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No.	

M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018

		Wi.Sc. (SerileSter - I) (CBCS)		
BIOI		Bota ON AND DIVERSITY OF FUNCTORS	_	ACTERIA, VIRUSES AND LICHENS
			D,	
_		½ Hours		Max. Marks: 70
Instru	ucti	ions: 1) All questions are compulsory.2) Figures to the right indicate full3) Draw a neat, well labeled, com4) Use of calculators, cell phones prohibited.	ple	te diagram wherever necessary.
Q.1		ewrite the sentences by choosing co		
	1)	Infectious RNA particles without protei		
		a) prion	,	virusoid
	٠.	c) viroid	,	virus
	2)	Usnea is the example of L		
		a) Crustosec) Fruiticose	,	Foliiose Both b & c
	2)	,	,	
	3)	All the bacteria fix nitrogen except a) Rhizobium		E. coli
		c) Azotobacter	,	Cyanobactera
	4)	Perfect stage of fungus means	,	•
	.,	a) when the fungus is perfectly health		<u></u> .
		b) when it reproduce asexually	•	
		c) when it forms perfect sexual spores	S	
		d) None of these		
	5)	Who crystallized & isolated viruses for		
				F.C. Bawden
	٥)		-	D. Ivanowski
	6)	Myxomycetes are commonly called		
		a) Slime mouldsc) Green moulds	,	Brown moulds Diatoms
	7)	The classification of fungi is based on	,	
	')	a) The structure of vegetative mycelium		·
		b) Asexual stage		
		c) The sexual reproductive stage		
		d) Both mycelia structure and sexual	sta	ge
	8)	Peziza is a member of		
		a) Phycomycetes		Ascomycetes
		c) Basidiomycetes	•	Deterromycetes
	9)	Ergot is obtained from		Ola Tanana
		a) Rhizopusc) Albugo		Claviceps Mucor
	40	,	,	
	TU,	 The symbiotic association ship between called 	GI)	rungi and roots of nigher plants is
		a) Lichens	b)	Mycorrhizae
		c) Parasite		None

	11)) In bacteria endoplasmic reticulum an present.a) ribosome	b) mitochondria	
	12)	c) chromosomes) Rhizopus multiplies by the productiona) Zoosporesc) Sporangiospores	d) true nucleus n of b) Conidiospores d) Akinetes	
	13)) Which of the following disease is caua) Typhoidc) Tuberculosis	sed by virus? b) Cholera d) AIDs	
	14)) Bacteria that are responsible for ferma) Acetobacterc) Rhizobium	nentation of dairy milk is b) Lactobacillus d) All of these	
Q.2	a)	 Answer the following:- (Any four) 1) What is Ascus? 2) Explain the term karyogamy. 3) Name the fruiting body of Basidion 4) Justify the living nature of viruses. 5) Name any two bacterial diseases 		80
	b)	Write short notes on. (Any two)1) Parasexuality in fungi2) Role of fungi in industry3) Steps involved in Pleurotus-mushr	oom cultivation	06
Q.3	a)	Answer the following:- (Any two) 1) What are lichens? Explain any two 2) Explain the life cycle is <i>Stemonites</i> 3) Define spawn, explain the procedu		80
	b)	Answer the following:- (Any one) 1) Enlist the economic importance of 2) Give the silent features of Ascomy		06
Q.4	a)	Answer the following:- (Any two) 1) Explain the sexual reproduction in 2) Explain the life cycle in <i>Plasmodio</i> 3) Explain general characters of bact	phora brassicae.	10
	b)	Answer the following:- (Any one)1) Explain the germination of uredios2) What is ascocarp? Describe variousAscomycotina.		04
Q.5	a) b)	Explain the sexual reproduction in Mu Enlist the classes of Mastigomycotina with suitable example of each. Write an account of ultra structure of	? Give the brief characters of each class	14
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M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018 Botany BIOLOGY AND DIVERSITY OF ALGAE, BRYOPHYTES AND PTERIDOPHYTES

Time	: 21/	2 Hours		Max. Marks	: 70
Instr	ucti	ions: 1) All questions are compulsory. 2) Figures to the right indicate ful 3) Draw neat labeled diagrams w			
Q.1		write the sentences by choosing co Vegetative telomes are also called as a) Phylloids c) Both a & b	b)		14
	2)	Leaves of plant have le a) Pinus c) Selaginella	b)	ne. Cycas Lycopodium	
	3)	Gemma cup is found in a) Anthoceros c) Riccia	,	Sphagnum Marchantia	
	4)	a) Biflagellate c) Multiflagellate	b)	ound in Equisetum. Uniflagellate None of these	
	5)	Psilotum belongs to ordera) Psilotales c) Psilophytales	,	Lycopodiales Equisetales	
	6)	Marsilea is found in habitat. a) Terrestrial c) Amphibian	,	Aquatic Both b & c	
	7)	Anthoceros is commonly known as a) Liverworts c) Stoneworts	b)	Hornworts Bladderworts	
	8)	Siphinostele is found ins a) Ephedra c) Equisetum	b)	Marsilea	
	9)	The method of isolation of pure culture a) Robert Kochc) Robert William	b)	as discovered by Robert Hook Robertson	
	10) Eye spot is absent in cla a) Rhodophyceae c) Chlorophyceae	b)	of algae. Phaeophyceae cyanophyceae	
	11	Floridean starch occurs in a) Phaeophyceae c) Bacillariophyceae		Rhodophyceae Cyanophyceae	

	12) In lycopodium sporangium originates	s on	
	a) Ligume	b) Microphyll	
	c) Sporophyll	d) Spore	
	13) of the following is kno	wn as green laver.	
	a) Ulva	b) Laminaria	
	c) Nostoc	d) Fucus	
	14) The antherozoids are biflagellate in		
	a) Philotopsida	b) Lycopsida	
	c) Pteropside	d) sphenopsida	
Q.2	a) Answer the following:- (Any four)		80
	Enlist types of thallus organization		
	2) Any 4 salient features of order An3) Important characters of subdivision		
	4) Types of reserve food material in	·	
	5) Any 4 general characteristics of P	•	
	b) Write notes on. (Any two)	. ,	06
	Asexual reproduction in Bryophyte	es	00
	2) Unusual habitat of algae		
	Structure of archegonium in Psilo	tum.	
Q.3	a) Answer the following:- (Any two)		80
	 Salient features of class Psilopsid 		
	2) Salient features of class Jungerm		
	Telome concept in pteridophytes.		
	b) Answer the following:- (Any one)		06
	Salient features of Lycopsida Alternation of generation in Bruen	huton	
	Alternation of generation in Bryop	riyles	
Q.4	a) Answer the following:- (Any two)		10
	 Describe isolation & culture of alg Describe antheridium of Selagine 		
	3) Write a note on economic importa		
	b) Answer the following:- (Any one)		04
	Describe interrelationship in betw	een Psilopsida and Lycopsida.	U-T
	Write general character of Polytric	• • • • • • • • • • • • • • • • • • • •	
Q.5	Answer the following:- (Any two)		14
	a) Describe in detail stelar evolution in F	^o teridophytes.	
	b) Describe modern classification system	m of Bryophytes.	
	c) Describe in detail antheridia & archeg	gonia in Lycopodium.	

