoma gambiens
- d) Leishmania donovani.
- Enterotoxin is produced by 2.
  - Yersinia pestis
- b) Vibrio cholerae
- Plasmodium vivax
- d) Ascaris lumbricoides.
- How many genes are found in Para virus? 3.
  - 1 2 genes
- b) Hundreds of genes
- c) 3 4 genes d) Thousands of genes.
- Thymus growth occurs up to 4.
  - 17 years

12 years b)

- 5 years c)
- 30 years.
- 'Milk fever' in cows is normally due to 5.
  - inability to assimilate calcium from the feed a)
  - starvation b)
  - overfeeding c)
  - parasitic infection. d)

a)

b)

c)

dì

O. Hertwig

Ivan Pavlov

T.H. Morgan

B. Sumner.

13.	The	term "Super bugs" refers to		ever your are uses or transferred or
	a)	arthropods	b)	insects with a section of the sectio
	c)	beetles	d)	genetically engineered bacteria.
14.	'Bu	bble boy syndrome' is a		
	a)	severe combined immunodifici	ency	disease
	b)	sickle cell anaemia		
	c)	thrombosis		
	d)	malaria.		Vote: 1) Answer any the
15.	The	e military related wastes are disp	posed	by
	a)	deep well injection	b)	surface impoundments
	c)	land-fills	d)	incineration.
16.	Wh	nich is commonly considered as a	a biolo	ogist's paradise?
	a)	Gulf of Mannar Biosphere Res		
	b)	Nilgiri Biosphere Reserve		32. What is a 'Glowing Coal' ? What are
	c)	Nanda Devi		33. Describe the modern concept of national
	d)	Andaman and Nicobar.		
		SEC	CTIO	V - B
		Note: i) Answer any eigh	t ques	stions.
		ii) Each question ca	arries	three marks. $8 \times 3 = 24$
17.	Me	ention the different types of Herr	nia.	4. Explain the process of pulmonary res
18	. Wi	rite three phases of Menstrual c	ycle.	5. Explain the stateture and functional
19	. Wı	rite notes on Gastroenteritis.		6. Giobal warming is the direct re
20	. Wi	rite any three unique features of	spec	
21		hat are the main functions of fre		
22	. Di	fferentiate somatic cell gene the	rapy i	from germ line cell gene therapy.
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3539

- 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.