

Test Booklet No. _____

This booklet consists of 150 questions and 23 printed pages.

RGUPET/2024/___/___

RGUPET 2024
Common Entrance Test, 2024
DOCTOR OF PHILOSOPHY IN BOTANY

Full Marks: 150
Hours

Time: 3

Roll No.

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Day and Date of Examination: _____

Signature of Invigilator(s) _____

Signature of Candidate _____

General Instructions:

PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE MAKING ANY ENTRY.

1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Candidate must write his/her Roll Number on the space provided.
3. This Test Booklet contains 150 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark.
4. Please check the Test Booklet to verify that the total pages and total number of questions contained in the test booklet are the same as those printed on the top of the first page. Also check whether the questions are in sequential order or not.
5. Candidates are not permitted to enter into the examination hall after the commencement of the entrance test or leave the examination hall within two hour.
6. Making any identification mark in the OMR Answer Sheet or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
7. Candidates shall maintain silence inside and outside the examination hall. If candidates are found violating the instructions mentioned herein or announced in the examination hall, they will be summarily disqualified from the entrance test.
8. In case of any dispute, the decision of the Entrance Test Committee shall be final and binding.
9. The OMR Answer Sheet consists of two copies, the Original copy and the Student's copy.

1	Which of the following changes in auxiliary cannot be seen while changing direct to indirect speech?				b
	a) 'Will' of future tense is changed to 'would'	b) 'Can' of the present tense is changed to 'could'	c) 'Shall' of future tense is changed to 'should'	d) 'Will' of future tense is changed to 'should'	'Can' of the present tense is changed to 'could'
2	Match the synonym pairs:				c
	A. Prosperous		i Covert		
	B. Surreptitious		ii Affluent		
	C. Sanguine		iii Disrespectful		
	D. Insolent		iv Optimistic		
	a)A-i; B-ii; C-iii; D-iv.	b) A-iv; B-iii; C-ii; D-i.	c) A-ii; B-i; C-iv; D-iii.	d)A-i; B-iii; C-ii; D-iv.	A-ii; B-i; C-iv; D-iii
3	He is so sick that he cannot speak. (Make it simple):				b
	<p>A. He is sick, so he cannot speak.</p> <p>B. As he is sick, so he cannot speak.</p> <p>C. He is sick, and he cannot speak.</p> <p>D. He is too sick to speak.</p>				
	a) C	b) D	c) B	d) A	D. He is too sick to speak
4	During peak hours, it _____ take more than two hours.				c
	a) will	b) shall	c) can	d) should	can
5	Identify the article in this sentence: "An apple a day keeps the doctor away."				c
	a) the	b) a	c) an	d) apple	an
6	A: Assertion: Pure water is neither acidic nor basic.				b
	B: Justification: The pH of a solution is inversely proportional to the concentration of hydrogen ions in it.				
	a) Both A and B are true, and B is the correct explanation of A.	b) Both A and B are true, but B is not the correct explanation of A.	c) A is true but B is false.	d) A is false but B is true.	Both A and B are true, but B is not the correct explanation of A.
7	Who is the father of cellular phone?				c

	a) Linus Torvalds	b) Fred Morrison	c) Martin Cooper	d) Percy Lebaron Spencer	Martin Cooper
8	There is 10 % loss if an article is sold at Rs. 270. Then the cost price of the article is:				d
	a) Rs. 250	b) Rs. 320	c) Rs. 270	d) Rs. 300	Rs. 300
9	In a group of friends, Alice is taller than Bob, but shorter than Claire. David is taller than Bob, but shorter than Alice. Who is the tallest in the group?				c
	a) Alice	b) Bob	c) Claire	d) David	Claire
10	Which of the following statement regarding the properties of a parallelogram is true? A. Opposite angles are supplementary. B. Diagonals are not necessarily equal in length. C. All sides are necessarily equal in length. D. The sum of interior angles is 360 degrees.				a
	a) A	b) B	c) C	d) D	Opposite angles are supplementary
11	A clock is set right at 5 am the clock loses 16 min in 24 hours. What will be the right time when the clock indicates on 3 pm the 8th day?				c
	a) 7 pm	b) 6 pm	c) 5 pm	d) 4 pm	5 pm
12	Which letter would NOT look the same when viewed in a mirror?				a
	a) S	b) O	c) X	d) H	S
13	'Unnat Bharat Abhiyan' is associated with which Union Ministry?				d
	a) Ministry of Textiles	b) Ministry of Rural Development	c) Ministry of Culture	d) Ministry of Education	Ministry of Education
14	Match the environmental issue with the corresponding impact:				b
	A. Plastic pollution	i. Skin cancer			
	B. Deforestation	ii. Destruction of marine ecosystems			
	C. Depletion of ozone layer	iii. Rising CO ₂ levels			
	D. Acid rain	iv. Loss of soil nutrients			
	a) A-i, B-iii, C-ii, D-iv	b) A-ii, B-iii, C-i, D-iv	c) A-iii, B-i, C-ii, D-iv	d) A-iii, B-iv, C-i, D-ii	A-ii, B-iii, C-i, D-iv
15	A: Assertion: Increasing the temperature of a gas increases its pressure. B: Justification: According to the ideal gas law, pressure is directly proportional to temperature when the volume and the amount of gas remain constant.				a
	a) Both A and B are true, and B is the correct explanation of A.	b) Both A and B are true, but B is not the correct explanation of A.	c) A is true but B is false.	d) A is false but B is true.	Both A and B are true, and B is the correct

