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Number	4.00	Marin S.	M Ba	allinari	

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.

 $14 \times 1 = 14$

- 1. The conjunctive tissue in the stele of Bean root is
 - a) Parenchymatous
- b) Collenchymatous
- c) Chlorenchymatous
- d) Sclerenchymatous.
- 2. The size of the genome in Arabidopsis thaliana is
 - a) 130 kb

b) 130 mb

c) 3300 mb

d) 300 mb.

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

b) Trisomy

c) Tetrasomy

d) Monosomy.

[Turn over

4.	The gene isolated from which of the following organisms is capable of inactivating			
	the	herbicide 'Basta' ?		
	a)	Bacillus thuringiensis	b)	Streptomyces hygroscopicus
	c)	Pseudomonas putida	d)	Agrobacterium.
5.	Exa	ample for aquatic fern is		
	a)	Azotobacter	b)	Azolla
	c)	Pseudomonas striata	d)	Azospirillum.
6.	The	plant that is used for treating b	one f	ractures is
	a)	Aegle marmelos	b)	Mimosa pudica
	c)	Solanum nigrum	d)	Cissus quadrangularis.
7.	In	Bentham and Hooker's sy	ysten	of classification, the sub-class
	Moi	nochlamydeae includes		
	a)	8 series and 36 families	b)	7 series and 34 families
	c)	7 series and 36 families	d)	6 orders and 34 families.
8. According to Phylogenetic system, the highly advanced family amor				thly advanced family among monocots is
	a)	Asteraceae	b)	Orchidaceae
	c)	Zingiberaceae	d)	Musaceae.
9.	The	type of fruit in Ravenala is		a) Parenchymotous
	a)	Веггу	b)	Capsule Capsule (a)
	c)	Regma	d)	Drupe.
10.	If xy	ylem completely surrounds the p	hloen	
	a)	Collateral	b)	Bicollateral
	c)	Amphivasal	d)	Amphicribral.
11.	l. Virus free germplasms are produced through			
	a)	Apical meristem culture	b)	Endosperm culture
*	c)	Embryo culture	d)	Protoplasmic fusion.

- 12. The enzyme that catalyses the fixation of CO 2 in C 4 cycle is
 - 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 2
- b) 4 ATP and 4 NADH 2
- c) 3 ATP and 2 NADH ₉
- d) 9 ATP and 6 NADH 2.
- 14. 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. What are the aims of biosystematics?
- 16. Mention the fibre yielding plants of Malvaceae.
- 17. Write any three differences between the vascular bundles of Dicot stem and Monocot stem.
- 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
 - b) Succinyl CoA synthetase.
- 24. What is bio-piracy? Give one example.

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.

 $2 \times 10 = 20$

- 32. 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).

PART - II (ZOOLOGY)

(Marks: 75)

SECTION - A

Note: i) Answer all questions.

		ii) Choose and writ	e the	correct answer. $16 \times 1 = 16$
1.	Нер	atitis <i>B</i> virus (HBV) is an envel	oped	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		
	a)	Entamoeba histolytica	b)	Leishmania donovani
	c)	Trypanosoma gambiense	d)	Leishmania tropica.
3.	The	test which is used to confirm th	e HI	7 infection, is
	a)	Western Blot	b)	ELISA
	c)	Diploid cell staining	d)	Pure culture.
4.	The	e part of the antibody molecule	whi	ch makes contact with the antigen is
	call	ed		asing simple vot.
	a)	Hapten	b)	Constant region
	c)	Epitope	d)	Paratope.
5.	The	e order of cat fishes is		a postquinter elegino postd smu 21
	a)	Siluriformes	b)	Channiformes
	c)	Perciformes	·d)	Cypriniformes.
6.	Wh	ich one of the following imaging	techr	niques gives excellent job of showing soft
	tiss	sues and blood vessels?		
	a)	ECG	b)	Endoscopic image
	c)	X-ray image	d)	Magnetic resonance image.
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7.	Which breed of fowl contains black colour flesh?				
	a)	Aseel	b)	Chittagong	
	c)	Karaknath	d)	Busra.	
8.	The	e book 'Philosophie Zoologique' w	as pu	iblished by	
	a)	Jean Baptiste de Lamarck	b)	Charles Robert Darwin	
	c)	Alfred Russel Wallace	d)	McDougall.	
9.	The connective tissue proteins are not synthesized properly due to the deficient				
	of			O'A manusan samual ig	
	a)	Vitamin E	b)	Vitamin B ₁	
	c)	Vitamin C	* d)	Vitamin B 12.	
10.	. The left and right hemispheres of brain exchange information through				
	a)	Corpus albicans	b)	Corpus luteum	
	c).	Corpus striatum	d)	Corpus callosum.	
11.	1. The disease which is caused by airborne droplets, is				
	a)	Myasthenia gravis	b)	Syphilis	
	c)	Tuberculosis	d)	Cholera.	
12.	Ûre	a biosynthesis takes place in		S. The order of our fishes fis-	
	a)	Kidney	b)	Liver condition (c	
	c)	Heart	d)	Pancreas.	
13.	In h	uman chromosome karyotyping	the c	hromosomes X and Y belong to groups	
	a)	B and C	b)	C and D	
	c)	C and G	d)	G and D.	

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14. The enzyme necessary to convert DOPA into melanin in the melanocytes is

a) Arnylase

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).