

RGUCET 22
Common Entrance Test, 2022
Ph.D. IN BOTANY

1	In dehydration schedule what is the function of olive-oil?					
	a) Removing traces of water	b) Cleaning the specimen	c) Fixing the dye	d) Improving the contrast	B	Cleaning the specimen
2	Out of the listed chemicals which are not a mountant?					
	a) Canada balsam	b) 70% ethanol	c) Euparal	d) DPX	B	70% ethanol
3	Why xylene is used at the end of dehydration series?					
	a) to replace ethanol from the material and to dissolve the mountant	b) for absolute drying	c) cleaning the specimen	d) improving colour	A	to replace ethanol from the material and to dissolve the mountant
4	How the destaining is done while staining algae or fungi with cotton-blue?					
	a) washing specimen with glycerine	b) washing specimen with distilled water	c) washing specimen with lectophenol	d) washing with ethanol	C	washing specimen with lectophenol
5	How to destain anatomical specimen (stem/ root/ leaf) staining with two dyes in dehydration series?					
	a) Wash with ethanol at the end	b) clean with olive-oil	c) wash with same concentration of ethanol in which dye is dissolved	d) wash in water and dehydrate again	C	wash with same concentration of ethanol in which dye is dissolved
6	Which one of the following statements is not correct for Agarose gel when compared to Polyacrylamide gel?					
	a) It is more fragile.	b) Separate very large molecules.	c) It processing is faster.	d) Its resolution is superior.	d	Its resolution is superior.

7	Which one of the following will not be needed while performing Agarose gel electrophoresis for visualization of a particular DNA segment?					
	a) Glycerol	b) Coomassie brilliant blue	c) Ethidium bromide	d) TBE buffer	b	Coomassie brilliant blue
8	If any two single numbers are selected and they are multiplied, then the probability that the last digit will be 1 is _____.					
	a) 2/9	b) 4/81	c) 1/25	d) 4/25	b	4/81
9	One card is drawn randomly from a pack of 52 cards, then what is the probability that it is a King of Hearts or Queen of Hearts?					
	a) 1/13	b) 1/104	c) 1/52	d) 1/26	d	1/26
10	How much amount of NaOH is required to make 50 ml solution of concentration 0.25 molar per litre?					
	a) 100 mg	b) 12.5 mg	c) 200 mg	d) 400 mg	c	200 mg
11	For transferring DNA onto nylon membrane, the Agarose gel is pre-treated first with HCl then NaOH and finally with buffered salt solution (pH 7). Select from the following, the most right reason(s) for doing such pre-treatment. (i) The DNA backbone is broken at depurinated sites. (ii) The double-stranded DNA molecules become single-stranded. (iii) DNA molecules are transferred more efficiently onto nylon membrane. (iv) DNA binds easily to the nylon membrane.				(v)	

	a) i, ii and iii	b) i, iii and iv	c) i, ii and iv	d) i, ii, iii and iv	d	i, ii, iii and iv
12	Mean deviation can be computed from					
	a) arithmetic mean	b) median	c) Range	d) Variance	d	Variance
13	Sonication used in rDNA experiments is the process in which _____.					
	a) sound waves are used for agitating the particles in the solutions	b) sound waves are used for placid the particles in the solutions	c) ultrasound waves are used to placid the particles in the solutions	d) Infrasonic sound waves are used for placid the particles in the solutions	A	sound waves are used for agitating the particles in the solutions
14	In genetic engineering, elution means _____.					
	a) Separation of the DNA from centrifuge tube after centrifugation	b) Separation of protein from recombinant cell	c) Insertion of recombinant DNA into host cell	d) DNA bands are cut out from the gel	D	DNA bands are cut out from the gel
15	In blue-white screening of rDNA technology, white colonies represents _____.					
	a) non-transformed plasmids	b) cells containing empty plasmid vectors	c) cells with recombinant plasmids containing a new insert	d) cells that have not taken up the plasmid vector	C	cells with recombinant plasmids containing a new insert
16	With a pure sample of DNA, the ratio of the absorbances at 260 and 280 nm is _____.					
	a) 1.8	b) 1	c) 0.9	d) 2	A	1.8