					explanation of A
16	Which one of the following is the context in which the term “qubit” is mentioned?				a
	a) Quantum Computing	b) Visible Light Communication Technologies	c) Cloud Services	d) Wireless Communication Technologies	Quantum Computing
17	What kind of cell is the mobile phone battery when it is being charged?				c
	a) Solar cell	b) Fuel cell	c) Electrolytic cell	d) Galvanic cell	Electrolytic cell
18	Which of the following is blended with petrol in India?				b
	a) methanol	b) ethanol	c) kerosene	d) acetone	ethanol
19	Malinithan is located in-				c
	a) Assam	b) Tripura	c) Arunachal Pradesh	d) Manipur	Arunachal Pradesh
20	The Fame India scheme of Govt. of India encourages the adoption of-				c
	a) solar power	b) biodiesel	c) electric and hybrid vehicles	d) organic foods	electric and hybrid vehicles
21	Consider the following headings and decide their correct sequence when preparing a research proposal. (i) Topic of research (ii) Formulating the research questions (iii) Justification of the research problem (iv) Identifying the research gap (v) Defining the objectives				a
	(a) (i), (iv), (ii), (v), (iii)	(b) (i), (iv), (ii), (iii), (v)	(c) (i), (ii), (iv), (v), (iii)	(d) (i), (ii), (iii), (iv), (v)	(i), (iv), (ii), (v), (iii)
22	What type of experimental work involves manipulating one or more independent variables to observe their impact on a dependent variable, while also controlling for extraneous variables?				c
	(a) Observational study	(b) Survey research	(c) Experimental study	(d) Case study	Experimental study
23	Which section of a research paper provides an understanding of its new findings?				d
	(a) Abstract	(b) Introduction	(c) Results	(d) Discussion	Discussion
24	In which section of a research paper are in-text citations typically most numerous?				a
	(a) Introduction	(b) Results	(c) Materials and Methods	(d) Conclusion	Introduction
25	Consider the following statements. The purpose of Referencing in a research publication is: (i) To give credit to the writers from whom you have borrowed ideas. (ii) To provide evidence to support the assertions and claims in your own research work. (iii) To allow the readers to trace the sources of information you have used in your research publication. (iv) To avoid plagiarism. Now, choose the combination with all correct statements.				d

	(a) (i) only	(b) (i) and (ii) only	(c) (i), (ii) and (iii) only	(d) All the above statements are correct.	All the above statements are correct.
26	Which type of experimental work is conducted in a natural setting rather than in a laboratory?				b
	(a) Case study	(b) Field experiment	(c) Laboratory experiment	(d) Survey	Field experiment
27	Which of the following is an example of primary data collection method in research?				b
	(a) Reviewing existing literature in a library	(b) Conducting interviews with participants	(c) Analysing data from government databases	(d) Gathering data from thesis kept in a library	Conducting interviews with participants
28	What is the median value of the following data set: 1, 4, 6, 2, 3, 8, 9, 5?				d
	(a) 2	(b) 3	(c) 2.5	(d) 4.5	4.5
29	What is the probability of obtaining a sum of 5 when two fair six-sided dice are rolled simultaneously?				a
	(a) 1/9	(b) 1/36	(c) 5/12	(d) 5/36	1/9
30	A researcher finds that every change in one trait results in a consistent change in the other. This invariant relation between two traits is an example of				d
	(a) Positive Correlation.	(b) Negative Correlation	(c) No Correlation	(d) Perfect Correlation	Perfect Correlation
31	In scientific research papers, 'et al.' is frequently encountered in some in-text citations. What does this abbreviation denote?				a
	(a) One work by three or more authors	(b) One work by multiple authors affiliated to different institutions	(c) Several works published in a particular year by three or more authors	(d) Several works published in a particular year by one author	One work by three or more authors
32	What criterion is typically regarded as more significant by researchers while selecting research journal to submit an article for publication?				a
	(a) Impact factor	(b) h-index	(c) i10 score	(d) g-index	Impact factor
33	Which of the following is an example of quantitative data collection method in research?				c
	(a) Interviews	(b) Focus groups	(c) Surveys	(d) Case studies	Surveys
34	Which of the following options best defines the mean of a data set?				c
	(a) The middle value when all data points are arranged in	(b) The most frequently occurring value in the data set.	(c) The sum of all values in the data set divided by the	(d) The difference between the highest and lowest values in the data set.	The sum of all values in the data set divided