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M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018

		Bota PLANT E	
Time:	21/2	≨ Hours	Max. Marks: 70
Instru	ucti		I marks. Inplete diagram wherever necessary. In any other electronic gadgets is
Q.1		write the sentences by choosing co An organism that cannot make its owr a) Heterotroph c) Autotroph	rrect answer from given alternatives: 14 n food is called a(an) b) Chemotroph d) Producer
	2)	EIA is a) Environmental intact assessment b) Ecological impact assessment c) Environmental impact assessment d) None of these	
	3)	is known as water hyacir a) Eichhornia crassipes c) Salvinia molesta	
	4)	In Phytoextraction process a) Excretion c) Chelation	is essential. b) Dehydration d) Secretion
	5)	In lentic wetlands is a op a) Profundal c) Benthic zone	en water zone. b) Pelagic d) All of the above
	6)	 Remote Sensing include	
	7)	a) Methane c) Oxygen	as. b) Nitrous oxide d) Chlorofluorocarbons
	8)	An agricultural field is supposed to bea) Single pointc) Non point source	a source of pollution. b) Point source d) All of these
	9)	is not a functional unit of a) Productivity c) Energy flow	of an ecosystem? b) Stratification d) Decomposition
	10)) are sensitive only to rad	

d) Electrical sensors

c) Chemical sensors

	a) Climax b) Sere c) Pioneers d) Carni	
	12) RADAR is an example of a) Passive sensors b) Active c) Neutral sensors d) Both	e sensors
	13) Biosphere reserves are areas comprisinga) Terrestrial b) Marinc) Coastal d) All of	e
	14) The Earth's ozone layer is mainly found in the I stratosphere from approximately a) 10 to 20 km b) 20 to c) 30 to 40 km d) 40 to	 30 km
Q.2	 a) Answer the following:- (Any four) 1) Define an ecosystem and mention its types. 2) Give wetland characteristics. 3) Mention causes of groundwater pollution. 4) What are Xenobiotics? 5) Enlist active sensors in remote sensing. 	08
	b) Write notes on. (Any two)1) Ozone depletion2) Bioremediation3) Role of decomposers in an ecosystem.	06
Q.3	 a) Answer the following:- (Any two) 1) Climatic climax 2) Water hyacinth 3) Bioaccumulation of pollutants 	08
	b) Answer the following:- (Any one)1) Explain effects of water pollution.2) Give applications of remote sensing technique	06 ue in wild life management.
Q.4	 a) Answer the following:- (Any two) 1) Give structural components of an ecosystem 2) MAB 3) Biotransformation 	10 n.
	b) Answer the following:- (Any one)1) Phytoextraction2) Carbon Credit	04
Q.5	 Answer the following:- (Any two) a) Give significance of remote sensing in vegetation b) Explain in detail fresh water ecosystem. c) Write an essay on 'environmental toxicology'. 	n mapping.

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M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018 Botany TOOLS AND TECHNIQUES IN BOTANY

		TOOLS AND TECHNIQUES IN BOTANY
Time	21/2	½ Hours Max. Marks: 70
Instr	ucti	ions: 1) All questions are compulsory.2) Figures to the right indicate full marks.3) Draw neat labeled diagrams whenever necessary.
Q.1		The basic theory of atomic absorption states that a) The incident light intensity is directly proportional to atom concentration b) Light is absorbed by ground-state electrons c) The transmitted light is proportional to the ground state atoms d) Absorption results in the lowering of energy levels of most atoms
	2)	is the most suitable gas to use as a carrier gas in a gas chromatogram. a) Helium b) Oxygen c) Methane d) Both a and c
	3)	HPLC stands for a) High Pressure Liquid Chromatography b) High Performance Liquid Chromatography c) Both a and b d) Highly placed Liquid Chromatography
	4)	The ultracentrifuge method for determining the molecular weight of proteins was discovered by a) Svedberg b) Tiselius c) Schraiber d) Bouguer
	5)	The biggest herbarium in India is a) I.A.R.I. Delhi b) Central National Herbarium, Calcutta c) St. Xavier's Herbarium, Bombay d) Forest Research Institute, Dehradun
	6)	Isotopes of an element a) May or may not be radioactive b) Have the same atomic number but differing atomic masses c) May be used for human disease diagnostics d) All of the above
	7)	A Geiger-Muller counter is able to provide an indirect measure of radioactivity because radiation has a property of a) Ionization b) Making matter glow in the dark c) Fogging photographic film d) Attracting electrons
	8)	The main advantage of fluorescence over UV-Vis spectroscopy is a) Its sensitivity b) Its compatibility with separation techniques c) Its compatibility with most analysts d) None of these

 9) Chi square test (X²) is a) Measure the degree of deviation of the experimental result from the expected result b) To test the closeness of observed and expected frequency c) To test the population variance and sample variance d) All of these 	
 10) Living, unstained cells and organism can be observed best using a) Fluorescent microscopy b) TEM c) Phase contrast microscopy d) Scanning electron microscope 	
 11) Which of the following identifies three types of sources used in AAS? a) Hollow Cathode Lamp (HCL), Electrodeless Discharge Lamp (EDL) Argon Lamp b) Electrodeless Discharge Lamp (EDL), Deuterium (D2) lamp, Hollow 	
Cathode Lamp (HCL) c) Deuterium (D2) lamp, plasma, flame d) Neon lamp, Acetylene torch, Tungsten lamp	
 12) Scanning electron microscopy (SEM) is best used to study	 le cells
 13) In distribution probability of success remains constant from trial t a) Normal b) Poisson c) Binomial d) None of these 	to trial.
 14) chemical is used for poisoning the specimens in herbarium tech a) KCl b) AgNO₃ c) HCl d) HgCl₂ 	ınique.
 a) Answer the following:- (Any four) 1) Define pH and give its scale. 2) What is probability? 3) Give any two application of phase contrast microscopy. 4) Write any two application of gel electrophoresis. 5) What is half-life of radio isotopes? 	08
 b) Write notes on. (Any two) 1) Principle o Flame spectrophotometry 2) O-banding 3) Effect of radiation on biological system 	06
 a) Answer the following:- (Any two) 1) Describe coefficient of variation. 2) Explain principle of electron microscope. 3) Write a note on radioactivity counting system. 	08
 b) Answer the following:- (Any two) 1) Write application of computer in life science. 2) Describe herbarium technique. 3) Explain important herbaria in India. 	06
 a) Answer the following:- (Any two) 1) Describe photomicrography. 2) Explain Chi-square test. 3) Explain thermal inactivation point. 	10

Q.2

Q.3

Q.4

SLR-VD-9	3

- b) Answer the following:- (Any one)
 - 1) Write application NMR spectroscopy.
 - 2) Write application ESR spectroscopy.

Q.5 Answer the following:- (Any two)

14

04

- a) Describe principle and application atomic absorption.
- **b)** Describe principle and application of ultracentrifugation.
- c) Describe principle and application of SEM.