17	A proper technique for staining gymnosperm leaves employs _____.					
	a) safranin with a fast green counterstain	b) safranin only	c) Fast green only	d) Cotton blue	A	safranin with a fast green counterstain
18	Which is the most efficient detector for qualitative analysis of isotopes of an element?					
	a) MS	b) DAD	c) IR	d) None of them	A	MS
19	Essential oils can be extracted more effectively from aromatic plants by _____.					
	a) Chromatography	b) Soxhlet apparatus	c) Clevenger apparatus	d) Centrifugation	C	Clevenger apparatus
20	Liquid containing suspension can better be purified by _____.					
	a) Crystallography	b) Filtration	c) Decantation	d) Centrifugation	D	Centrifugation
21	Which of the following wavelength ranges is associated with VIS- spectroscopy?					
	a) 400 – 800nm	b) 200 – 800nm	c) 200 – 300nm	d) 850 – 1400nm	A	400 – 800nm
22	Under which frequency range functional groups of compounds can be detected by infrared spectroscopy?					
	a) 1400 - 600cm ⁻¹	b) a) 600 - 300cm ⁻¹	c) a) 300 - 100cm ⁻¹	d) a) 100 - 20cm ⁻¹	A	1400 - 600cm ⁻¹
23	Which of the following is the disadvantage of Nitrogen, which can be used as carrier gas in gas chromatography?					
	a) Dangerous to use	b) Reduced sensitivity	c) Expensive	d) High density	B	Reduced sensitivity

24	RP-HPLC method contains _____.					
	a) Polar stationary phase with non-polar mobile phase	b) Non-polar stationary phase with polar mobile phase	c) Polar stationary phase with polar mobile phase	d) Non-polar stationary phase with non-polar mobile phase	A	Polar stationary phase with non-polar mobile phase
25	At which wavelength would you set your HPLC-UV/VIS detector during qualitative analysis of Flavonoids?					
	a) (400-600)nm	b) (500 – 700) nm	c) 200 – 300 nm	d) None of them	C	200 – 300 nm

26	Which organization recognize the Biodiversity Hotspots?					
	a) WWF	b) IUCN	c) UNO	d) BSI	B	IUCN
27	Which Biodiversity Hotspot covers the state of Nagaland?					
	a) Eastern Himalaya	b) Himalaya	c) Indo-Burma	d) Sundaland	C	Indo-Burma
28	Recognize the plant part of <i>Shorea robusta</i> which is marketed as NTFP.					
	a) Leaf	b) Seed	c) Bark	d) Root	A	Leaf
29	How many Biodiversity Hotspots has covered Indian territory?					
	a) 12	b) 06	c) 04	d) 03	C	04
30	Choose the name of the species whose plant-part is generally collected from the natural habitat and has high demand in the export market.					
	a) <i>Aloe vera</i>	b) <i>Artemisia vulgaris</i>	c) <i>Rauvolfia serpentina</i>	d) <i>Curcuma amada</i>	C	<i>Rauvolfia serpentina</i>
31	Para-rubber plant is a native of which country?					
	a) India	b) Malaysia	c) Brazil	d) Nigeria	C	Brazil
32	With which terminology the local varieties of rice are recognized in science?					
	a) Species	b) Land-races	c) Varieties	d) crop-lines	B	Land-races
33	How many Megadiversity countries have been recognized so far globally?					

