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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

Answer all the questions. Note: i)

> Choose and write the correct answer. ii)

- The conjunctive tissue in the stele of Bean root is
  - a) Parenchymatous

- Collenchymatous b)
- Chlorenchymatous c)
- Sclerenchymatous. d)
- The size of the genome in Arabidopsis thaliana is 2.
  - 130 kb a)

130 mb b)

3300 mb

300 mb. d)

- 3. 2n - 1 represents
  - Nullisomy a)

b) Trisomy

Tetrasomy c)

Monosomy. d)

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				wing organisms is capable of inactivating				
				LEATE LEATER				
				OHAT.				
704	41		2	7.60				
4.		e gene isolated from which of the herbicide 'Basta'?	he follo	wing organisms is capable of inactivating				
	a)	Bacillus thuringiensis	b)	Streptomyces hygroscopicus				
	c)	Pseudomonas putida	d)	Agrobacterium.				
5.	Exa	ample for aquatic fern is		Gallerian -				
	a)	Azotobacter	b)	Azolla				
	c)	Pseudomonas striata	d)	Azospirillum.				
6.	The	The plant that is used for treating bone fractures is						
	a)	Aegle marmelos	b)	Mimosa pudica				
	c)	Solanum nigrum	(d)	Cissus quadrangularis.				
7.		Bentham and Hooker's nochlamydeae includes	systen	n of classification, the sub-class				
	a)	8 series and 36 families	b)	7 series and 34 families				
	c)	7 series and 36 families	d)	6 orders and 34 families.				
3.	Acc	cording to Phylogenetic system,	the hig	ghly advanced family among monocots is				
	a)	Asteraceae	b)	Orchidaceae				
	c)	Zingiberaceae	d)	Musaceae.				
9.	The	e type of fruit in Ravenala is		a) Paretichymotous				
	a)	Berry	b)	Capsule				
	c)	Regma	d)	Drupe.				
10.	If x	ylem completely surrounds the	phloer	m, the vascular bundle is called				
	a)	Collateral	b)	Bicollateral (8				
	c)	Amphivasal	d)	Amphicribral.				
11.	Vir	us free germplasms are produc	ed thro	3. 2n - 1 represents				
	a)	Apical meristem culture	b)	Endosperm culture				
	c)	Embryo culture	d)	Protoplasmic fusion.				

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			3		1.6			
12.	The	enzyme that catalyses the fixation	on of	CO <sub>2</sub> in C <sub>4</sub> cycle is	CHE			
	a)	RUBP carboxylase	b)	PEP carboxylase				
	c)	Transaminase	d)	PGA kinase.				
13.	The	net gain of energy in Glycolysis	is					
	a)	2 ATP and 2 NADH <sub>2</sub>	b)	4 ATP and 4 NADH <sub>2</sub>				
	c)	3 ATP and 2 NADH <sub>2</sub>	d)	9 ATP and 6 NADH $_{\rm 2}$ .				
14.	1. Which of the following hormones delays the ageing in plants?							
	a)	Auxins	b)	Gibberellins				
	c)	Cytokinins	d)	Ethylene.				
SECTION - B								
	Note: Answer any seven questions. $7 \times 3 = 21$							
15.	5. What are the aims of biosystematics?							
16.	Mention the fibre yielding plants of Malvaceae.							
17.		te any three differences between ocot stem.	en th	e vascular bundles of Dico	t stem and			

- 18. Describe any two types of collenchyma.
- 19. Draw and label the Polytene chromosome.
- 20. What is PEG? Write its role.
- 21. What is photolysis of water?
- 22. What is bolting?
- 23. Write the role of following enzymes in respiration:
  - a) Aldolase

A.

- Succinyl CoA synthetase. b)
- 24. What is bio-piracy? Give one example.

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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. Write any five salient features of ICBN.
- 26. Write short notes on sieve elements.
- 27. Describe the structure of tRNA.
- 28. Define SCP. Write its uses.
- 29. Write the significance of pentose phosphate pathway.
- 30. Bring out any five physiological effects of Ethylene.
- 31. Bring out the economic importance of Teak.

#### SECTION - D

- Note: i) Answer any two questions.
  - ii) Draw diagrams wherever necessary.

 $2 \times 10 = 20$ 

- Describe Ricinus communis in botanical terms. Draw its floral diagram and write the floral formula.
- 33. Describe the internal structure of a dicot leaf.
- 34. Define Tissue culture. Describe the basic techniques of tissue culture.
- 35. Write an account on Calvin's cycle (explanation or flow-chart).