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M.Sc. (Semester - II) (CBCS) Examination Nov/Dec-2018 Botany

E		MNOSPERMS AND PALAEOBOT	ANY
Time	e: 2½ Hours	Max.	Marks: 70
Instr	ructions: 1) Attempt total five question 2) Figures to the right indicated 3) Attempt any two questions 4) Attempt any two questions	te full marks. s from question no. 2 to 4.	
Q.1	Rewrite the sentences by choosing1) Fusiform medullary rays are chargeda) Sclerenchymac) Protoxylem	ng correct answer from given alternative acterized by having b) Bars of sanio d) Resin canals	ves: 14
	2) It is used as most valuable timbera) Cedrusc) Podocarpus	b) Araucaria d) Cupressus	
	3) Araucaria pit pores are a) Vertical c) Horizontal	b) Circular d) Oblique	
	4) The only Gymnosperm having CAa) Thujac) Taxus	AM, is b) <i>Zamia</i> d) <i>Welwitschia</i>	
	5) Canada balsam is obtained from a) Cycas circinalisc) Zamia floribunda	b) <i>Abies balsamea</i> d) <i>Agathis purpurea</i>	
	6) In female cone of Zamia arranger axis isa) Valvate	ment of megasporophylls along the central b) Axillary	al
	c) Papilaceous7) Presence of hump is the charactera) Taxusc) Cupressus	d) Overlapping eristic of the male cone of b) Ginkgo d) Ephedra	
	8) An alkaloid obtained from a) Ephedra c) Taxus	, .	
	9) Calamites shows close affinity wita) Anthocerosc) Equisetum	th living genus b) Sphagnum d) Riccia	
	10) First account of Psilophytales waa) Mackiec) Sir William Dawson	is given by b) Kidston and Lang d) Krausel and Hirmar	
	11) Coal is type of fossia) Impressionc) Petrification	b) Compression	

	12) Pteridosperms developed climaxa) Devonianc) Permian	in b) Carboniferous d) Jurassic	
	13) In Rhynia type of some a) Protostele c) Siphonostele	tele is present. b) Eustele d) Plectostele	
	14) The seed of Lyginopteris wasa) Orthotropusc) Hymenotropus	b) Anatropus d) Campylotropus	
Q.2	a) Explain the diversity of gymnosperb) Describe out line of Indian fossil fle Gondawana.	,	07 07
Q.3	a) Give modern trends in classificationb) Give important features of Cordait	·	07 07
Q.4	a) Give an account on phylogeny ofb) Explain Glossopteris flora.	Coniferales.	07 07
Q.5	Describe:-a) Give salient features of order Psilob) Describe Rajmahal hill flora of uppc) Write short note on Amber.	•	05 05 04
Q.6	Explain:-a) Write salient features of welwitschb) Lepidocarponc) Lyginopteris	iales.	05 05 04
Q.7	 Write shot notes. (Any two) a) Male cone of Podocarpus b) Female cone of Taxus c) Economic importance of coniferate 	es.	14

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M.Sc. (Semester - II) (CBCS) Examination Nov/Dec-2018 Botany TAXONOMY OF ANGIOSPERMS

		TAXONOMY OF A	ANGIOSPERMS
Time	: 21/	ź Hours	Max. Marks: 70
Instr	ucti	ons: 1) Question no.1 is compulsory. 2) Figures to the right indicate ful 3) Write any two questions from (4) Write any two questions from (5) Draw neat and labeled diagrar	question 2, 3 and 4. question 5, 6 and 7.
Q.1			rrect answer from given alternatives: 14 are the characteristic feature of family
		a) Commelinaceaec) Tiliaceae	b) Papaveraceaed) Magnoliaceae
	2)	Sacred groves are specially useful in a) Generating environmental awareness) Preventing soil erosion c) Year-round flow of water in rivers d) Conserving rare and threatened specially useful in growing the special properties and the special properties are specially useful in growing the special proper	ess
	3)	Perianth is absent in thea) Commelinaceae c) Zingiberaceae	family. b) Scrophulariaceae d) Araceae
	4)	Isotype is a duplicate of the from same locality. a) Lectotype c) Neotype	, which collected by same author b) Syntype d) Holotype
	5)	Typology is one of the type of a) Chemotaxonomy c) Species concept	b) Alpha taxonomy d) Typification
	6)	The herbarium specimen is basic tool a) Classification c) Nomenclature	for plant b) Phylogeny d) Identification
	7)	The genus belongs to a) <i>Manilkara</i> c) <i>Sorghum</i>	family Sapotaceae. b) <i>Rosa</i> d) <i>Piper</i>
	8)	Exploratory and consolidation phases taxonomy. a) omega	b) alpha
	9)	c) numericalWhich of the following area in India, isa) Aravali hillsc) Eastern Ghats	d) cyto a hotspot of biodiversity? b) Western Ghats d) Gangetic Plains

	10) Situation tautonym leads to thea) Conserve generic name	of a name. b) Resolve	
	c) Rejection	d) Conservation	
	11) <i>Michelia</i> is a genus of family a) Myrtaceae	b) Tiliaceae	
	c) Magnoliaceae	d) Polygonaceae	
	12) Hookers 'Flora of British India' is ana) Monographc) Local flora	n example of b) Continental flora d) Regional flora	
	13) is an example of ex-sa) National parkc) Seed bank	itu conservation. b) Wildlife sanctuary d) Sacred groves	
	14) Criteria is used when taxona) Endangeredc) Vulnerable	has not yet been assessed against criteria. b) Extinct d) Not evaluated	
Q.2	Write about:-a) Effective and valid publications.b) Aims and principles of the Taxonom	ny.	14
Q.3	Describe:-a) Merits and demerits of Cronquist's sb) Typological species concept.	system of classification	14
Q.4	Explain:-a) What is hotspot, comment on hotspb) What are the strategies for species		14
Q.5	a) Write short notes on:1) Rejection of names.2) Subclass-Commelinadeae with states	suitable example.	10
	b) Give the distinguishing characters of	of Piperaceae with example (species).	04
Q.6	a) Write short notes on:-1) Chemotaxonomy2) Floristic diversity of India.		10
	b) Note on rejection of names with the	ir situations.	04
Q.7	a) Write short notes on:-1) What is Typification and comme2) What is citation of authority and		10
	b) Give the distinguishing characters of	of Sapotaceae with example (species).	04

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M.Sc. (Semester - II) (CBCS) Examination Nov/Dec-2018 Botany CELL AND MOLECULAR BIOLOGY OF PLANTS

		CELL AND MOLECULAR	R BIOLOGY OF PLANTS
Time	: 21/	∕₂ Hours	Max. Marks: 70
Instr	ucti	ions: 1) Question no.1 is compulsory. 2) Figures to the right indicate full 3) Attempt any two questions from 4) Attempt any two questions from 5) Draw neat and labeled diagran	om Q. 2, 3 and 4. om Q. 5, 6 and 7.
Q.1	Re 1)	ewrite the sentences by choosing co lipids is most abundantly a) Phospholipids c) Glycolipids	y present in plasma membrane. b) Sphingolipids d) Sterols
	2)	a) ABC transporters c) P-type	present on the cell membrane. b) V-types d) All of these
	3)	a) H2A c) H3	ore histones. b) H2B d) H1
	4)	Okazaki fragments are absent on a) Leading c) 5' to 3'	DNA strand during replication. b) Lagging d) None of these
	5)	MTOC stands for a) Microtubule Original Core c) Microtubule Organ Centre	
	6)	Capping and polyadenylation occurs i a) tRNA c) mRNA	in RNA editing. b) rRNA d) snRNA
	7)	a) CDK c) Caspases	rotein. b) p53 d) p450
	8)	a) UGA c) UAA	b) UGG d) UAG
	9)	a) Carbohydrates c) ATP	ce of energy for active transport. b) Lipids d) A & b
	10) GISH stands for a) Gene in situ hybridization c) Genetic in situ hybridization	b) Genomic in situ hybridizationd) Genomic in silicon hybridization
	11	Photolyase is a enzym a) DNA transcription c) DNA repair	ne. b) DNA replication d) RNA replication