	a) 17	b) 26	c) 11	d) 35	A	17
34	Indicate the state from the list in which there is no Ramsar Site.					
	a) Tripura	b) Assam	c) Arunachal Pradesh	d) Manipur	C	Arunachal Pradesh
35	Which one of the algae listed below produce phycocyanin pigment?					
	a) <i>Spirogyra communis</i>	b) <i>Spirulina pratensis</i>	c) <i>Porphyridium cruentum</i>	d) <i>Dunaliella salina</i>	B	<i>Spirulina pratensis</i>
36	Select the group of flowers that can be developed as floricultural crop in Arunachal Pradesh.					
	a) Marigold varieties	b) Dahlia varieties	c) Orchids	d) Lilies	C	Orchids
37	Which plant do you think can be promoted for yielding biofuel and has highly increasing demand?					
	a) Sugar cane	b) Castor	c) Mustard	d) Cassava	A	Sugar cane
38	Recognize two highly endangered species of North-east India.					
	i) <i>Vanda caerulea</i>	ii) <i>Coptis teeta</i>	iii) <i>Dendrobium densiflorum</i>	iv) <i>Drosera peltata</i>		
	a) i & ii	b) i & iii	c) ii & iv	d) i, ii & iii	A	i & ii
39	Indicate the species which is commonly used as biopesticide.					
	a) <i>Azadirachta indica</i>	b) <i>Melia azedarach</i>	c) <i>Cassia fistula</i>	d) <i>Solanum indicum</i>	A	<i>Azadirachta indica</i>
40	Autecology deals with					
	a) Ecology of species	b) Ecology of many species	c) Ecology of community	d) All the above	a	Ecology of species
41	Ecotype is a type of species in which environmentally induced variations are					
	a) Temporary	b) Genetically fixed	c) Genetically not related	d) None of the above	b	b) Genetically fixed
42	The pyramid of energy in any ecosystem is					
	a) Always upright	b) Maybe upright or inverted	c) Always inverted	d) None of the above	a	a) Always upright
43	Biotic potential is counteracted by					
	a) Competition with other organisms	b) Producer is the Largest	c) Limitation of food supply	d) None of the above	d	d) None of the above

44	Species that occur in different geographical regions separated by special barriers are					
	a) Allopatric	b) Sympatric	c) Sibling	d) mutualistic	a	a) Allopatric
45	Ecosystems resist change because they are in a state of?					
	(a) Imbalance	(b) Homeostasis	(c) Shortage of components	(d) Deficiency of light	b	(b) Homeostasis
46	Energy storage at the consumer level is called?					
	(a) Gross primary productivity	(b) Secondary productivity	(c) Net primary productivity	(d) Net productivity	b	(b) Secondary productivity
47	Primary productivity					
	(a) is equal to the standing crop of an ecosystem.	(b) is greatest in freshwater ecosystems.	(c) is the rate of conversion of light to chemical energy in an ecosystem.	(d) is inverted in some aquatic ecosystems.	c	(c) is the rate of conversion of light to chemical energy in an ecosystem.
48	Mass of living matter at a trophic level in an area at any time is called?					
	(a) standing crop	(b) detritus	(c) humus	(d) standing state	a	(a) standing crop
49	What type of pyramid shows the best efficiency of an ecosystem?					
	(a) Pyramid of number	(b) Pyramid of biomass	(c) Pyramid of volume	(d) Pyramid of energy	b	(b) Pyramid of biomass
50	Intermediate communities between pioneer and climax communities are called?					
	(a) Seral community	(b) Biotic community	(c) Temporary community	(d) Ecosphere	a	(a) Seral community
51	Approximately how much of the solar energy falls on the leaves of a plant are converted to chemical energy by photosynthesis?					
	(a) Less than 1%	(b) 2 – 10%	(c) 30%	(d) 50%	b	(b) 2 – 10%
52	What is the name of the species that invade a bare area?					
	(a) keystone species	(b) extinct species	(c) pioneer species	(d) rare species	c	(c) pioneer species
53	What is the name of the species that invade a bare area?					
	(a) keystone species	(b) extinct species	(c) pioneer species	(d) rare species	c	(c) pioneer species

54	Survivorship is the converse of					
	(a) mortality	(b) Natality	(c) Survival rate	(d) Age specificity	a	(a) mortality
55	Rate of change of population at time t is represented by					
	(a) rN	(b) 1-N/K	(c) $\ln R_0/T$	(d) K	a	(a) rN
56	Which of the following in an ecosystem exhibits one-way flow rather than cyclic flow?					
	(a) Potassium	(b) Carbon	(c) Free energy	(d) Nitrogen	c	(c) Free energy
57	The construction of ecological pyramids does not involve the use of?					
	(a) Number of individuals	(b) Rate of energy flow	(c) Fresh weight	(d) Dry weight	c	(c) Fresh weight
58	What are the species called whose number of individuals is greatly reduced recently and is decreasing continuously?					
	a) Endangered	b) Rare	c) Vulnerable	d) Indeterminate	c)	Vulnerable
59	Exploration of molecular, genetic, and species-level diversity for products of economic importance is called?					
	a) Biopiracy	b) Biofuel	c) Bioprospecting	d) Biodiversity	c)	Bioprospecting
60	In which year the convention on Biological diversity was signed?					
	a) 1990	b) 1991	c) 1992	d) 1993	c)	1992

