Seat	Cat
No.	Set F

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019

		Botany
BIC	LOG	AND DIVERSITY OF FUNGI, BACTERIA, VIRUSES AND LICHENS
•		Monday, 18-11-2019 Max. Marks: 70 AM To 02:00 PM
Instr	uctior	3: 1) All questions are compulsory.2) Figures to the right indicate full marks.3) Draw neat and labeled diagram wherever necessary.
Q.1	Fill in	the blanks by choosing correct alternatives given below. Identify the term that describe spherical shape bacteria a) coccus b) bacillus c) spirilli d) cylindrical
	2)	Fungal cell wall is made up of a) chitin b) peptidoglycan c) muramic acid d) none
	3)	Mycorrhizae are formed by many members of genus a) Rhizobium b) Azotobacter c) Azospirillum d) Glomus
	4)	Tobacco Mosaic Virus (TMV) is viras. a) single stranded RNA b) double stranded DNA c) single stranded DNA d) none of these
	5)	Lichens thallus is formed by the mutualism of and fungi. a) bacteria b) algae c) viruses d) bacteriophages
	6)	Who among the following is known as a Father of modern Mycology? a) Stanley b) Bawden c) De bary d) Micheli
	7)	Myxomycetes are commonly called a) Golden -brown algae b) slime moulds c) Yellow green algae d) rust fungi
	8)	The black rust of wheat is a fungal disease caused by a) Albugo candida b) Claviceps perpurea c) Puccinia graminis trittici d) None
	9)	mperfect fungi lack sexual reproduction and possess a special genetic recombination, called a) disexuality b) parasexuality c) homosexuality d) none
	10)	Common bread moulds is a) Albugo b) Mucor c) Claviceps d) Ustilago

	11)	True nucleus is absent in a) algae b) bacteria c) fungi d) bryophytes	
	12)	Basidiomycetes produce as a fruiting body. a) ascocarp b) cleistothecium c) basidiocarp d) basidiospore	
	13)	Find out correct sequence of sexual reproduction in fungi. a) karygamy-plasmogamy- meiosis b) plasmogamy-karyogamy-meiosis c) meiosis-karyogamy-plasmogamy d) all of these are correct	
	14)	Yellow vein mosaic of lady's finger is caused by a) bacteria b) mycoplasma c) virus d) nematoades	
Q.2	A)	Answer the following questions. (Any Four)) What is collumella? Explain role of fungi in food. Enlist any four characteristics of viruses. Name any two antibiotics derived from bacteria with their biological source. Draw a well labeled diagram of Bacteriophage.	8
	B)	Vrite short notes. (Any Two)) Fructification in myxomycetes Powdery mildews Edible fungi)6
Q.3	A)	Answer the following questions. (Any Two) Describe sexual reproduction in Chytridiomycetes. Describe the structure of conidium in penicillium. Explain the role of lichens.	8
	B)	Answer the following questions. (Any One)) Enlist general characters of fungi. Comment on general account of bacteria.)6
Q.4	A)	Answer the following questions. (Any Two) Explain ectomycorrhizae and endomycorrhizae with suitable example. Describe the distinguishing characters of zygomycotina. Give classification of Lichen.	0
	B)	Answer the following questions. (Any One) Explain the germination of Teletospores in <i>Puccinia graminis</i> . What is ascocarp? Describe various kinds of ascocarp within the Ascomycotina.)4
Q.5	Ans a) b)	er the following questions. (Any Two) Describe replication in viruses. Describe life cycle in Stemonites. Assexual and sexual reproduction in fundi	4

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M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019 Botany BIOLOGY AND DIVERSITY OF ALGAE, BRYOPHYTES AND PTERIDOPHYTES

•		e: Tuesday, 05-11-2019 0 AM To 02:00 PM	Max. Marks: 70
Instr	uction	1) All questions are compulsory.2) Figures to the right indicate full marks.3) Draw neat labelled diagrams wherever neces	ssary.
Q.1	Fill i	n the blanks by choosing correct alternatives gi	iven below. 14
	1)	Leaves of plant have legume. a) Pinus b) Cycas c) Selaginella d) Lycopo	dium
	2)	 type of antherozoids are found in Equisetur a) Biflagellate b) Uniflag c) Multiflagellate d) None or 	ellate
	3)	Marsilea is found in habitat. a) Terrestrial b) Aquatic c) Amphibian d) Both B	
	4)	Siphonostele is found in stem. a) Ephedra b) Marsile c) Equisetum d) Pinus	a
	5)	 type of reserve food material found in Chlo a) Starch b) Fat c) Both A and B d) Lamina 	
	6)	is father of modern Algology of India. a) Fritsch b) lyengar c) Alasingaracharya d) Allen	r
	7)	Eye spot is absent in class of algae. a) Rhodophyceae b) Phaeor c) Chlorophyceae d) Cyanor	
	8)	The gametophyte of Psilotum is a) Endosporic b) Endosc c) Exosporic d) Dioecic	
	9)	The archegoniophore of Marchantia is known as _ a) Carpogonium b) Archeg c) Female receptacle d) Carpoc	
	10)	In bryophytes vegetative reproduction takes place a) Gemmae b) Aplano c) Haplanospore d) Akinete	spores