	12) Satellite DNA is present in			
		a) Coding		Non coding	
		c) Centromere	d)	b & c	
	13)The DNA sequence spreads by formir genome is called			
		a) Junk DNA	,	Selfish DNA	
		c) Spiritual DNA	d)	All of these	
	14) DNA damage is induced by			
		a) UV radiation	b)	Ionizing radiation	
		c) Mutagens	d)	All of these	
Q.2		rite about:-			14
	•	Describe the models of plasma members What is ATPases? Describe the types			
Q.3	Ex	plain:-			
	a)	Write the structure and function of mic	croti	ubules.	07
	b)	Explain principles and applications of	con	focal microscopy.	07
Q.4	Ex	plain:-			14
	a)	What is Cistron? Describe the process	s of	transcription.	
	b)	Explain the genome organization with	nea	at labeled diagram.	
Q.5	a)	Write short notes on:			10
	•	1) Give account on mechanism of DN		epair.	
		2) Write the properties of genetic cod	e.		
	b)	Write a note on types of caspases.			04
Q.6	a)	Write short notes on:-			10
		1) Write a note on FISH and GISH.			
		2) Write a note Satellite DNA.			
	b)	Describe the Mitochondria biogenesis			04
Q.7	a)	Write short notes on:-			10
	,	1) Describe the models of DNA replic	atio	ons.	
		2) Write a note on storage organelle.			
	b)	Give account on composition of Plasm	na r	nembrane.	04
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M.Sc. (Semester - III) (CBCS) Examination Nov/Dec-2018 Botany PLANT EMBRYOLOGY AND PALYNOLOGY

		PLANT EMBRYOLOGY	_		
Time	: 21/	≨ Hours		Max. Mark	s: 70
Instr	ucti	ions: 1) All questions are compulsory. 2) Figures to the right indicate ful 3) Draw a neat, well labeled, com 4) Use of calculators, cell phones prohibited.	ple	te diagram wherever necessary.	
Q.1		ewrite the sentences by choosing co Gametophyte developed directly from a) Apospory c) Amphimixis	spo b)		14
	2)	Intine of pollen grains is made up of _ a) Lipid and protein c) Lignin and cutin	b)	Pectin and lignin Cellulose and pectin	
	3)	Ovule with one integument is a) Ategmic c) Bitegmic	b)	ovule. Multitegmic Unitegmic	
	4)	Callose is highly a) impermeable c) semipermeable	,	permeable all of them	
	5)	Entry of pollen tube through integume a) chalazogamyc) porogamy	b)	s mesogamy pseudogamy	
	6)	In male gamete fuses wire a) porogamy c) syngamy	b)	gg. siphonogany triple fusion	
	7)	The first polyembryony was reported i Leeuwenhoek in 1719. a) Guava c) Grape	b)	Banana Orange	
	8)	The branch which deals with study of a) Cytology c) Genetics	b)	en grain is Palynology Paleobotany	
	9)	If the types of pollen may vary consideration, etc. then such taxa are termed a) stenopalynous c) eurypalynous	as b)	•	
	10)	Bee collected pollens are devoid of _a) Proteinsc) Starch	,	Vitamins Chlorophyll	

	11) family is Stenopalynous		
	a) Poaceaec) Verbenaceae	b) Convolvulaceaed) Rubiaceae	
	12) helps in search of sourc		
	a) Bryophytec) Microfossils	b) Algae d) Lichens	
	13) Pollen grains are stored bya) Organic solventsc) Cryopreservation	methods. b) Freezing temperatures d) All a, b & c	
	14) is not hay fever test.a) Scratch testc) Western blot and ELISA	b) Intra-cutaneous testd) Passive transfer	
Q.2	 a) Answer the following:- (Any four) 1) Describe pollen wall. 2) Draw neat labelled diagram of typ 3) Describe function of generative content 4) What is Pollenkitt? 5) Describe types of stigma. 		08
	b) Write notes on. (Any two)1) Structure of exine2) Pollen germination3) Bee bread		06
Q.3	 a) Answer the following:- (Any two) 1) Describe male gametophyte 2) Write note on embryo culture. 3) What is pollen calendar? Give its 	importance.	80
	 b) Write note on:- (Any one) 1) Explain application of palynology Gymnosperms. 2) Describe any two types of Polyen 	•	06
Q.4	 a) Answer the following:- (Any two) 1) Describe in brief application of an 2) Give account on branches of paly 3) Role of microfossils in oil exploration 	nology.	10
	b) Write note on:- (Any one)1) Entry of pollen tube2) Melittopalynology		04
Q.5	 Answer the following:- (Any two) a) Describe brief outline of development b) Write an illustrated account of double c) Describe pollen pistil interactions with 	e fertilization and its significance.	14

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Seat	Set	D
No.	Set	

M.Sc. (Semester - III) (CBCS) Examination Nov/Dec-2018

		Bota			
	CY.	TOGENETICS, PLANT BREEDII	_	ND GENETIC ENGINEERING	
Time	e: 2½	∕₂ Hours		Max. Marks	: 70
Instr	ucti	ions: 1) All questions are compulsory.2) Figures to the right indicate fu3) Draw a neat, well labeled, con4) Use of calculators, cell phonesprohibited.	nplete	diagram wherever necessary.	
Q.1		ewrite the sentences by choosing co A fully formed infectious viral particle a) Voiriod c) Virion	is calle b)		14
	2)	Tobacco mosaic virus is a) Spherical shaped c) Cuboidal shaped	b)	Rod shaped Oval shaped	
	3)	Proteins responsible for compact pack	king ar	nd winding chromosomal DNA are	
		a) Histone c) Trypsin		Nonhistones Serein	
	4)	Type of chromatin that participates in products is a) Heterochromatin c) Centromere	b)	transcription of DNA to mRNA Euchromatin Achrcentric chromosome	
	5)	Region of repetitive nucleotide sequence a) Centromere c) Isomers	b)	t each end of chromatid is Telomere Monomers	
	6)	Euchromatin is a) Lightly packed form of chromatin b) Tightly packed form of chromatin c) Concentrated packed form of chro d) Elongated form of chromatin	matin		
	7)	Which of the following process occurs sequences? a) Homologous genetic sequences b) Site specific recombination c) Non homologous recombination d) Replicative recombination	s betwe	een DNA molecules of very similar	
	8)	Which of the following does not code nuclease activity? a) Rec A c) Rec C	b)	enzyme having both helicae ad Rec B Rec D	

	9)	One centiMorghan is defined as percent	of _	the total recombination events.	
		a) 1 c) 0.1	,	10 0.01	
	10	 Hormone pair required for a callus to diff a) Auxin and Cytiokinin c) Auxin and abscisic acid 	b)	ntiate are Auxin and ethylene Cytokinins and giberllin	
	11) Emasculation is concerned with a) Hybridization c) Mass selection	b)	Clonal selection Pure line selection	
	12	 Hybridomas are made by	cells		
	13) Monoclonal antibodies are used ina) Screening of recombinantsc) The treatment of many cancers	b)	Diagnostic kits	
	14) Which of the following is not a variant ofa) BLASTNc) BLASTX	b)	AST BLASTP TBLASTNX	
Q.2	a)	Answer the following:- (Any four) 1) Hybrids 2) Protein data bank 3) Importance of IPR 4) Regeneration of protoplast 5) Amplification			80
	b)	Write notes on. (Any two)1) Gene conversion2) Independent assortment3) Physical map			06
Q.3	a)	Answer the following:- (Any two)1) Write a note on linkage group.2) Explain gene mapping.3) Use of bioinformatics in research			80
	b)	Answer the following:- (Any one) 1) Explain genome structure of plasmid. 2) Describe the method of protoplast iso		on.	06
Q.4	a)	Answer the following:- (Any two)1) Explain hybridoma technology.2) Explain site specific recombination.3) Write a note on mobile genetic element	nt.		10
	b)	Answer the following:- (Any one)Write a note on NCBI.Explain mechanism of crossing over.			04
Q.5	a) b)	nswer the following:- (Any two) Explain size and structure of genome in a Describe chromosome mapping. Explain in detail somaclonal variation.	euk	aryotics.	14