	ascending order.		total number of values.		by the total number of values.
35	Which of the following definitions best describes Statistics?				d
	(a) Statistics pertains to the analysis, and interpretation of data.	(b) Statistics pertains to the collection, analysis, and interpretation of data.	(c) Statistics pertains to the collection, analysis, and presentation of data.	(d) Statistics pertains to the collection, analysis, interpretation, and presentation of data.	Statistics pertains to the collection, analysis, interpretation, and presentation of data.
36	Which of the following is the best example of a nominal scale? (i) Local names of banana varieties (ii) Length-weight ratio of banana (iii) Use value index of banana varieties (iv) Frequency of occurrence of banana varieties				a
	(a) (i)	(b) (ii)	(c) (iii)	(d) (iv)	(i)
37	What is the purpose of writing an abstract in a research paper?				a
	(a) To provide a concise summary of the study.	(b) To explain the research problem and discuss the key findings.	(c) To offer a detailed analysis of the research problem and its implications.	(d) To enable the editor to determine whether similar research work has already been published by others.	To provide a concise summary of the study.
38	A peer-reviewed journal:				b
	(a) Publishes review papers only on a particular topic written by experts.	(b) Contains published research that has been reviewed by experts.	(c) Publishes research papers that have been reviewed by all contributing authors.	(d) Publishes papers contributed by reputed researchers only.	Contains published research that has been reviewed by experts.
39	Which of the following author citation is correct?				Answer option (a,b,c or d)
	a) <i>Ageratum conyzoides</i> L.	b) <i>Ageratum conyzoides</i> LINN.	c) <i>Ageratum conyzoides</i> L.f	d) <i>Ageratum conyzoides</i> Carl Linnaeus	a
40	Which of the following is correct?				Answer option (a,b,c or d)

	a) Plant specimen for herbarium preservation should be dried in Oven	b) Plant specimen for herbarium preservation should be dried in news paper	c) Plant specimen for herbarium preservation should be dried in sunlight	d) Plant specimen for herbarium preservation should be dried in open shade	b
41	Match the following pairs:				Answer option (a,b,c or d)
	A. Pollen grain	i. Microtome			
	B. Tissue sectioning	ii. Microscope			
	C. Staining agent	iii. First collection			
	D. Holotype	iv. Safranin			
	a) A=ii; B=i; C=iv; D=iii	b) A=iii; B=ii; C=1; D=iv	c) A=i; B=ii; C=1; D=iv	d) A=iii; B=ii; C=iv; D=i	a
42	How research topics are finalized?				Answer option (a,b,c or d)
	a) After setting materials and methods	b) After setting materials and methods and expected result	c) After setting expected outcome	d) After setting hypothesis	
43	What could be the best tentative research topic for the following research themes if combined?				Answer option (a,b,c or d)
	A. Quantitative ethnobotany of the tribe B. Taxonomic study of district flora of Siang				
	a) Taxonomic study of district flora of Siang	b) Taxonomy and quantitative ethnobotanical study of the flora of Siang district	c) Quantitative ethnobotany and taxonomy of Siang district	d) Ethnobotanical and taxonomic study of plants of Siang district	b
44	Which of the following statement is true?				Answer option (a,b,c or d)
	A. Research topic is selected based on expected outcome B. Research topic is selected based on research problems, materials and methods, result and expected outcome C. Research topic is selected based on result and discussion D. Based on result, discussion and conclusion				
	a) Only A	b) Only B & C	c) Only B	d) Only D	c
45	Match the following pairs:				Answer option (a,b,c or d)
	A. Research activities	i. Materials and methods			
	B. Research topic	ii. Under specified objective			
	C. Research objectives	iii. Based on research problem			
	D. Research method	iv. Based defined research outcome			