	11)	is the apical part of capsule. a) Peristome b) Epiphragm c) Operculum d) Rim	
	12)	Chlorella belongs to order a) Chlorococcales b) Chlorococcaceae c) Chrchlorellaceae d) Oocystaceae	
	13)	A bryophyte differs from Pteridophyte in a) Archegonia b) Flagellated antherozoids c) Lack of vascular tissue d) Independent gametophytes	
	14)	generation is dominant in mosses. a) Diploid gametophyte b) Diploid sporophyte c) Haploid gametophyte d) Haploid sporophyte	
Q.2	A)	 Answer the following questions. (Any Four) 1) Enlist types of thallus organization in algae. 2) Any 4 salient features of order Sphagnales. 3) Important characters of subdivision Lycopsida. 4) Types of flagella in algae. 5) Any 4 general characteristics of chlorophyceae. 	08
	B)	 Write Notes. (Any Two) 1) Asexual reproduction in Bryophytes 2) Unusual habitat of algae 3) Structure of archegonium in Mesipteris 	06
Q.3	A)	 Answer the following questions. (Any Two) Salient features of class psilopsida. Salient features of order Anthocerotales. Write in brief Pigments of algae. 	08
	B)	 Answer the following questions. (Any One) Salient features of Lycopsida. With a well labelled diagram describe archegonium in psilotum. 	06
Q.4	A)	 Answer the following questions. (Any Two) 1) Describe isolation and culture of algae. 2) Describe gametophyte of Selaginella. 3) Write a note on economic importance of bryophytes. 	10
	B)	 Answer the following questions. (Any One) 1) Describe interrelationship in between Psilopsida and Lycopsida. 2) Write general character of Polytrichales. 	04
Q.5	Ansv a) b) c)	wer the following questions. (Any Two) Describe in detail Spike of Ophioglossum. Describe classification of algae by G. M. Smith. Describe in detail antheridia and archegonia in Lycopodium.	14

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M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019

		Botany PLANT ECOLOGY
-		Thursday ,07-11-2019 Max. Marks: 70 AM To 02:00 PM
Instr	uctior	s: 1) All questions are compulsory. 2) Figures to the right indicate full marks.
Q.1	Fill ii 1)	the blanks by choosing correct alternatives given below. An organism that cannot make its own food is called a(an) a) Heterotroph b) Chemotroph c) Autotroph d) Producer
	2)	Energy flow in an ecosystem is not cyclic because energy is. a) Destroyed as it is used b) Evenly spread out over many organisms c) Increased as you go up the energy pyramid d) Lost as heat or used
	3)	Trophic levels in ecosystem is formed by a) only herbivores b) only plants c) only bacteria d) Organisms linked in food chain
	4)	Which type of pyramid shows the amount of living tissue at each trophic level in an ecosystem? a) A numbers pyramid b) An energy pyramid c) A biomass pyramid d) A food pyramid
	5)	EIA is the assessment of the environmental consequences. a) only positive b) only negative c) both positive and negative d) None of these
	6)	The Ramsar Convention on Wetlands comes into force in a) 1975 b) 1965 c) 1955 d) 1945
	7)	All of the members of a particular species that live in one area are called a(an) a) Biome b) Population c) Community d) Ecosystem
	8)	is the increase of Earth's average surface temperature due to effect greenhouse gases. a) Global warming b) Global cooling c) Global marketing d) Globalalization
	9)	If pollution comes from a single location then it is known as pollution. a) point-source b) nonpoint-source c) pickpoint d) midpoint

	10)	a) Chlorincarbon c) Chlorofluorocarbo	b) on d)	Chlorofluorocadmium All of these	
	11)	a) Eichhornia crassic) Salvinia molesta	_	Marsilea quadrifolia HydrillaVerticillata	
	12)	a) Water vapor c) Ozone	house gas. b) d)	Methane Oxygen	
	13)	chemicals in an organ a) biomagnification c) bioaccumulation		such as pesticides, or other biotransformation biocontrol	
	14)	In Phytoextraction a) Chelation c) excretion	•	ntial. dehydration secretion	
Q.2	A)	Answer the following 1) What is successive 2) Give wetland cha 3) Mention causes of 4) What is Phytovola 5) Enlist active sens	on? racteristics. of air pollution.		08
	B)	2) Biotransformation	nents of ecosystem	eness programmes	06
Q.3	A)	Answer the following 1) Biosphere reserv 2) Water hyacinth. 3) Ramasar conven	es.	vo)	08
	B)	Answer the following 1) Explain EIA. 2) Explain Marine w		ne)	06
Q.4	A)	Answer the following 1) Give Mechanism 2) IUCN 3) Biotransformation	of bioremediation.	vo)	10
	B)	Answer the following 1) Phytostabilization 2) Carbon credit		ne)	04
Q.5	Ans a) b)	wer the following que Give effects of air pollu Explain consequences Write an essay on 'fac	ution on vegetation. s of climate changes		14

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M.Sc.(Semester - I) (CBCS) Examination Oct/Nov-2019

				Botan	V		
			TOOLS A			S IN BOTANY	
•			turday, 09-11-2019 I To 02:00 PM	9		Мах	k. Marks: 70
Instr	uctior	2) All questions are) Figures to the rig) All questions car) Draw neat labele	ht indicate full n ry equal marks.			
Q.1	Fill in		asic principle of AA All atoms emit lig All atoms produc	AS may be expro pht e light light	esse	atives given below. ed by the statement wavelength	14
	2)	chro a) c)	is the most suit omatogram. Helium Methane	able gas to use	as ab)	a carrier gas in a gas Oxygen Both a and c	
	3)	Higl a) b) c) d)	h performance liques of separate types of determine the medidentify the various determine the ca	f organic pestici ercury content o us pigments fror	des f a f n a	leaf extract	
	4)		strate?			Affinity chromatography Anion exchange	
	5)	lsot a) b) c) d)	opes of an elemer may or may not be have the same a may be used for all of the above	oe radioactive tomic number b		iffering atomic masses gnostics	
	6)	The a) b) c) d)	e main advantage of Its sensitivity Its compatibility of Its compatibility of None of the abou	vith separation t vith most analys	ech	· UV-Vis spectroscopy is	·
	7)	Chi a) b) c) d)	expected result	ree of deviation	d an	he experimental result from d expected frequency ample variance	the