Seat No.	Set	P
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M.Sc. (Semester - III) (CBCS) Examination Nov/Dec-2018 Botany ADVANCED PLANT PHYSIOLOGY AND BIOCHEMISTRY

		ADVANCED PLANT PHYSIOI	•	
Time:	21/2	2 Hours	Max. Marks	: 70
Instru	ucti	ons: 1) All questions are compulsory.2) Figures to the right indicate ful3) Draw neat and labeled diagrar		
Q.1	1)	Chlorophyll is present ina) grana c) lamellae	rrect answer from given alternatives: b) stroma d) matrix of mitochondria	14
	2)	NADPH ₂ is generated through a) Glycolysis c) P.S.II	b) P.S.I d) Anaerobic respirations	
	3)	a) Carbohydrates c) Fats and organic acids	ratory substrate. b) Proteins d) All of the above	
	4)	phase of respiration is aa) Glycolysisc) Kreb's cycle	naerobic. b) TCA Cycle d) Oxidation of NADH ₂	
	5)	The main function of lumen of chlorop a) protons (H ⁺) c) neutron	hyll is to store b) electrons d) electrons and neutrons	
	6)	is the precursor for the for a) Erythrose 4 phosphate c) Serine	mation of aromatic amino acids. b) Glycine d) Iron	
	7)	Sulphate assimilation in plants occurs a) ribosomes c) chloroplast	in the b) mitochondria d) vacuoles	
	8)	a) Anabolic c) Amphibolic	TCA cycle. b) Catabolic d) None of these	
	9)	Ribulose diphosphate carboxylase oxy a) Mitochondria c) Peroxisomes	/genase is located in b) Chloroplasts d) Golgi bodies	
	10)	 Pigment gets exited first i P₆₈₀ Xanthophyll 	n non cyclic photophosphorylation. b) P ₇₀₀ d) Chlorophyll b	
	11)	 The exact role of O₂ in respiration is in a) glycolysis c) Formation of Acetyl Co-A 	n b) TCA Cycle d) terminal oxidation	

	12) is a precursor for the	he formation of phytochelatins. b) Cystein	
	a) Glutathionec) Glycine	d) Magnecium	
	13) is used as respiratory su	bstrates.	
	a) Carbohydratesc) Fats and organic acids	b) Proteinsd) All of the above	
	14) H ₂ S is fixed in the form of	d) 7 iii oi iiio above	
	a) Glutamate	b) Cystein	
	c) Adenine	d) Acetyl Co-A	
Q.2	 a) Answer the following:- (Any four) 1) Explain the reduction of sulphate 2) Ultrastructure of chloroplast 3) Discuss the role of malic acid in r 4) Give the forms of phosphate in se 5) Secondary metabolites studies by 	metabolism. oil.	80
	b) Write notes on. (Any two)1) Photosynthetic electron transfer2) Biosynthesis of Cysteine3) VAM		06
Q.3	 a) Answer the following:- (Any two) 1) Mechanism of P uptake 2) Write in brief respiratory inhibitors 3) Significance of Photorespiration. 	S	08
	 b) Answer the following:- (Any one) 1) C₃ photosynthetic pathway 2) Shikimic acid pathway 		06
Q.4	 a) Answer the following:- (Any two) 1) CAM pathway in plants 2) Biosynthesis of sulphur containin 3) Modern concept of electron trans 	-	10
	 b) Answer the following:- (Any one) 1) C₄ pathway of photosynthesis 2) Glycolysis 		04
Q.5	Answer the following:- (Any two)a) Intermediates and regulation of Rubib) Pentose phosphate pathwayc) TCA cycle in plants	isco	14

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Seat	Set	D
No.	Set	

M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018

			any CONSERVATION BIOLOGY	
Time	e: 2½	∕₂ Hours	Max. Mark	s: 70
Insti	uct	, , , , , , , , , , , , , , , , , , , ,	ıll marks.	
		Sect	ion – I	
Q.1			orrect answer from given alternatives: sity and have the power to or	14
		a) Regulate or Protect c) Protect or Destroy		
	2)	a) 2010 c) 2015	rnational year of biodiversity. b) 2020 d) 2025	
	3)	All the different kinds of living things	found in a convinced habitat are called as	
		a) Genetic diversityc) Species diversity	b) Population diversityd) Ecological diversity	
	4)	Threatened species are documented a) Rae plants of India b) Endemic flowering plants of Maha c) Ethnobiology of India d) Red Data Book		
	5)	The sentence 'the older the species,	the wider its range' supports for the	
		a) Relationship of plant geography c) Endemism	b) Age and Area hypothesisd) Continental-drift theory	
	6)	The species conserve with its natural a) Ex-situ c) In-vivo	habitat means conservation. b) In-situ d) In-vitro	
	7)	a) Rotala serpyllifolia c) Crypsis aculeata	,	
	8)	Green House effect is the result ofa) Land acquisition and over grazing b) Use of chemical fertilizers c) Use of huge amount of coal, gased) Outbreak of volcano		

	9) The term Age and Area hypothesis was coined by a) John Willis b) Alfred Wagner c) William Smith d) Charles Smith	
	10) Wildlife protection act was established on a) 2010 b) 1980 c) 1972 d) 2002	
	11)The Indian Botanical Garden, Kolkata was established in year a) 1787 b) 1984 c) 1998 d) 2000	·.
	12) theory is also called as polar oscillation theory or shifting of a) Land-Bridge theory b) Pendulum theory c) Age and Area theory d) Continental drift theory	poles.
	 13) The term phytogeography means the a) Distribution of animals in the geographical regions b) Distribution of phytoplanktons on earth surface c) Distribution of plants & animals on earth surface d) Distribution of plants in the geographical regions. 	
	14) are those forest fragments which are commonly protected generally have important religious implication for protecting society. a) Sacred grooves b) Parks c) Sanctuaries d) Biosphere reserves	l and
	Section – II	
Q.2	a) Explain Indian phytogeographical divisions.b) Comment up in brief on Mangrove vegetation of India.	07 07
Q.3	a) Comment up on Biological diversity act-2002b) Explain in brief – concept of the Seed banks.	07 07
Q.4	a) Comment up on Western Ghat vegetation of India.b) Explain in brief – concept of <i>endemism</i>.	07 07
	Section – III	
Q.5	Explain in brief:a) Biosphere reserveb) RET plantsc) Gene banks	05 05 04
Q.6	Explain in brief:a) Local vegetation (i.e. floristic components)b) Cryopreservationc) Highlight the main aim of forest conservation act.	05 05 04
Q.7	 Write short notes on any three:- a) National parks b) NBPGR c) Sanctuaries d) Role of NGO's in biodiversity conservation 	14

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Seat	Set	D
No.	Set	

M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018 Botany PLANT TISSUE CULTURE AND GREEN HOUSE TECHNOLOGY AND HYDROPONICS