	a) A = ii, B=iii, C=iv, D=i	b) A=ii, B=iii, C=iv, D=i	c) A=iv, B=iv, C=I, D=ii	d) A=i, B=iv, C=iii, D=ii	a
46	Which of the following statement is correct? A. Journal need to have constituted editorial board members headed by Editor-in-Chief to manage peer-review process and publish the articles B. Journal need not have to have Editorial Board Members C. Journal publishes articles without peer-review process D. Journal do not have publisher.				Answer option (a,b,c or d)
	a) Only A	b) Only B	c) Only C	d) Only D	a
47	Which of the following assertion and justification is correct? A: Assertion: Quality journals need have UGC CARE Listed B: Justification: Those journals not in UGC CARE List are considered predatory journals				Answer option (a,b,c or d)
	a) Both A and B are false	b) Both A and B are correct and related to each other.	c) A is true but B is false	d) B is true but not related with A	b
48	Impact factor of research measures the quality of the journal and articles published in it. Which agency measures journal impact factor?				Answer option (a,b,c or d)
	a) Thomson Reuter	b) Scopus	c) Web of Science	d) NAAS	a
49	Which of the following statement is correct? A. SCOPUS measures impact factor B. SCOPUS measures citation scores of articles C. SCOPUS is a journal database maintained by Elsevier D. SCOPUS do not measure citation scores				Answer option (a,b,c or d)
	a) Only A	b) Both B & C is correct	c) Only C	d) Only D	b
50	Which of the following correct with regards to article submission in research journal?				Answer option (a,b,c or d)
	a) Research scholar should communicate paper in the journal without prior consultation with supervisor	b) Research scholar should not submit article in Journal without prior consultation with supervisor	c) Research scholar should communicate paper in research article as first author after prior editing, concept checking and consultation with supervisor	d) Research scholar should submit alone without grammar check	c

51	Which one of the following statements are correct? A. Tea is the main crop of Assam. B. Karnataka is the highest producer of Coffee. C. Kerala is the highest producer of Cocoa. D. Assam is the highest producer of Areca nut .				Answer option (a,b,c or d)
	a) A	b) A and B	c) A, B and C	d) A, B, C and D	c
52	Which one of the following combinations are correct? A. White Tea – formed by steaming and drying of fresh Camellia. B. Green tea – is formed by withering, steaming rolling and drying of fresh Camellia. C. C. Oolong tea is formed by withering, shaking, partial fermentation and drying of fresh Camellia. D. D. Black tea is formed by withering, rolling, full fermentation and drying.				Answer option (a,b,c or d)
	a) A	b) A and B	c) A, B and C	d) A, B, C and D	c
53	Which one of the following is not a cole crop.				
	a) Broccoli	b) Cauliflower	c) Okra	d) Cabbage	c
54	Which of the following is true about Fodder Crop?				Answer option (a,b,c or d)
	a) Crops graze by animal themselves without human intervention	b) Crops feeds to animal after formulation by human	c) Crop graze by animal	d) None of the above	b
55	Which of the following is oil yielding crop?				Answer option (a,b,c or d)
	a) <i>Cymbopogon citratus</i>	b) <i>Senna alata</i>	c) <i>Engelhardia spicata</i>	d) <i>Rubus ellipticus</i>	a
56	Which one of the following is seen insphenopsida?				
	a) Strobillus axis, Sporangiphore , homosporos, peltate disc, annulus	b) Strobillus axis, Sporangiphore, heterosporos, ligules, annulus	c)Sporophyllous cone, heterosporos, ligules	d) None	a
57	Which one of the following isthe edible fern?				Answer option (a,b,c or d)
	a) Diplazium	b) Marsilea	c) Diplazium and Marsilea	d) Diplazium, Marsilea and Equisetum	c
58	Which group of pteridophyte is considered more primitive?				