8)	Living, unstained cells and organisms can be observed best using a) Fluorescent microscopy b) TEM c) Phase contrast microscopy d) Scanning electron microscopy	
9)	Scanning electron microscopy (SEM) is best used to study a) small internal cell structures b) internal structure of live, motile cells c) surface morphology d) all of the above	
10)	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	
11)	In distribution probability of success remains constant from trial to trial. a) Normal b) Poisson c) Pinemial d) None of those	
12)	c) Binomial d) None of these The biggest herbarium in India is a) I.A.R.I Delhi b) Central National Herbarium, Calcutta c) St. Xevier's Herbarium, Bombay d) Foreset Research Institute, Dehradun	
13)	chemical is used for poisoning the specimens in herbarium technique. a) Hg ₂ Cl ₂ b) AgNO ₃ c) HCl d) HgCl ₂	
14)	 Which of the following identifies three types of sources used in AAS? a) Hollow cathode Lamp (HCL), Electrode less Discharge Lamp (EDL), Argon lamp b) Electrode less Discharge Lamp (EDL), Deuterium (D2) lamp, Hollow Cathode Lamp (HCL) c) Deuterium (D2) lamp, plasma, flame d) Neon lamp, Acetylene torch, Tungsten lamp 	
A)	Answer the following question.(Any Four) 1) Define buffer and give its examples. 2) Define regression. 3) Write any two application of ultracentrifugation. 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 of Flame spectrophotometry 2) Effect of radiation on biological system 3) Standard units of expression 	06
A)	Answer the following question. (Any Two) 1) What is probability? Give its examples. 2) Explain application of computer in life science. 3) Explain principle of electron microscope.	08
B)	Answer the following question.(Any One) 1) Write application of HPCL. 2) Explain important herbaria in India	06

Q.2

Q.3

SLR-JD-77

Q.4	A)	Answer the following question. (Any Two)	10	
	,	 Explain the principle and application of gas chromatography. Explain the principle and application of photomicrography. Explain the principle and application of TEM. 		
	B)	 Answer the following question. (Any One) 1) Explain in brief radioisotopes. 2) Write application of gel filtration. 	04	
Q.5	Ans a) b)	wer the following question. (Any Two) Describe in brief principle and application atomic absorption. Describe in brief principle and application of phase contrast microscopy.	14	
	c)	Describe in brief principle and application of SEM		

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		IVI.3	Sc. (Semester - II) (CBCS) E Botan		nination Oct/Nov-2019
В	BIOLO	GY		_	RMS AND PALAEOBOTANY
			onday, 04-11-2019 I To 02:00 PM		Max. Marks: 70
Instr	uctior	3) All questions are compulsory. 2) Figures to the right indicate full r 1) Use of calculators, cell phones o 2) Draw neat, well labeled, complet	r any	other electronic gadgets is prohibited.
Q.1	Fill in	Syr a)	e blanks by choosing correct alto mbiotic relationship of roots of gymes Ephedra Pinus	nos b)	
	2)	a) `	getative reproduction is present in <i>Cycas Pinus</i>	b)	 Ephedra Cedrus
	3)		nerally the leaves are in gyl Monomorphic Trimorphic	b)	sperms. Dimorphic Polymorphic
	4)		Pulvinous leaf base	b)	acteristic feature of gymnosperms. Irregular nodes Leaf scars
	5)	Ho	gler (1889) created another group oker to accommodate. Cycadales, <i>Cycas</i> Coniferales, <i>Pinu</i>		in addition to Bentham and Gnetales, <i>Gnetum</i> Ginkgoales, <i>Ginkgo</i>
	6)		e order Coniferales does not includ Voltziaceae Cephalotaxacece		e following family Taxacece Cupressacece
	7)		niferales haveWood. Pycnoxylic Both a & b	b) d)	Manoxylic Polycyclic
	8)		ucarian pitting is seen in Araucaria Both a & b	b) d)	Agathis Podocarpus
	9)		cheids are characterized by tertial Cupressaceae Pinacece		Podocarpacece
	10)	Uni a) c)	seriate, 1-18 cells high vascular ra Taxaceae Pinacece	•	an be seen in Taxodacece Araucariaceae

	11)	· ·				
		,	Steler (1883) Potonie (1899)	b) d)	Williamson (1889) Kidston(1904)	
	12)	C)	is a stem genus.	u)	Musion(190 1)	
	12)	a)	is a stern gerias. Lyginopteris	b)	Kaloxylon	
		c)	Sphenopteris	d)	Lagenostoma	
	13)		<i>yginopteris oldhamia</i> primary xyle			
		,	Exarch Mesarch	b) d)	Endarch Polyarch	
	14)	,	ne centre of seventy steles	,	•	
	17)		Medullosa endocentrica		Medullosa stellata	
		c)	Medullosa anglica	d)	Medullosa thompsoni	
Q.2	A)		wer the following questions. (A	าy F	our)	80
		,	What is maceration? Describe stigmaria root.			
		,	What is fossilization?			
		,	Draw male cone of Zamia.			
	-,	,	What is Mycorrhizal roots?			
	B)		e Notes. (Any Two) Shoot dimorphism in Ginkgo			06
		•	Describe coal ball.			
		3)	Male flower of Ephedra			
Q.3	A)		wer the following questions. (A	-	=	80
		,	How reproductive structure of Cy Sphenophyllum foliage	Cauc	ales get evolved?	
		•	Explain phylogeny of Coniferales			
	B)		wer the following questions. (A	ny C	ne)	06
			Applied aspect of Cycadaceae Give a brief account of order Ben	nett	tala	
Q.4	A)	,	wer the following questions. (A			10
Q. 7	Λ)	1)	Discuss Sahanianthus flower.	ıy ı	WOJ	10
			Explain Enigmocarpon.			
		,	Write salient features of Order Co	orda	tales.	
	B)	Write	e Notes. (Any One) Salient features of Taxales.			04
		2)	Explain Ephedrales.			
Q.5	Ans	wer t	he following questions. (Any Tv	vo)		14
	a)	Dive	rsity of gymnosperms with respec	-	Anatomy.	
	b) c)		cribe upper Gondwana. cribe various techniques used in th	ne st	udy of different fossil.	