		HYDROF	PONICS
Time	: 21/	2 Hours	Max. Marks: 70
Instr	ucti	ions: 1) Question no. 1 is compulsory. 2) Figures to the right indicate fu 3) Attempt any two questions fro 4) Attempt any two questions fro	m Q.2, 3 and 4.
Q.1	Re 1)	a) Cell & organ differentiation	rrect answer from given alternatives: 14 b) Somaclonal variation d) Both a & b
	2)	used medium called as	b) Batch culture d) Cell culture
	3)	Synchronization of suspension vulture a) Chemical inhibition c) Starvation	e takes place with the help of b) Colchicines d) All of these
	4)	Production of variant clones with new as a) Totipotency c) Somatic variation	characters this phenomenon is known b) Clonal propagation d) Somaclonal variation
	5)	Use of immature embryos for in vitro p a) Cybrids c) Embryo culture	broduction of hybrids called as b) Hybrids d) Embryo resue
	6)	culture. a) Auxin c) GA	uction of secondary metabolite in tissue b) Cytokinine d) ABA
	7)	media generally preferred f a) White's c) B ₅	or root culture. b) MS d) Nitsch's
	8)	enzymes are commerciall a) Cellulasec) Pectinases	y used enzymes for protoplast isolation. b) Hemicelluloses d) All of these
	9)	a) Nitrogen c) Zinc	quired for chlorophyll biosynthesis. b) Molybdenum d) Sulphur
	10) For callus initiation ratio of auxin to cy a) High c) Moderate	ytokinine is b) Low d) Very low

	11) fucogen used for fusion	of protoplast.	
	a) NaNo ₃	b) NaHco ₃	
	c) PEG	d) Both a & c	
	12) application of cybrid. a) Environmental tolerance	b) Production of quality	
	c) Cytoplasmic male sterility		
	13) media used for another		
	a) White's c) B ₅	b) N ₆ d) All	
	14) Gynogenic haploids were first development	oped by	
	a) Nitsch	b) White	
	c) San Noem	d) Thomas	
Q.2	Write a note on:-		07
	a) Meristem cultureb) Hybridization		07 07
Q.3	Describe in detail:-		
۷.0	a) Applications of tissue culture		07
	b) Applications of synthetic seeds		07
Q.4	Describe in detail:-		
	a) Somatic embryogenesisb) Factors affecting green house technology	ology	07 07
O 5	Describe in detail:-	лоду	U1
Q.5	a) Procedure of ovary culture		05
	b) Applications of hydroponics		05
	c) Continuous batch culture		04
Q.6	Describe in detail:		
	a) Technique of hydroponicsb) Objectives of plants tissue culture		05 05
	c) Applications of callus culture		03
Q.7	Any three:-		14
	a) Sterilization methods in tissue culture	е	
	b) Macronutrients used in MS media		
	c) Different media used in tissue cultured) Somatic embryogenesis	€	
	a) Johnane embryogenesis		

Seat No. S	et	P

M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018

		Bot ENVIRONMENTAL P	_	
Time	: 21⁄	≨ Hours		Max. Marks: 70
Instr	ucti	ions: 1) Attempt totally five questions. 2) Q.1 is compulsory. 3) Figures to the right indicate further any two questions from 5) Attempt any two questions from 5	m C	2.2 to Q.4.
Q.1		ewrite the sentences by choosing control of the	the b)	
	2)	Desert ephemerals are an example o a) Drought resistant c) Drought tolerant	b)	type of plants. Drought escape Drought sensitive
	3)	Photorespiration in C ₃ plants gets a) Increased c) Maintained	b)	when CO ₂ level is increased. Reduced Balanced
	4)	Depletion of ozone increases the amo a) Visible c) IR	b)	of radiations reaching the globe. UV Gamma
	5)	Cell membranes of plants resistant to acids in their lipid bilayer. a) Saturated c) Unsaturated	b)	ling injury contain fatty Long chain Short chain
	6)	SOD catalyzes the reduction of a) Molecular oxygen c) Ozone	b)	into hydrogen peroxide. Singlet oxygen Superoxide
	7)	Acid rain is caused by higher concent a) NO_x and SO_2 c) SO_2 and O_3	b)	ons of in the atmosphere. NO_2 and O_3 CO_2 and SO_2
	8)	a) Suaeda c) Date palm	,	Sugarbeet Cotton
	9)	Accumulation of phytohora) IAA c) Ethylene	b)	ne occurs during waterlogging. Cytokinin ABA
	10) In sodic soils a high concentration ofa) Saltc) Potassium	b)	Sodium Sand

	a) Stomatal movementsc) Cell signalling		
	 12) Manganese toxicity in plants is idential a) Chlorosis b) Necrosis c) Brown sports surrounded by chlorod d) All the above 		
	13) Disease occurs in the plants when tha) R genesc) DIR1 genes	e pathogen lacks b) avr genes d) None of these	
	a) Compatible solutesb) LEA proteins	icators of heavy metal stress. b) Phytochelatins d) HSPs	
Q.2	What is a disease? Describe biochemica during fungal infection.	I changes occurring in the host tissue	14
Q.3	a) Give an account of effect of salt stressb) Write a note on mechanism of salt tolor	•	07 07
Q.4	Describe in brief:-a) Effects of water stress on plant metabb) Structural adaptation in xerophytes in		07 07
Q.5	 Write on: a) Effect of SO₂ on plant metabolism. b) Chilling injury 		07 07
Q.6	Give an account of:-a) Reactive oxygen species in plants andb) Antioxidants in plants and their role.	d their origin.	07 07
Q.7	 Write short notes on any three:- a) Proline accumulation in plants b) Heat shock proteins c) Effects of flood and tolerance mechand d) Impact of elevated CO₂ concentration 	•	14

Seat No.	Set	Р
NO.		

M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018

Botany						
	CROP PHYSIOLOGY					
Time	: 21/2	2 Hours	Max. Marks: 70			
Instr	ucti	ions: 1) Answer any five questions.				
		2) Question No. 1 is compulsory.3) Answer any two questions from C) No 2 3 & 4			
		4) Answer any two questions Q.No.				
		Figures to the right indicate full m	arks.			
Q.1		Rewrite the sentences by choosing corre	_			
	1)	Aspirin and Salicylic acids controls the m a) Xylem tissue	b) Phloem tissue			
		c) Stomatal aperture	d) None of these			
	2)	In DNP flowering is interrupted by				
		a) Dark Condition is interrupted by Far-reb) Dark Condition is interrupted by red light				
		c) Dark Condition is interrupted by white	, ,			
		d) None of above				
	3)	The substances which kills weeds known				
		•	b) Fungicides d) Vivicides			
	4)	What is full form of BARC?	,			
	,	a) Bhartia Automatic Research Centre				
		b) Bhartia Agricultural Centrec) Bhabha Atomic Research Centre				
		d) Bhartia Atomic Centre				
	5)	Growth follows sequence of growth phase				
		,	b) Log-lag-stationary d) Lag-stationary-log			
	6)	The total weight of sink tissue is known a	, , ,			
	U)	_	b) Sink-size			
		c) Sink weight	d) All of these			
	7)	Which of the following fertilizer affects ba				
		including biodiversity, biological cycle and a) Compost	a soil properties? b) Inorganic			
			d) Green manure			
	8)	The function of leg hemoglobin is to				
		 a) Maintain adequate supply of O₂ to bac b) Protect nitrogenase enzyme inside the 				
	c) Neither a nor b correct					
		d) Both a and b correct				
	9)	Arc indicator used to measure	h) Bata of Transpiration			
			b) Rate of Transpirationd) pH of soil			