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### PART - II ( ZOOLOGY )

#### SECTION - A

				12
			5	OLOGY) 75) - A
		PAI	RT - II ( ZO	OLOGY)
			( Marks : 7	75)
			SECTION	
		Note: i) Answer	all questions.	- A
				correct answer. $16 \times 1 = 16$
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1.	Нер	atitis B virus (HBV) is a	n enveloped	virus with a
	a)	double stranded DNA	b)	double stranded RNA
	c)	single stranded DNA	d)	single stranded RNA.
2.	Kala	a-azar is caused by		Suffering to
	a)	Entamoeba histolytica	b)	Leishmania donovani
	c)	Trypanosoma gambiens	e d)	Leishmania tropica.
3.	The	test which is used to con	nfirm the HIV	/ infection, is
	a)	Western Blot	b)	ELISA
	c)	Diploid cell staining	d)	Pure culture.
4.	The	part of the antibody n	nolecule whi	ch makes contact with the antigen is
	call			
	a)	Hapten	b)	Constant region
	c)	Epitope	d)	Paratope.
5.	The	order of cat fishes is		or spety-either stegitorpoid anti21
	a)	Siluriformes	b)	Channiformes
	c)	Perciformes	d)	Cypriniformes.
6.	Wh	ich one of the following in	naging techn	niques gives excellent job of showing soft
	tiss	ues and blood vessels?		
	a)	ECG	b)	Endoscopic image
	c)	X-ray image	d)	Magnetic resonance image.

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A

Student Bounty.com 7041 Which breed of fowl contains black colour flesh? a) Aseel Chittagong c) Karaknath Busra. d) The book 'Philosophie Zoologique' was published by a) Jean Baptiste de Lamarck b) Charles Robert Darwin c) Alfred Russel Wallace d) McDougall. The connective tissue proteins are not synthesized properly due to the deficiency of Vitamin E a) b) Vitamin B, Vitamin C c) Vitamin B<sub>12</sub>. d) 10. The left and right hemispheres of brain exchange information through Corpus albicans Corpus luteum a) b) Corpus striatum d) Corpus callosum. 11. The disease which is caused by airborne droplets, is a) Myasthenia gravis b) Syphilis Tuberculosis c) d) Cholera. 12. Urea biosynthesis takes place in Kidney a) b) Liver Heart c) d) Pancreas.

#### C and G c) G and D.

a)

B and C

13. In human chromosome karyotyping the chromosomes X and Y belong to groups

C and D

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ocytes is

- 14. The enzyme necessary to convert DOPA into melanin in the melanocytes is
  - a) Amylase

b) Tyrosinase

c) Gamma globulin

- d) Adenine deaminase
- 15. The most abundant greenhouse gas is
  - a) Methane
  - b) Carbon dioxide
  - c) Trifluoromethyl sulphur pentafluoride
  - d) Chlorofluorocarbons.
- 16. Which of the following is a marine biosphere reserve of Tamil Nadu?
  - a) Nilgiri biosphere reserve
  - b) Nandadevi biosphere reserve
  - c) Gulf of Mannar biosphere reserve
  - d) Namdapha biosphere reserve.

#### SECTION - B

Note: Answer any eight questions.

 $8 \times 3 = 24$ 

- 17. List out the essential amino acids.
- 18. Define Basal Metabolic Rate (BMR).
- 19. Write the crowning achievements of Louis Pasteur.
- 20. What are the three main functions of free antibodies?
- 21. How do Interferons act as physiological barriers in our body?
- 22. What are the clinical manifestations of "Thalassemia'?
- 23. What is DNA library?
- 24. What is meant by Bio-remediation?

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- 25. What is pedigree chart?
- 26. Write any three characteristics of Jersey breed.
- 27. Write any three advantages of Auto-analyser.
- 28. State the theory of pangenesis.

#### SECTION - C

Note: Answer any three questions including Question No. 31 which is compulsory.  $3 \times 5 = 15$ 

- 29. Enumerate the steps involved in root canal treatment of tooth.
- 30. Write notes on sexually transmitted bacterial diseases in man.
- 31. Write short notes on genetic basis of organ transplants.
- 32. Mention the ethical problems of cloning.
- 33. What are the conditions under which Hardy-Weinberg law operates?

#### SECTION - D

Note: Answer any two questions.

 $2 \times 10 = 20$ 

- 34. Describe the structure of a skeletal muscle.
- 35. Write an essay about Eye defects and their corrective measures.
- 36. How are reuse and recycling techniques useful in management of solid wastes?

  Add a note on waste water treatment and management.
- 37. Write an essay on Electrocardiogram ( ECG ).

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