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov 2019 Botany TAXONOMY OF ANGIOSPERMS

			TAXONOMY OF		OSPERMS	
			sday, 06-11-2019 02:00 PM			Max. Marks: 70
Instr	uction	,	questions are compulsory. Jures to the right indicate ful	ll mark	S.	
Q.1	Fill ir 1)	The terral	nks by choosing correct and it is a coined by the coined b	y	<u>_</u> .	14
	2)	a) Gerb) Corc) Spe	n Alpha diversity refers to _ netic diversity nmunity and ecosystem divecies diversity ersity among the plants			
	3)	a) Nat	s not included under in situ ional park logical garden		vation. Wild life sanctuary Biosphere reserve	
	4)	a) My	oublished the Biodiversity Hers P. Odum	b)	s Concept. E. O. Wilson S. K. Jain	
	5)	a) Mag	c belongs to family gnoliaceae ootaceae	b) d)	Zingiberaceae Araceae	
	6)	a) Har	nily Urticaceae belongs to so namelidae cidae	ubclas b) d)	s Rosidae Asteridae	
	7)	a) Bio	y gave ogical concept cies concept	b) d)	typological concept None of these	
	8)	same lo a) Lec	•	which b) d)	•	nor from
	9)	Internat a) IUC c) ICB			my (IAPT) publish ICVCN ICZN	<u></u> .
	10)	A a) fam c) orde		-	ated species. genus division	

	11)	is the salient feature of Zingiberaceae. a) Tepals three b) Perianth 6 in 2 whorls	
	12)	c) Pinnate leaves d) staminodes absent has maximum genetic diversity in India.	
	- —,	a) Tea b) Teak c) Mango d) Wheat	
	13)	is example ex-situ conservation. a) National park b) Wildlife sanctuary c) Seed bank d) Sacred groves	
	14)	Typology is one of the type of a) typification b) species concept c) chemotaxonomy d) alpha taxonomy	
Q.2	A)	Answer the following questions. (Any Four) 1) Define Numerical Taxonomy. 2) Define Biodiversity. 3) Define Paratype. 4) Define Genus. 5) Write the typical morphological peculiarity of family Zingiberaceae.	08
	B)	Write notes. (Any Two) 1) Functions of taxonomy 2) Synonym and Homonym 3) In situ conservation	06
Q.3	A)	 Answer the following questions. (Any Two) 1) Demerits of Cronquist's system of classification. 2) Non-dimensional species concept. 3) Comment on hotspots in India. 	08
	B)	Write short notes. (Any One)1) General evolutionary trends in gynoecium2) Rejection of names	06
Q.4	A)	Answer the following questions. (Any Two) 1) Floristic diversity of India. 2) Authors citation. 3) Flower of Commelinaceae.	10
	B)	Write short notes. (Any One)Strategies for species conservationEffective and valid publications	04
Q.5	Ans a) b)	wer the following questions. (Any Two) Morphological characters of orchidaceae. Explain in brief typification. Floristic works in Maharashtra	14

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M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019 Botany CELL AND MOLECULAR BIOLOGY OF PLANTS

		CELL AND MOLECULAR	BIO	LOGY OF PLANTS
		e: Friday, 08-11-2019 0 AM To 02:00 PM		Max. Marks: 70
Instr	uctio	ns: 1) All questions are compulsory. 2) Figures to the right indicate full	mark	KS.
Q.1		iple Choice Questions.		14
	1)	Plasma membrane is a) S.J. Singer c) Aristotle	b) d)	G.L. Nicolson Both a & b
	2)	is not a histone. a) H2A c) H3	b) d)	H2B H6
	3)	are the membrane transporta) Uniporterc) Antiporter	•	ns. Symporter All of these
	4)	Endocytosis is transport. a) passive c) small	b) d)	active large
	5)	30S ribosome occurs in RNA a) tRNA c) mRNA	 b) d)	rRNA snRNA
	6)	is an exogenous agent that day of a) Oxidation c) Ionizing radiation	amag b) d)	
	7)	is not a stop codon. a) UGA c) UAA	b) d)	UGG UAG
	8)	Chloroplast DNA is denoted as a) mtDNA c) nDNA	b) d)	CtDNA cpDNA
	9)	GISH stands for a) Gene in situ hybridization c) Genetic in situ hybridization	b) d)	Genomic <i>in situ</i> hybridization Genomic <i>in silico</i> hybridization
	10)	mtDNA is inherited from a) Father c) Grandfather	b) d)	Mother Mother in-law
	11)	Satellite DNA is present in re a) Coding c) Centromere	gion. b)	Non coding

	12)	a) DNA b) RNA c) Carbohydrate d) Both a & b	
	13)	A membrane which bounds the chief vacuole of a plant cell is calleda) Chloroplast b) Tonoplast c) Leucoplast d) Spheroplast	
	14)	Any DNA sequence that occurs in nuclear, mitochondrial, or plastid of eukaryotic cells is called a) Promoter DNA b) Promiscuous DNA c) General DNA d) Common DNA	
Q.2	A)	Answer the following questions. (Any Four) 1) Channels and pumps in cell 2) Plasmodesmata 3) FISH 4) Cell-Cell interaction 5) mtDNA	08
	B)	 Write Notes. (Any Two) 1) Write note on cyclin dependent kinases 2) Write note on cell cycle 3) Write note on cytokinesis and cell plate formation 	06
Q.3	A)	Answer the following questions. (Any two) 1) Give account on GISH 2) Write a note on selfish DNA. 3) Write a note on Vacuoles.	08
	B)	 Answer the following questions. (Any One) Write a note on nucleochloroplastic interactions. Explain the genome organization of chloroplast. 	06
Q.4	A)	 Answer the following questions. (Any Two) 1) Explain the mechanism of DNA repair. 2) Explain the plasma membrane. 3) Describe denovo synthesis of mitochondria. 	10
	B)	 Answer the following questions. (Any One) 1) Describe the tumor suppressor gene p53. 2) Explain the mechanisms of programmed cell death. 	04
Q.5	Ans 1) 2) 3)	wer the following questions. (Any two) Explain various types of transporters in cell. What is ATP? Add a note on ATPase. Explain structure and function of microtubules	14

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M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019