	10	During vernalization the cold temperatu plants by	re is	s received annual and biennial	
		a) Tips of older leaves c) Stem apex	,	Tips of young leaves Roots	
	11)) Which of the following pair of enzyme is ripening?	inv	volved in softening of fruit during its	
		a) Peroxidase and catalasec) Pectinase and cellulose	,	Pectinase and peroxidase None of these	
	12)) Ratio of economic yield to the whole bica) Harvest indexc) LAR	b)	ical yield. NAR RGR	
	13) Which of the following should not be feat a) Toxic to plant b) Cause damage to stomatal apparatu c) Causing side effect d) All of these 		e of antitranspirants?	
	14) Which of the following is only group of ra) Ca, Mg, Kc) Na, Ca, K	b)	or elements? NPK Fe, Mo, Zn	
Q.2	•	What is the source and sink relationship Describe the physiological basis of yield		•	07 07
Q.3	•	Give an account of a post harvest technium. r. t. field to customer. What is vernalization? Add note its med			07 07
Q.4	•	Give an account of use of growth regula Give an idea about physiology of minera		•	07 07
Q.5	a) b)	rite a short note on the following: Write note on research contribution of IC Give an account of mode of action of we Write about application of fertilizers through	edi	cides.	05 05 04
Q.6	b)	Write in short about physiology of N_2 fixed What is meant by water use efficiency a Brief account on idea of physiological bases.	nd r	n-use efficiency	05 05 04
Q.7	a) b) c)	rite short notes on any three:- Phloem transport Organic farming and its applications Research Institute BARC Post-harvest technology of any fruit stud	lied	by you	14

Seat	Set	D
No.	Set	

M.Sc. (Semester - IV) (Old) (CBCS) Examination Nov/Dec-2018

			any CONSERVATION BIOLOGY	
Time	e: 2½	∕₂ Hours	Max. Marks:	70
Instr	uct			
		Sect	ion – I	
Q.1			orrect answer from given alternatives: rsity and have the power to or	14
		 _	b) Recreate or Destroyd) Regulate or Recreate	
	2)	a) 2010 c) 2015	national year of biodiversity. b) 2020 d) 2025	
	3)	All the different kinds of living things	ound in a convinced habitat are called as	
		a) Genetic diversity c) Species diversity	b) Population diversityd) Ecological diversity	
	4)	Threatened species are documenteda) Rae plants of Indiab) Endemic flowering plants of Mahac) Ethnobiology of Indiad) Red Data Book		
	5)	The sentence 'the older the species,	the wider its range' supports for the	
		a) Relationship of plant geography c) Endemism	b) Age and Area hypothesisd) Continental-drift theory	
	6)	The species conserve with its natural a) Ex-situ c) In-vivo	habitat means conservation. b) In-situ d) In-vitro	
	7)	a) Rotala serpyllifolia c) Crypsis aculeata	pecies on Kas plateau. b) <i>Anagallis pumila</i> d) <i>Rotala sahyadrica</i>	
	8)	Green House effect is the result ofa) Land acquisition and over grazing b) Use of chemical fertilizers c) Use of huge amount of coal, gased) Outbreak of volcano		

	9) The term Age and Area hypothesis waa) John Willisc) William Smith	as coined by b) Alfred Wagner d) Charles Smith	
	10) Wildlife protection act was established a) 2010 c) 1972	d on b) 1980 d) 2002	
	11)The Indian Botanical Garden, Kolkataa) 1787c) 1998	was established in year. b) 1984 d) 2000	
	12) theory is also called as pola) Land-Bridge theoryc) Age and Area theory	b) Pendulum theory	
	 13) The term phytogeography means the a) Distribution of animals in the geog b) Distribution of phytoplanktons on e c) Distribution of plants & animals on d) Distribution of plants in the geography 	graphical regions earth surface n earth surface	
	14) are those forest fragmer generally have important religious impa) Sacred groovesc) Sanctuaries		
	Section	on – II	
Q.2	a) Explain Indian phytogeographical divisb) Comment up in brief on Mangrove veg		07 07
Q .3	a) Comment up on Biological diversity acb) Explain in brief - concept of the Seed I		07 07
Q.4	a) Comment up on Western Ghat vegetab) Explain in brief – concept of <i>endemisr</i>		07 07
	Section	n – III	
Q.5	Explain in brief:a) Biosphere reserveb) RET plantsc) Gene banks		05 05 04
2.6	Explain in brief:a) Local vegetation (i.e. floristic componeb) Cryopreservationc) Highlight the main aim of forest conse	,	05 05 04
Q.7	 Write short notes on any three:- a) National parks b) NBPGR c) Sanctuaries d) Role of NGO's in biodiversity conservation 	ation	14

Seat No.	t I
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M.Sc. (Semester - IV) (Old) (CBCS) Examination Nov/Dec-2018 Botany PLANT TISSUE CULTURE AND GREEN HOUSE TECHNOLOGY AND HYDROPONICS

		HYDROF	ONICS
Time:	2½	≨ Hours	Max. Marks: 70
Instru	ucti	ons: 1) Question no. 1 is compulsory. 2) Figures to the right indicate ful 3) Attempt any two questions from 4) Attempt any two questions from	m Q.2, 3 and 4.
Q.1		ewrite the sentences by choosing comparison of callus culture a) Cell & organ differentiation c) Isolation of single cell	b) Somaclonal variation
	2)	The process in which there is addition used medium called as a) Suspension culture c) Continuous culture	of fresh nutrient medium & draining out b) Batch culture d) Cell culture
	3)	Synchronization of suspension culture a) Chemical inhibition c) Starvation	takes place with the help of b) Colchicines d) All of these
	4)	Production of variant clones with new as a) Totipotency c) Somatic variation	b) Clonal propagation
	5)	Use of immature embryos for in vitro p a) Cybrids c) Embryo culture	broduction of hybrids called as b) Hybrids d) Embryo resue
	6)	hormone promotes produculture. a) Auxin c) GA	b) Cytokinine d) ABA
	7)	media generally preferred for a) White's c) B_5	or root culture. b) MS d) Nitsch's
	8)	a) Cellulase c) Pectinases	y used enzymes for protoplast isolation. b) Hemicelluloses d) All of these
	9)	a) Nitrogenc) Zinc	luired for chlorophyll biosynthesis. b) Molybdenum d) Sulphur
	10) For callus initiation ratio of auxin to cya) Highc) Moderate	vtokinine is b) Low d) Very low

11) fucogen used for fusion of protoplast.				
a) NaNo₃	b) NaHco ₃			
c) PEG	d) Both a & c			
a) Environmental tolerancec) Cytoplasmic male sterility	b) Production of qualityd) All of these			
13) media used for another a) White's c) B ₅	culture. b) N ₆ d) All			
14) Gynogenic haploids were first developa) Nitschc) San Noem	bed by b) White d) Thomas			
Write a note on:- a) Meristem culture b) Hybridization		07 07		
Describe in detail:- a) Applications of tissue culture b) Applications of synthetic seeds		07 07		
Describe in detail:- a) Somatic embryogenesis b) Factors affecting green house technological.	ogy	07 07		
Describe in detail:- a) Procedure of ovary culture b) Applications of hydroponics c) Continuous batch culture		05 05 04		
Describe in detail: a) Technique of hydroponics b) Objectives of plants tissue culture c) Applications of callus culture		05 05 04		
Any three:- a) Sterilization methods in tissue culture b) Macronutrients used in MS media c) Different media used in tissue culture d) Somatic embryogenesis		14		
	a) Nitsch c) San Noem Write a note on:- a) Meristem culture b) Hybridization Describe in detail:- a) Applications of tissue culture b) Applications of synthetic seeds Describe in detail:- a) Somatic embryogenesis b) Factors affecting green house technology Describe in detail:- a) Procedure of ovary culture b) Applications of hydroponics c) Continuous batch culture Describe in detail: a) Technique of hydroponics b) Objectives of plants tissue culture c) Applications of callus culture Any three:- a) Sterilization methods in tissue culture b) Macronutrients used in MS media c) Different media used in tissue culture	a) Nitsch c) San Noem d) Thomas Write a note on:- a) Meristem culture b) Hybridization Describe in detail:- a) Applications of tissue culture b) Applications of synthetic seeds Describe in detail:- a) Somatic embryogenesis b) Factors affecting green house technology Describe in detail:- a) Procedure of ovary culture b) Applications of hydroponics c) Continuous batch culture Describe in detail: a) Technique of hydroponics b) Objectives of plants tissue culture c) Applications of callus culture Any three:- a) Sterilization methods in tissue culture b) Macronutrients used in MS media c) Different media used in tissue culture		

Seat No.	Set	Р
140.		