	a) <i>Psilopsida</i> ,	b) <i>Lycopsida</i> ,	c) <i>Sphenopsida</i>	d) <i>Pteropsida</i>	a
59	Which of the following is seen in the members of family Equisitaceae?				
	a) Heterospory & Leptosporangiate fern	b) Heterospory & Eusporangiate ferns	c) Homospory & Eusporangiate ferns	d) Homospory & Leptosporangiate ferns	c
60	Sporangium which is developed from a single superficial cell is called _____?				Answer option (a,b,c or d)
	a) Leptosporangiate fern	b) Eusporangiate ferns	c) either Eusporangiate ferns or Leptosporangiate fern	d) Any one of the following	a
61	Which one of the following vascular bundle is occurred in selaginella?				
	a) Amphivasel, monarch	b) Amphicribal and monarch	c) Amphivasel, monarch, diarch and polyarch	d) none	b
62	Which of the following conditions indicate the impact of global warming? i. Melting of glaciers ii. Submerging of coastal areas iii. Changes in weather conditions iv. Rise in Global temperature				
	a) i, and ii	b) i, ii & iii	c) i, ii & iv	d) i, ii, iii & iv	d
63	Which is correct sequence of the Green House Gases concentrated in the earth's atmosphere?				Answer option (a,b,c or d)
	a) H ₂ O – 60%, CO ₂ – 10, CH ₄ – 20%, O ₃ – 5%, CFCs – 5%	b) H ₂ O – 10%, CO ₂ – 20, CH ₄ – 60%, O ₃ – 5%, CFCs – 5%	c) H ₂ O – 60%, CO ₂ – 20, CH ₄ – 10%, O ₃ – 5%, CFCs – 5%	d) H ₂ O – 20%, CO ₂ – 60, CH ₄ – 10%, O ₃ – 5%, CFCs – 5%	c
64	Which one of the following is/are the criteria of being a wetland? i. hydrophytic vegetation ii. hydric soils iii. Wetland hydrology				
	a) i only	b) i & ii only	c) ii & iii only	d) i, ii & iii	d
65	Which one of the following influence most of the Ozone layer depletion?				Answer option (a,b,c or d)
	a) CFCCl ₂	b) CCl ₄	c) CH ₃ Br	d) All	d
66	Which one of the following laws is true regarding the flow of nutrient and energy in an ecosystem?				

	a) 1 st law of thermodynamics	b) 2 nd law of thermodynamics	c) Both a) and b)	d) Zeroth law	c
67	Which one of the following is the major reservoir for Carbon?				Answer option (a,b,c or d)
	a) Ocean	b) geological reserves of fossil fuels	c) Atmosphere	d) Terrestrial surface (plants and soils)	a
68	Consider the following algal genera. A. <i>Cladophora</i> B. <i>Coleochaete</i> C. <i>Polysiphonia</i> D. <i>Scytonema</i> Now, identify those algal genera that have false branching.				a,b,c,d
	(a) B and D only	(b) A and D only	(c) C only	(d) D only	d
69	Consider the following statements about Glycocalyx in Prokaryotes. A. Glycocalyx is a gelatinous polymer composed of polysaccharides, polypeptides, or both. B. Bacterial capsule and Slime layer, both are types of glycocalyx. C. Bacteria form biofilms with the help of glycocalyx. D. Without glycocalyx, <i>Streptococcus pneumoniae</i> is avirulent. Now, identify from the above the false statements.				a,b,c,d
	(a) B only	(b) A and B	(c) B, C and D	(d) None of these	d
70	Consider the following statements about prokaryotes. (i) A carbohydrate is present in their plasma membrane. (ii) Sterol is often absent in their plasma membrane. (iii) Their plasma membrane is rigid in comparison to eukaryotes. (iv) Cell wall of Archaea lacks peptidoglycan. Which of the above statements about prokaryotes are correct?				a,b,c,d
	(a) (i) only	(b) (i) and (ii) only	(c) (i),(ii) and (iii)	(d) All the statements are correct.	d
71	Which of the following life forms has the largest genome size?				a,b,c,d
	(a) Ferns	(b) Ambhībians	(c) Mammals	(d) Fungi	a
72	Mitosis will be delayed in G2 cell if it is fused with: A. G1 cell B. S-phase cell C. M-phase cell Choose the option with all correct statements.				a,b,c,d
	(a) A only	(b) B only	(c) A and B	(d) B and C	d
73	The key enzyme responsible for regulating cell cycle is:				a,b,c,d
	(a) Kinase	(b) Cellulase	(c) DNA Polymerase	(d) Histone acetyltransferase	a
74	SWI-SNF proteins play a role in :				a,b,c,d