) Botar	١٧	
		PLANT EMBRYOLOGY	_	PALYNOLOGY
		e: Monday, 18-11-2019 0 PM To 05:30 PM		Max. Marks: 70
Instr	uctior	ns: 1) All questions are compulsory.2) Figures to the right indicate full r3) Draw neat, well labeled, comple4) Use of calculators, cell phones, or	te dia	
Q.1		n the blanks by choosing correct al	terna	atives given below. 14
	1)	Pollinia are found in a) Rubiaceae c) Orchidaceae	b) d)	Poaceae Magnoliaceae
	2)	Generative cell gives rise to a) Antipodal cell c) Egg	b) d)	Male gamete Synergids
	3)	Tricellular pollen grains are found in a) Poaceae c) Rosaceae		 Betulaceae Solanaceae
	4)	is diploid in nature. a) Synergid c) Antipodal cell	b) d)	Egg cell Nucellus
	5)	Incompatibility reactions are controlle a) 'S' c) 'I'	ed by b) d)	' gene. 'nif' PHF8
	6)	In <i>Casuarina equisetifolia</i> eml a) two c) four	oryo b) d)	sacs are formed within ovule. three many
	7)	coined the term palynology.LinnaeusErdmann	b) d)	Theophrastus Hyde and Williams
	8)	Winged pollen grain is characteristic a) Pinaceae c) Gnetaceae		mily in Gymnosperm. Cycadaceae Taxaceae
	9)	Aeropalynolgy is the study of pollen i a) Water c) Soil		Air Honey
	10)	Honey bees collect pollen and necta a) Bee-bread c) Honey	b)	making Honey Comb None of them

	11)	Pollen grains are produced in a) Algae b) Bryophyte c) Fungi d) Angiosperm & Gymnosperms	
	12)	Choose the incorrect method of pollen germination from following. a) Hanging Drop Culture b) Sitting Drop Culture c) Suspension Culture d) Callus culture	
	13)	Entry of pollen tube through chalaza is a) chalazogamy b) mesogamy c) porogamy d) pseudogamy	
	14)	Secondary nucleus is a) Haploid b) Triplod c) Diploid d) Tetraploid	
Q.2	A)	 Answer the following questions. (Any Four) Define apomixs. Give definition of eurypalynous condition with suitable example. Give definition of stenopalynous condition with suitable example. Define function of synergid. What does pollen viability mean? 	80
	B)	 Write notes. (Any Two) 1) Typical female gametophyte in Angiosperm 2) Causes of Polyembryony 3) Scope of palynology 	06
Q.3	A)	Answer the following questions. (Any Two) 1) Describe male gametophyte. 2) Write note on ovary culture. 3) Describe in brief path of pollen tube.	80
	B)	Write notes. (Any One)1) Any two methods of pollen viability test.2) Abnormal male gametophyte.	06
Q.4	A)	 Answer the following questions. (Any Two) 1) Distinguish unifloral and multifloral honeys. 2) Give an account on stigma surface proteins and its significance. 3) Give account on plants causing pollen allergy. 	10
	B)	Write notes. (Any One) 1) Pollen analysis 2) Structure and composition of pollen wall	04
Q.5	Ans a) b) c)	wer the following questions. (Any Two) What is pollen allergy? Give brief account of various pollen allergies. Describe process of double fertilization in angiosperms. Describe various methods of pollen storage.	14

Seat	Set	D
No.	Set	<u> </u>

		M.S	Sc. (Semester - III) (CBCS Bot	5) Exai tany	mination Oct/Nov-2019	
	CYTC	GE		_	ND GENETIC ENGINEERING	j
			ıesday, 05-11-2019 ∕l To 05:30 PM		Max. Marks	s: 70
Instr	uctior	3	 All questions are compulsory Figures to the right indicate f Draw a neat, well labeled, co Use of calculators, cell phonorprohibited. 	ull mark Implete	diagram wherever necessary.	
Q.1	Fill i	Inte a)	e blanks by choosing correct egration of viral 'DNA' into cell ' Viral genome Virion	'DNA' re		14
	2)		nen DNA helix has normal num state. Coiled Normal		ase pairs per helical turn then it is Supercoiled Elongated	
	3)		terochromatin is usually localiz Cell membrane Nucleus		eriphery of the Cytoplasm Cell wall	
	4)		rt of chromosome that links sist Telomere Isomer		matids is called Centromere Polymer	
	5)	DN a)	nich of the following involves re A from one place to another? DNA transposition Transcription		le capacity of short segment of DNA replication Translation	
	6)	on a) b)	nich of the following occurs betwo otherwise dissimilar parental management of the Homologous genetic recombination Site specific recombination Non homologous recombination Replicative recombination	nolecule nation	articular short sequences present ?	
	7)	and	nich of the following contain the of the genes for proteins that pro Insertion sequences Transposons	omotes	·	
	8)		ossing over in diploid organism Dominance of genes Recombination of linked gene	b)	onsible for Segregation of alleles Linkage between genes	
	9)	Syr a) c)	nthetic seed is produced by end Sodium chloride Sodium acetate	•	ting somatic embryos with Sodium alginate Sodium nitrate	

	10)	Cybrids are a) Nuclear hybrids b) Hybrids from cro c) Cytoplasmic hybrids d) Cytological hybri	•
	11)	Hybridoma technology was developed by a) Kohler and Milstein b) Khorana and Nir c) Khorana and Kornberg d) Beedle and Taut	•
	12)	Monoclonal antibodies are produced by a) in vivo method b) suspended cell culture in fermenters c) immobilized cell reactors d) All of these	
	13)	Which of the following is not a variant of BLAST? a) BLASTN b) BLASTP c) BLASTX d) TBLASTNX	
	14)	The protein coat of virus is called a) Nucleiod	
Q.2	A)	 Answer the following (Any Four) 1) Role of Rec A enzyme. 2) Write in brief about plasmid genome. 3) What is gene mapping? 4) What is NCBI? 5) Recombination nodule. 	08
	B)	 Write Notes on (Any Two) Significance of mobile genetic element. Explain molecular mechanism of recombination. Explain architectural difference of the genome. 	06
Q.3	A)	 Answer the following (Any Two) Write a note on independent assortment. Bioinformatic resources on internet. Explain conventional method of construction of restriction 	08 on map.
	B)	Answer the following (Any One)1) Describe genome structure of yeast.2) Describe hybridoma technology.	06
Q.4	A)	Answer the following (Any Two)1) Explain gene conversion.2) Describe linkage group.3) Explain BLAST.	10
	B)	Answer the following (Any One) 1) What are risks and ethical issues of IPR? 2) Explain protein data bank.	04
Q.5	Ans a) b) c)	wer the following (Any two) Explain size and structure of genome of bacteria. Describe in detail amplification. Explain methods of protoplast fusion.	14