M.Sc. (Semester - IV) (Old) (CBCS) Examination Nov/Dec-2018 Botany

		ENVIRONMENTAL P	LÁ	NT PHYSIOLOGY
Time	: 2½	≨ Hours		Max. Marks: 70
Instr	ucti	 ons: 1) Attempt totally five questions. 2) Q.1 is compulsory. 3) Figures to the right indicate fu 4) Attempt any two questions fro 5) Attempt any two questions fro 	m C	0.2 to Q.4.
Q.1		ewrite the sentences by choosing control of the	the b)	<u> </u>
	2)	Desert ephemerals are an example of a) Drought resistant c) Drought tolerant	b)	type of plants. Drought escape Drought sensitive
	3)	Photorespiration in C ₃ plants gets a) Increased c) Maintained	b)	when CO ₂ level is increased. Reduced Balanced
	4)	Depletion of ozone increases the amo a) Visible c) IR	b)	of radiations reaching the globe. UV Gamma
	5)	Cell membranes of plants resistant to acids in their lipid bilayer. a) Saturated c) Unsaturated	b)	ling injury contain fatty Long chain Short chain
	6)	SOD catalyzes the reduction of a) Molecular oxygen c) Ozone	b)	into hydrogen peroxide. Singlet oxygen Superoxide
	7)	Acid rain is caused by higher concent a) NO_x and SO_2 c) SO_2 and O_3	b)	ons of in the atmosphere. NO_2 and O_3 CO_2 and SO_2
	8)	a) Suaeda c) Date palm	,	Sugarbeet Cotton
	9)	Accumulation of phytohor a) IAA c) Ethylene	b)	ne occurs during waterlogging. Cytokinin ABA
	10	In sodic soils a high concentration ofa) Saltc) Potassium		Sodium Sand

	11) Potassium ions play an important role in	
	a) Stomatal movementsb) Protein synthesisc) Cell signallingd) None of the above	
	 12) Manganese toxicity in plants is identified by a) Chlorosis b) Necrosis c) Brown sports surrounded by chlorotic zone d) All the above 	
	 13) Disease occurs in the plants when the pathogen lacks a) R genes b) avr genes c) DIR1 genes d) None of these 	
	 a) Compatible solutes b) Phytochelatins c) LEA proteins d) HSPs 	
Q.2	What is a disease? Describe biochemical changes occurring in the host tissue during fungal infection.	14
Q.3	a) Give an account of effect of salt stress on plant metabolism.b) Write a note on mechanism of salt tolerance in higher plants.	07 07
Q.4	Describe in brief:-a) Effects of water stress on plant metabolism.b) Structural adaptation in xerophytes in response to water stress.	07 07
Q.5	 Write on: a) Effect of SO₂ on plant metabolism. b) Chilling injury 	07 07
Q.6	Give an account of:-a) Reactive oxygen species in plants and their origin.b) Antioxidants in plants and their role.	07 07
Q.7	 Write short notes on any three:- a) Proline accumulation in plants b) Heat shock proteins c) Effects of flood and tolerance mechanism in plants d) Impact of elevated CO₂ concentration on plants 	14

Seat	Set	D
No.	Set	Г

M.Sc. (Semester - IV) (Old) (CBCS) Examination Nov/Dec-2018

	Botany CROP PHYSIOLOGY					
Time: 2	21/2	Hours		Max. Marks:	70	
		ons: 1) Answer any five questions. 2) Question No. 1 is compulsory. 3) Answer any two questions from (4) Answer any two questions Q.No. 5) Figures to the right indicate full not the control of the cont	.5, 6	o.2, 3 & 4 5 & 7.		
Q.1	1)	ewrite the sentences by choosing corn Aspirin and Salicylic acids controls the nanal and and and acids controls the nanal and and an acids controls the nanal and an acids and acids acids and acids a	nov b)		14	
2		In DNP flowering is interrupted by a) Dark Condition is interrupted by Far- b) Dark Condition is interrupted by red I c) Dark Condition is interrupted by white d) None of above	red ight	or red-light followed by far-red lights		
3	,	The substances which kills weeds know a) Weedicides c) Bactericides	b)	S Fungicides Vivicides		
2	,	What is full form of BARC? a) Bhartia Automatic Research Centre b) Bhartia Agricultural Centre c) Bhabha Atomic Research Centre d) Bhartia Atomic Centre				
Ę	•	Growth follows sequence of growth phase a) Lag-log-stationary c) Stationary lag	b)	s Log-lag-stationary Lag-stationary-log		
6	•	The total weight of sink tissue is known a a) Sink-shape c) Sink weight	b)	Sink-size All of these		
7	,	Which of the following fertilizer affects be including biodiversity, biological cycle ar a) Compost c) Organic	nd s b)	,		
3	,	The function of leg hemoglobin is to a) Maintain adequate supply of O ₂ to bab) Protect nitrogenase enzyme inside the c) Neither a nor b correct d) Both a and b correct				
ę	,	Arc indicator used to measure a) Growth of plant c) Light intensity		Rate of Transpiration pH of soil		

	 During vernalization the cold temperature is received annual and biennial plants by 				
		a) Tips of older leavesc) Stem apex	,	Tips of young leaves Roots	
	11)) Which of the following pair of enzyme is ripening?	inv	rolved in softening of fruit during its	
		a) Peroxidase and catalasec) Pectinase and cellulose	,	Pectinase and peroxidase None of these	
	12)	Ratio of economic yield to the whole bica) Harvest indexc) LAR	b)	ical yield. NAR RGR	
	13	 Which of the following should not be feat a) Toxic to plant b) Cause damage to stomatal apparatu c) Causing side effect d) All of these 		e of antitranspirants?	
	14]	Which of the following is only group of ra) Ca, Mg, Kc) Na, Ca, K	b)	or elements? NPK Fe, Mo, Zn	
Q.2	-	What is the source and sink relationship Describe the physiological basis of yield		_	07 07
Q.3	 a) Give an account of a post harvest technology of any plant studied by you w. r. t. field to customer. b) What is vernalization? Add note its mechanism. 				07 07
Q.4	a) Give an account of use of growth regulators in agriculture.b) Give an idea about physiology of mineral nutrition in groundnut.			07 07	
Q.5	 Write a short note on the following: a) Write note on research contribution of ICRISAT in crop physiology. b) Give an account of mode of action of weedicides. c) Write about application of fertilizers through soil. 			05 05 04	
Q.6	 a) Write in short about physiology of N₂ fixation in chickpea. b) What is meant by water use efficiency and n-use efficiency c) Brief account on idea of physiological basis of yield of sugarcane. 			05 05 04	
Q.7	a) b) c)	ite short notes on any three:- Phloem transport Organic farming and its applications Research Institute BARC Post-harvest technology of any fruit stud	lied	by you	14