	(a) Vesicular transport	(b) Cell Cycle regulation	(c) Gene silencing	(d) Chromatin remodeling	d
75	Consider the following statements about CpG island. A. It is commonly located near the transcription start sites of certain genes. B. Cytosine present here is a target for methylation at 5' carbon. C. Methylation of this cytosine leads to gene silencing. D. It carries heritable epigenetic modifications to daughter cells in animals. Choose the combination with all correct statements.				a,b,c,d
	(a) A and B only	(b) A and C only	(c) A, B and C	(d) All the above statements are correct.	d
76	Nucleoporins in the central channel of nuclear pore complexes chiefly contain repeat sequences that are rich in :				a,b,c,d
	(a) Lysine-arginine	(b) Lysine-glycine	(c) Phenylalanine-glycine	(d) Phenylalanine - tryptophan	c
77	Nuclear localization signal is rich in:				a,b,c,d
	(a) Positively charged amino acids	(b) Negatively charged amino acids	(c) Polar amino acids	(d) Neutral amino acids	a
78	The type of Coated vesicles ferrying materials between Endoplasmic reticulum and Golgi bodies are:				a,b,c,d
	(a) COP I	(b) COP II	(c) Both COP I and COP II	(d) Clathrin coated	c
79	Mannose 6-phosphate receptors that sort glycoproteins for lysosomes are located in:				a,b,c,d
	(a) Plasma membrane	(b) Trans-golgi network	(c) COP II coated vesicle	(d) Rough endoplasmic reticulum	b
80	KDEL sequence (Lys-Asp-Glu-Leu) is linked with which process?				a,b,c,d
	(a) Movement of proteins from Golgi network to Endoplasmic reticulum	(b) Movement of proteins from Endosome to Lysosome	(c) Movement of proteins from Golgi network to Lysosome	(d) Movement of proteins from Endoplasmic reticulum to Golgi network	a
81	Consider the following statements about Pinocytosis.				a,b,c,d
	(a) It refers to the ingestion of fluid by cells via small vesicles.	(b) It refers to selective and efficient uptake of hormones by cells.	(c) It refers to the ability of animal cells to take up the cholesterol.	(d) It refers to selective inclusion of non-functional proteins in vesicles for digestion by lysosome.	a
82	Which one of the following are used as a primer by retroviruses for initiation of synthesis of DNA strand?				a,b,c,d
	(a) RNA	(b) tRNA	(c) mRNA	(d) DNA	b

83	Consider the following polymerases. A. <i>Taq</i> polymerase B. Primase C. Reverse transcriptase D. Telomerase Identify those polymerases that use RNA as template for DNA synthesis.				a,b,c,d
	(a) C only	(b) A and C only	(c) C and D only	(d) B, C and D only	c
84	Which of the following DNA repair mechanisms does not require information from the complementary strand to correct the damage?				a,b,c,d
	(a) Base excision repair	(b) Nucleotide excision repair	(c) Mismatch repair	(d) Recombination repair	d
85	Which of the following types of Repetitive DNA sequence has smallest repeat unit?				a,b,c,d
	(a) α -satellite	(b) Simple sequence repeat	(c) Short interspersed nuclear elements	(d) Long interspersed nuclear elements	b
86	Which of the following nitrogenous base has the largest molecular mass?				a,b,c,d
	(a) Uracil	(b) Adenine	(c) Thymine	(d) Cytosine	b
87	Which of the following features will you not find in the molecular structure of a composite transposon integrated into the genome?				a,b,c,d
	(a) Direct repeat	(b) Inverted repeat	(c) Resolvase gene	(d) Transposase gene	c
88	What is the Resolving power of an electron microscope?				Answer option (a,b,c or d)
	a) 1\AA	b) 10\AA	c) 100\AA	d) 1000\AA	b
89	Which one of the following is the alternative name of Size exclusion chromatography?				
	a) Adsorption chromatography	b) Permeation chromatography	c) Partition chromatography	d) All of them	b
90	Which of the following is incorrect about the sedimentation principle?				Answer option (a,b,c or d)
	a) The denser a biological structure is, the faster it sediments in a centrifugal field.	b) The greater the centrifugal force is, the faster the particle sediments.	c) The more massive a biological particle is, the slower it moves in a centrifugal field.	d) The denser the buffer system is, the slower the particle will move in a centrifugal field.	d
91	What is the possible thinnest section of microtome when samples are dehydrated and embedding in paraffin or epoxy resin?				