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M.Sc.(Semester - III) (CBCS) Examination Oct/Nov-2019 Botany

		ADV	Botar ANCED PLANT PHYSIOL0	-	AND BIOCHEMISTRY	
-			ırsday , 07-11-2019 To 05:30 PM		Max. Marks: 7	'0
Instr	uctior	,	All questions are compulsory. Draw neat and labelled diagram	ıs wh	nerever necessary.	
Q.1	Fill in		blanks by choosing correct al tolysis of water takes place by pl Photosystem I Photosystem I Photosystem I and Photosystem Cytochrome b	notoc		4
	2)	Red a) c)	Drop Effect was studied with iso 12°C 14°C	tope b) d)	of carbon. 13C 18C	
	3)	Con a) c)	version of Pyruvic acid to Acetyl Mg++ Zn++		A requires as a cofactor. Fe++ Cu++	
	4)	a) c)	phosphorylation produces onl Cyclic Direct	y AT b) d)		
	5)	a) c)	acids are relatively non polar. Aromatic amino acids Shikimic acid	b) d)	Essential amino acids Phytic acid	
	6)	a) c)	is a type of secondary metabo Atropine Flavonoids	blite o b) d)	called a Tropane. Tannin Alkaloids	
	7)	Abo a) c)	ut 50% phosphorus from total ph Inorganic Mineral	b)	orus is in form. Organic Absorbed	
	8)	VAN a) c)	I plus preparation contains Aplanospores Clamydospores	_ ase b) d)	· · · · · · · · · · · · · · · · · · ·	
	9)	a) c)	is found in most high protein f Cysteine Phenol	ood. b) d)	Sulphur Zinc	
	10)	The a) c)	first reaction in photorespiration Carboxylation Oxygenation	is b) d)	Decarboxylation Phosphorylation	
	11)		is the precursor for the format	ion o	f aromatic amino acids.	

b) Serine

d) Erythrose 4 phosphate

a) Iron

Glycine

	12)		Calvin cycles needed to form one glucose molecule.					
		a) c)	One Four	b) d)	Two six			
	13)	a) c)	shows higher rate of respira Seeds Germinating seeds	,	Developing seeds Dry seeds			
	14)	Mito a) c)	ochondria is the site of Photolysis Photophosphorylation	b) d)	Oxidative phosphorylation Starch reactions			
Q.2	A)	Ansv 1) 2) 3) 4) 5)	wer the following questions.(Discuss the aromatic amino a Explain the Sulphate uptake. Write an account of photosyn Names of secondary metabol Describe the ATP synthesis.	icids. thetic c	,	08		
	B)	Write 1) 2) 3)	e Notes on. (Any Two) Forms of Sulphur in soil and p Energy transduction in photos Biosynthesis of Methionine		is	06		
Q.3	A)	Ansv 1) 2) 3)	wer the following questions. Factors controlling P uptake. Gluconeogenesis. The role of Malic acid in acid		·	08		
	B)	Ansv 1) 2)	wer the following questions. Pentose phosphate pathway. Biosynthesis of starch.	(Any C	One)	06		
Q.4	A)	Ansv 1) 2) 3)	wer the following questions. Describe the modern concept Mitochondria. Explain the photosynthetic ap Explain the VAM and P nutriti	of elec	ctron transport chain in	10		
	B)	Ansv 1) 2)	wer the following question. (A Explain the light harvesting co Discuss the role of pyrophosp	mplex	es.	04		
Q.5	Ans a) b) c)	Biosy Expla	he following questions. (Any ynthesis of sulphur containing a ain the various steps in respiration of CO ₂ in C ₃	amino a tory cha		14		

Seat	
No.	

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019

		Botan PHYTOGEOGRAPHY AND CO	-	FRVATION BIOLOGY	
•		e: Monday, 04-11-2019 0 PM To 05:30 PM	110	Max. Mark	s: 70
Instr	uction	ns: 1) All questions are compulsory. 2) Figures to the right indicate full r	nark	S.	
Q.1	Fill ir 1)	n the blanks by choosing correct alt organization is active for conse a) WWF c) both a and b	erva	atives given below. tion of biodiversity at world level. WCU EE	14
	2)	Find odd one out a) Nanda devi c) Mannar	b) d)	Great Nicobar Thar	
	3)	type of information is obtainedRed colored flowersEndangered plants and animals	b)	Red eyed birds	
	4) i) ii) iii) iv) v)	Which option is correct for endemism Any group which can be found in small Any group which can be found in larg Group of species which can be found Any group which can be not found an Endemic species which can be found a) i, ii, iii c) ii, iii, v	all re e re in d ywh eve	gion gion efinite region ere else	
	5)	is one of the Hot spot of India. a) Gangatic plain c) Eastern Ghat	b) d)	Western Ghat Arravali mountain	
	6)	is the most appropriate methoda) Vaccinationc) conservation in natural habitat	b)	conservation of wild life. Hybridization Killing of predator	
	7)	Which pair contains maximum diversia) Sunderban and runn of Kutchb) Eastern Ghat and West Bangalc) East Himalaya and Western Ghad) Kerala and Punjab		nd endemic species in India?	
	8)	is the modern concept of consa) Biosphere reserveb) National park	erva b) d)		
	9)	is the endemic tree genera for a) Acacia c) Azadirachta	Indi b) d)		