61	The sister chromatids are held together by a protein complex called _____.						
	a) Securin	b) Cohesin	c) Adhesin	d) Histones	b	Cohesin	
62	Sporophore is found in _____.						
	a) Equisetum	b) Azolla	c) Marselia	d) Adiantum	C	Marselia	
63	During meiotic prophase I, tight clustering of telomeres happens during which of the following stages?						
	a) Leptotene	b) Zygotene	c) Pachytene	d) Diplotene	b	Zygotene	
64	In which stage of meiosis I, chromosomes compaction is relatively more?						

	a) Zygotene	b) Pachytene	c) Diplotene	d) Diakinesis	d	Diakinesis
65	The thickness of nuclear lamina is _____.					
	a) 1-2 nanometer	b) 10-20 nanometer	c) 1-10 micrometer	d) 1-2 micrometer	b	10-20 nanometer
66	Which of the following human chromosomes do not contain of rRNA genes?					
	a) 13	b) 14	c) 15	d) 16	d	16
67	In plant nucleolus, mature ribosomal precursor particles are found in _____.					
	a) Fibrillar centre	b) Granular component	c) Dense fibrillar component	d) Nucleolar Vacuoles	c	Dense fibrillar component
68	Select the correct sequence in which sugars residues are added during N-Linked Glycosylation of a polypeptide.					
	a) N-acetylglucosamine, Glucose, Mannose	b) N-acetylglucosamine, Mannose, Glucose	c) Mannose, Glucose, N-acetylglucosamine	d) Mannose, N-acetylglucosamine, Glucose	b	N-acetylglucosamine, Mannose, Glucose
69	The first sugar in O-linked glycosylation is added to a polypeptide by glycosyltransferase in the Endoplasmic Reticulum. This addition happens to the hydroxyl group on the side chain of the following amino acids except _____.					
	a) lysine	b) hydroxylysine	c) threonine	d) serine	a	Lysine
70	Which amino acid of histone proteins plays a major role in binding to the DNA?					
	a) Arginine	b) Histidine	c) Lysine	d) Asparagine	a	Arginine
71	Which of the following equations between Linking number (L), Twist (T) and Writhe (W) is not possible for a given supercoiled DNA?					
	a) L=100, T=95.5 and W=4.5	b) L=110, T=100 and W=10	c) L=95.5, T= 100 and W = (-)4.5	d) L=95, T=100.1 and W =(-) 5.1	c	L=95.5, T= 100 and W = (-)4.5
72	Which histone protein contains the maximum number of target amino acids that can be subjected to covalent chemical modifications leading to a change in chromatin structure?					
	a) H3	b) H4	c) H2A	d) H2B	a	H3

73	Which one of the following would have the highest Cot value?					
	a) Unique sequence	b) Slightly repetitive sequence	c) Moderately repetitive sequence	d) Highly repetitive sequence	a	Unique sequence
74	A tool helpful in Homology and similarity search is _____.					
	a) BLAST	b) EMBOSS	c) ROBETTA	d) AUTODOCK	a	BLAST
75	A stepwise method for solving computational problem is known as _____.					
	a) Algorithm	b) Flowchart	c) Procedure	d) Sequential design	a	Algorithm

76	Penicillin production requires _____.					
	a) Anaerobic fermentation only	b) Aerobic fermentation followed by anaerobic fermentation	c) Aerobic fermentation only	d) Anaerobic fermentation, followed by aerobic fermentation	C	Aerobic fermentation only
77	Most acetic acid is produced by _____.					
	a) Methanol carbonylation	b) Methane carbonylation	c) Methanol carboxylation	d) Ethanol carbonylation	A	Methanol carbonylation
78	Conversion of sugar to alcohol in yeast fermentation is catalysed by which enzyme?					
	a) Ptyalin	b) Zymase	c) Diastase	d) Renin	B	Zymase
79	Smoked meats are associated with an increased risk for certain cancers due to the presence of _____.					
	a) Deposited PhIP	b) Deposited Aflatoxin	c) Tetracholorodibenz o-p-dioxin	d) Deposited formaldehyde	D	deposited formaldehyde
80	Liquid nitrogen used in cryopreservation is an inert cryogenic fluid with a temperature of _____.					
	a) - 196 °C	b) - 320 °C	c) - 180 °C	d) - 150 °C	A	- 196 °C