	a) 0.1-1 μm	b) 0.5-60 μm	c) 70-100 μm	d) 100-1000 μm	b
92	What is the function of Eukaryotic DNA Pol α ?				Answer option (a,b,c or d)
	a) Initiation and synthesis of short segment of the lagging strand	b) 3'-5' exonuclease activity	c) Elongation of the leading strand	d) High processivity	a
93	Which one of the following triggers the unwinding of DNA during initiation of replication in prokaryotes?				Answer option (a,b,c or d)
	a) DNA polymerase	b) SSB protein	c) DnaA protein	d) Topoisomerase	c
94	What is the name of the DNA repair system in <i>E. coli</i> in which dual incisions are made in the damaged part of the double helix, and a 12-13 base segment is removed and replaced with new DNA?				Answer option (a,b,c or d)
	a) Mismatch repair	b) Base excision repair	c) Nucleotide excision repair	d) AP site repair	c
95	Telomeres in the eukaryotes protect the random cleavage from nucleases. These telomeres are synthesized by the enzyme telomerase. Which of the following is not a property of enzyme telomerase?				Answer option (a,b,c or d)
	a) Telomerase is a reverse transcriptase enzyme	b) Telomerase consist of an RNA sequence that serves as a template	c) After completion of each cycle, telomerase translocates to 3'end of DNA to synthesize repetitive sequence.	d) Telomerase consist of an DNA sequence that serves as a template	d
96	Which of the following is a saturated essential fatty acid?				Answer option (a,b,c or d)
	a) Arachidonic acid	b) Oleic acid	c) Linoleic acid	d) Linolenic acid	b
97	The amide involve in Nitrogen metabolism is				Answer option (a,b,c or d)
	a) Serine	b) Cysteine	c) Methionine	d) asparagine	c
98	By which linkage formed Sucrose				

	a) α -D-glucopyranosyl-(1 \rightarrow 2)- β -D-fructofuranoside	b) α -D-glucopyranosyl-(1 \rightarrow 2)- α -D-fructofuranoside	c) α -D-glucopyranosyl-(1 \rightarrow 4)- β -D-fructofuranoside	d) α -D-glucopyranosyl-(1 \rightarrow 4)- α -D-glucopyranosyl	a
99	Which of the following is true about sucrose molecule?				
	a) sucrose has only the α form.	b) sucrose has only the β form.	c) sucrose has only the γ form.	d) sucrose can have both the α and β forms according to situation.	a
100	Which of the following coenzyme does not function as a redox reaction?				Answer option (a,b,c or d)
	a) Flavin adenine dinucleotide	c) Deoxyadenosylcobalamin	c) Nicotinamide adenine dinucleotide	d) Flavin mononucleotide	c
101	Which of the following statements best describes the Second Law of Thermodynamics?				Answer option (a,b,c or d)
	a) When an isolated system undergoes a spontaneous change, the entropy of the system will increase.	b) Heat flows spontaneously from cold to hot, and entropy increases.	c) Heat flows spontaneously from hot to cold, and entropy decreases.	d) The internal energy of the universe is constant.	a
102	Which one of the following is the simplest lipid?				Answer option (a,b,c or d)
	a) Triacylglycerol	b) Steroids	c) Lecithin	d) Fatty acid	a
103	Which of the following lipid is mostly present in mitochondrial membranes?				Answer option (a,b,c or d)
	a) cardiolipin	b) phosphatidylglycerol	c) phosphatidic acid	d) All of them	d
104	Which are the common features that shows affinities of algae with bryophytes				a,b,c,d
	a) No embryo formation after gametes fusion in the life cycle	b) Water is an essential medium for fertilization and	c) No division of labour is observed in both the group.	d) Pores or stomata are absent in both the group.	b