	10)	component.					
		a) Co ₂ enrichment b) Heating c) Mulching d) Ventilation					
	11)	Threatened species are documented in a) Rare plants of India b) Endemic plants of Maharashtra c) Ethnobiology of India d) Red Data Book					
	12)	Climatic regions includes with even climate and with uneven climate. a) Mountains and Deserts b) Oceanic and Mountains					
		c) Continental and Islands d) Oceanic and Continental					
	13)	The term means 'a particular taxon has very restricted distribution'. a) Critically Endangered b) Low risk c) Threatened d) Endemic					
	14)	Climate of temperate & adjacent lands with means annual temperature					
		is a) Below 10 ⁰ C b) Above 10 ⁰ C c) Below 0 ⁰ C d) Between 0 ⁰ - 10 ⁰ C					
Q.2	A)	Answer the following. (Any Four) 1) What is relic endemism? 2) What is in-situ conservation? 3) Define cryopreservation. 4) Define biotechnology. 5) What is mean by Agroforestry?	80				
	B)	Write Notes. (Any Two) 1) Rare plants 2) National parks 3) Sthalvrikshas	06				
Q.3	A)	 Answer the following. (Any Two) 1) Write in brief importance of Botanical gardens. 2) Comment up on NBPGR. 3) Write brief about scared groves. 	80				
	B)	 Answer the following. (Any One) Write in brief about the seed banks. Inscribe temperate biome- as a major terrestrial biome. 	06				
Q.4	A)	 Answer the following. (Any Two) 1) Comment up on wild life protection act. 2) Write in brief about role of NGO's in conservation. 3) Inscribe the role of polyhouse in- Ex-situ conservation. 	10				
	B)	 Answer the following. (Any One) Write in brief about biological diversity act- 2002. Write in brief about Aforestation. 	04				
Q.5	Ans a) b) c)	wer the following. (Any two) Comment up on western ghat vegetation of India. Explain in detail Age & Area hypothesis. Explain Mangrove vegetation of India.	14				

Seat	Set	D
No.	Set	

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019 Botany PLANT TISSUE CULTURE AND GREEN HOUSE TECHNOLOGY AND HYDROPONICS

			HYDROPO	NIC	S	
•			ednesday, 06-11-2019 /I To 05:30 PM		Max. Marks	: 70
nstr	uctior) All questions are compulsory. 2) Figures to the right indicate full r	nark	S.	
Q.1	Fill in		anks by choosing correct alternated and control culture of the culture of th		es place with the help of	14
	2)	Use	e of immature embryos for in vitro	prod	uction of hybrids called as	
		a) c)	Cybrids embryo culture	b) d)	Hybrids Embryo rescue	
	3)	a)	ploid plants are useful in Screening of recessive mutation Development of homozygous pla Production of diploids All of above	nts		
	4)	a) c)	media generally preferred for r White's B ₅	oot (b) d)	culture. MS Nitsch's	
	5)	a) c)	element in MS media require Nitrogen Zinc	d for b) d)	chlorophyll biosynthesis. Molybdenum Sulphur	
	6)	a)	e term hydroponics was first introd W. A. Setchell W. F. Gericke	b)	•	
	7)	The	e ability of component cells of callu	ıs to	form a whole plant is known as	
		a) c)	Redifferentiation Both (b) and (c)	b) d)	Dedifferentiation None of these	
	8)	Wh a) c)	ich of the following is thermo stabl Zeatin Both a and b	e? b) d)	ABA None of these	
	9)		iich of the following hydrogels have drated somatic embryos? Sodium and potassium alginate Carageenan and Gel-Rite Sodium pectate and Agar All of these	e be	en used for encapsulation of	

	10)	Pollen embryoids were discovered by a) Konal and Natraja b) Guha and Maheshwari					
	11)	c) Skoog and Mille d) Helperin and Wetherell Gynogenic haploids were first developed by					
		a) Nitsch b) White c) San Noem d) Thomas					
	12)	Which country has developed advanced hydroponics technology due to its arid climate? a) Sri Lanka b) UAE					
		c) USA d) Israel					
	13)	Rock wool is the most probably widely used medium in hydroponics, which is obtained from a) Fossil remains b) Basalt rock c) Volcanic rock d) All of these					
	14)	PEG treatment is widely used for protoplast fusion because a) Low frequency of heterokaryon formation b) Slow agglutination c) Reduced formation of binucleate heterokaryon d) Both a & c					
Q.2	A)	Answer the following questions. (Any Four) 1) Define micropropagation. 2) Chemical Sterilization in tissue culture. 3) Define hydroponics. 4) macronutrients in tissue culture media 5) Applications of haploid culture.	80				
	B)	 Write notes. (Any Two) 1) What is haploid culture? Describe Process of anther culture? 2) objectives of tissue culture 3) Growth media used in hydroponics 	06				
Q.3	A)	Answer the following questions. (Any Two) 1) Embryo rescue 2) Types of greenhouse 3) Haploid plants	80				
	B)	Write notes. (Any One)1) Bioreactors and secondary metabolites.2) Factors affecting anther culture.	06				
Q.4	A)	 Answer the following questions. (Any Two) 1) Factors affecting green house technology. 2) Applications of hydroponics. 3) Describe process of axillary bud culture. 	10				
	B)	Write notes. (Any One)1) Applications of synthetic seeds.2) Significance of Embryo culture.	04				
Q.5	Ans a)	Answer the following questions. (Any Two) a) Describe concept of cellular totipotency.					
	b) c)	Describe in detail somatic embryogenesis and its applications. Fertilizers in greenhouses.					