81	The most primitive among the fungal groups are the _____.					
----	---	--	--	--	--	--

	a) Oomycetes	b) Myxomycetes	c) Zygomycetes	d) Chytridiomycetes	b	Myxomycetes
82	Nucleosome model is a characteristic feature of _____.					
	a) Prokaryotes	b) Eukaryotes	c) Some Prokaryotes	d) Some Eukaryotes	b	Eukaryotes
83	In bacterial flagella, the motility is generated from _____.					
	a) The Filament	b) The Hook	c) The Basal body	d) Motor protein	c	The Basal body
84	Club root disease in Crucifers is caused by a member of _____.					
	a) Oomycetes	b) Myxomycetes	c) Ascomycetes	d) Zygomycetes	b	Myxomycetes
85	The first organism to have its entire genome sequenced is _____.					
	a) <i>Tetrahymena thermophila</i>	b) <i>Sachharomyces cerevisiae</i>	c) <i>Merchantia polymorpha</i>	d) <i>Escherichia coli</i>	b	<i>Sachharomyces cerevisiae</i>

86	Fragile X syndrome is associated with _____.					
	a) a triplet (CGG) repeat expansion	b) a triplet (AGG) repeat expansion	c) a triplet (CCG) repeat expansion	d) a triplet (CAG) repeat expansion	A	a triplet (CGG) repeat expansion
87	Spontaneous changes in base structure can cause mutations if they occur immediately prior to DNA replication _____.					
	a) Tautomeric shifts	b) Aberrant segregation	c) Depurination	d) Toxic metabolic products	A	Tautomeric shifts
88	Nitrogen mustard is _____.					
	a) a base analog	b) an alkylating agent	c) a deaminating agent	d) an intercalating agent	B	an Alkylating agent
89	Testing methods that can determine if an agent is a mutagen _____.					
	a) ELISA test	b) EIA test	c) Ames test	d) ELISPOT test	C	Ames test
90	The phrase edible vaccine was first used by _____.					
	a) Charles Arntzen	b) Edward Jenner	c) Robert Koch	d) Louis Pasteur	A	Charles Arntzen
91	Who amongst the following is regarded as the "Father of Bryology"?					

	a) Prof. S.R. Kashyap	b) Prof. K.C. Mehta	c) Johann Hedwig	d) Edward Klekowski	C	Johann Hedwig
92	The simplest sporophyte is found in _____.					
	a) Funaria	b) Riccia	c) Sphaeroatrpus	d) Marchantia	B	Riccia
93	Stele of rachis in <i>Dryopteris</i> is _____.					
	a) Protostele	b) Dictyostele	c) Siphonostele	d) Plectostele	C	Siphonostele
94	To which one of the genus, Williamsonia belongs?					
	a)Cycadales	b) Coniferales	c) Bennittiales	d) None of them	C	Bennittiales
95	Most advanced gymnosperm belongs to _____.					
	a) Cycadales	b)Coniferales	c)Gnetales	d) Cycadofilicales	C	Gnetales
96	Tallest known gymnosperm is _____.					
	a) Pinus	b) Ginkgo	c) Sequoia	d) Ephedra	C	Sequoia
97	In Spectrometers, each ions hits a _____.					
	a) Ionizer	b) Fraction collector	c) Detector	d) None of them	C	Detector
98	Insoluble fine particles can be removed better in _____.					
	a) Chromatography	b) Filtration	c) Decantation	d) Centrifugation	D	Centrifugation
99	The molecules of NADH &FADH2 & formed during a cycle of β –Oxidation of fatty acid is _____.					
	a) 1FADH2 & 1NADH	b) 2FADH2 & 2NADH	c) 1FADH2 & 2NADH	d) 1FADH2 & 3NADH	A	1FADH2 & 1NADH
100	Which of the following is an unsaturated essential fatty acid?					
	a) Palmitic acid	b) Oleic acid	c)Linoleic acid	d) Stearic acid	C	Linoleic acid