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019

			Botang ENVIRONMENTAL PLA	•	PHYSIOLOGY	
			lay, 08-11-2019 To 05:30 PM		M	lax. Marks: 70
Instr	uction	2)	All questions are compulsory. Figures to the right indicate full n Draw neat, well labeled, complet Use of calculators, cell phones o Prohibited.	e dia	agram wherever necessa	
Q.1	Fill in 1)		blanks by choosing correct alto O4 is used for reclamation of Acidic Saline	s	_	14
	2)	SO ₄ a) c)	and NO ₂ produce pollution by inc Alkalinity Neutrality		ing Acidity Buffer action	
	3)	a) c)	$_$ gas of the atmosphere holds u Helium $N_{\rm 2}$	b)	_	
	4)	Salt a) c)	glands are present in halophytes Salt evasion Salt insensitive	b)	wing Phenomenon Salt tolerant All of these	n.
	5)	In fro a) b) c) d)	ost injury, ice formation begins at Freezing point Several degrees below freezing Slightly above the freezing point 10°C			
	6)	Elec a) c)	trical conductivity of typical saline Less than 4ds Equal to zero	soil b) d)	is More than 4ds Not measurable	
	7)	Tiss a) c)	ue water potential is measured in Amperes Calories		units of Volts Megapascals	
	8)	glob a)	Visible	b)	UV	hing the
	9)	c) An e a) c)	IR exposure to UV radiations stimulate Phenols Anthocyanins		Gamma ynthesis of in plane Proline Chlorophylls	nts.
	10)	a) c)	_ is the main target of chilling str Starch Proteins	,	Phospholipids Chlorophylls	

	11)	Pota a) c)	assium ions play an important role Stomatal movements Cell signaling		Proteins synthesis None of the above	
	12)	Accı	umulation of glycine betaine is ob	serv	ed in some crops in response to	
		a) c)	 Water stress Pollution stress	b) d)	Flooding All of these	
	13)		ling injury occurs when warm regi perature of	on p	lants are exposed to a	
		a) c)	0-10°C 25-35°C	b) d)	10-15 ⁰ C Less than 0 ⁰ C	
	14)	a) c)	is not a compatible solute. Proline Sorbitol	b) d)	Glycine-betain Malic acid	
Q.2	A)	Answ 1) 2) 3) 4) 5)	wer the following questions. (An What are different types of stres Define Osmolyte. What is mean by photoinhibition Define Ice nucleation. Define free radicals.	ses		80
	B)	Write 1) 2) 3)	Causes of soil salinization Causes of water logging Chilling injury			06
Q.3	A)	Answer the following questions. (Any Two) 1) Mechanism to overcome salt stress. 2) Heat shock proteins. 3) Mechanism of UV tolerance.				
	B)	Write 1) 2)	e Notes. (Any Two) Effects of salinity stress on plant Mechanism of flooding tolerance			06
Q.4	A)	Answer the following questions. (Any Two) 1) Effects of heavy metal toxicity in plants. 2) Reactive oxygen species. 3) Describe in brief chilling injury.			10	
	B)	Write 1) 2)	e notes. (Any One) Adaptations in plants in response Effect of SO ₂ on plant metabolism		water stress.	04
 Q.5 Answer the following questions. (Any Two) a) Role of proline in plants. b) Effects of Air pollutant on plant metabolism. c) Write on antioxidants in plant. 				٦.	14	

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Seat	Set P	
No.	Set F	_

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019 Botany CROP PHYSIOLOGY

			Botan CROP PHYS	-	OGY	
•			nday, 11-11-2019 To 05:30 PM		Max. Marks	: 70
Instr	uction		All questions are compulsory. Figures to the right indicate full r	mark	S.	
Q.1	Fill ir 1)		blanks by choosing correct alt ch of the growth hormone promot Ethylene Cytokinin		_	14
	2)	The a) c)	role of Antitranspirants is to Synthesis of florigen Check the water loss	b)		
	3)		lant food transport takes place th Xylem Both a & b		h Phloem None of above.	
	4)		manent and irreversible changes wn as Growth Flowering	in si: b) d)	ze, shape and structure of plant is Respiration None of these	
	5)	Syna) c)	thesis of florigen hormone takes p Root Leaves		e in Stem apex Fruit	
	6)	Whi a) c)	ch of the following is Organic ferti Compost SuperPhosphate		? DAP Urea	
	7)		ng Nitrogen fixation Nitrogenase per functioning. Aerobic Both a & b	enzy b) d)	me require condition for Aerobicun None of these	
	8)	Follo a) c)	owing are the PGR G.A Cytokinins	b) d)	Auxins All of these	
	9)	Long a) c)	g day Plant requires condi Less than 12 hrs Sunlight Low temperature		for the initiation of flowering. Only 12 hrs Sunlight None of these	
	10)	2-4- a)	D is potential Organic Fertilzer Growth promoter	q)	Weedicides	

	11)	a) Increase feb) Increase yi	eld of crops ysico-chemical prope			
	12)	Weedicides use a) Weeds c) Viruses	d to kill	b) d)	Bacteria Fungi	
	13)	Richest source (a) Immature Sc) Leaves	<u> </u>	ne ir b) d)	n higher plant is Stems Roots	
	14)	Central soil salir a) Jodhapur c) Bengleru	nity research Institute	is lo b) d)		
Q.2	A)	 Define hard Define Anti Define grow Any four fu 	transpirants.	ny F	our)	08
	B)		th regulators in agriculations of crop physical contains of crop physical contains are the crop physical contains and contains are the crop physical contains are the crop physical contains and contains are the crop physical contains are the crop contains are the			06
Q.3	A)	 Application Enlist the e 	Enlist the enzymes synthesised in during fruit ripening.			
	B)	action of ar			des & add a note on mode of crop Physiology.	06
Q.4	A)	1) Crop growt	owing questions. (A h analysis & its applion nstitute ICRISAT. dism.	-		10
	B)	Write notes. (A r 1) Types of fe 2) Give an ac	rtilizers.	ogy	of any one fruits studied by you.	04
Q.5	Ans 1) 2) 3)	Research contrib Explain Physiolo	g questions. (Any Toution of CAZARI in Agy of mineral nutrition as sink relationship &	gric	ground nut.	14