		food reserve are mostly starch.			
10 5	Match the following thallus with the representative genera:				a,b,c,d
	A. Palmelloid	i. Heterococcus sp.			
	B. Coccoid	ii. Botrydium sp.			
	C. Filamentous	iii. Chlorogloea sp.			
	D. Siphonaceous	iv. Chlorobotrys sp.			
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-iii, C-iv, D-i	c) A-iii, B-iv, C-i, D-ii	d) A-iv, B-i, C-ii, D-iii	c
10 6	Choose the correct statement:				a,b,c,d
	<p>A. Heterocysts are asexual spores responsible for asexual reproduction in cyanophycean members</p> <p>B. Cell wall composition in Chrysophyceae is usually cellulose, calcium carbonate & chitin</p> <p>C. Billiproteins are present in three algal classes viz. Cyanophyceae, Cryptophyceae, and Rhodophyceae.</p> <p>D. Pores or stomata are present in all the algal thallus</p>				
	a) A and B only	b) B and C only	c) C and D only	d) D and A only	b
10 7	<p>Assertion (A): Members of Xanthophyceae are called “yellow green algae”, and this division of algae was at one time included in the Chlorophyta.</p> <p>Justification (B): Later they are placed in xanthophytadue to an excess of carotenoids over chlorophylls and food storage products are oil, fat, and leucosin, but never starch.</p>				a,b,c,d
	a) Both A and B are correct and B is the correct explanation for A	b) Both A and B are correct but B is not the correct explanation for A	c) A is correct but B is incorrect	d) Both A and B are incorrect	
10 8	Identify the types of proteins most commonly associated with eyespot of flagellated algae responsible for phototaxis.				a,b,c,d
	a) Actin and myosin	b) Lectins and phycobiliproteins	c) Flavoproteins and retinylidene	d) Glucagon and thyrocalcitonin	c
10 9	Which algal division has the deposition of their death cells and their siliceous walls in the bottom of the sea as Kieselguhr in large amounts?				a,b,c,d
	a)Xanthophyta	b) Rhodophyta	c)Bacillariophyta	d)Charophyta	c
11 0	Choose the correct option:				a,b,c,d
	A. The main axis is corticated.	i. Nucule of <i>Nitella</i> sp.			
	B. The main axis is not corticated.	ii. <i>Chara</i> sp.			
	C. Presence of 5-celled corona at the apical end of nucule.	iii. <i>Nitella</i> sp.			

	D. Presence of 10 cells divided into two rows of five cells each.	iv. Nucule of <i>Chara</i> sp.			
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-iii, C-iv, D-i	c) A-iii, B-iv, C-i, D-ii	d) A-iv, B-i, C-ii, D-iii	b
11 1	Choose the incorrect statement from the given options: A. <i>Ulva</i> sp. - parenchymatous brown algae B. <i>Desmarestia</i> sp. - pseudo parenchymatous brown algae C. <i>Ectocarpus</i> sp. - most primitive heterotrichous brown algae D. <i>Cutleria</i> sp.- shows diffuse growth				a,b,c,d
	a) A and B only	b) B and C only	c) C and D only	d) D and A only	d
11 2	Assertion (A): The members of phaeophyta reproduced by all three means viz. vegetative, asexual, and sexual. Justification (B): In Fucales, the members reproduce asexually only by forming zoospores, and monospores.				a,b,c,d
	a) Both A and B are correct and B is the correct explanation for A	b) Both A and B are correct but B is not the correct explanation for A	c) A is correct but B is incorrect	d) Both A and B are incorrect	c
11 3	The organelle responsible for the active functioning of photosynthesis in diverse light intensity by some unicellular motile algae and photosynthetic euglenoids-				a,b,c,d
	a) Stigma	b) Whiplash	c) Tinsel	d) Cilia	a
11 4	Fill in the blank with the appropriate word from the option given below. Palmelloid plant bodies found in damp or moist areas like paddy fields, particularly in water logging conditions-				a,b,c,d
	a) <i>Mischococcus</i> sp.	b) <i>Vaucheria</i> sp.	c) <i>Heterogloca</i> sp.	d) <i>Heterochloride</i> s sp.	c
11 5	Match the following pairs and choose the correct option given below:				a,b,c,d
	A. Algal division never produces motile flagellated cells among any of its members		i. <i>Oedogonium</i>		
	B. Filamentous algae showing sexual dimorphism		ii. <i>Chaetoceros</i>		
	C. Rejuvenescent cells are characteristic of		iii. <i>Sargassum</i>		
	D. Conceptacle and receptacle are present		iv. <i>Porphyra</i>		
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-iii, C-iv, D-i	c) A-iii, B-iv, C-i, D-ii	d) A-iv, B-i, C-ii, D-iii	d
11 6	Find the correct match from the following and choose the correct option given below: A. Storage media - Egg saline medium B. Enriched media - Chocolate agar C. Selective media - Peptone water D. Basal media – MacConkey agar				a,b,c,d

	a) A and B only	b) B and C only	c) C and D only	d) D and A only	a								
117	<p>Assertion (A): Differential media are designed in such a way that different bacteria can be recognized based on their colony color.</p> <p>Justification (B): Some media are designed to inhibit unwanted commensal bacteria and help to recover pathogens from a mixture of bacterial cultures.</p>				a,b,c,d								
	a) Both A and B are correct and B is the correct explanation for A	b) Both A and B are correct but B is not the correct explanation for A	c) A is correct but B is incorrect	d) Both A and B are incorrect	b								
118	<p>In a culture, nutrients enter the reactor in the form of “plugs,” which flow in an axial direction through the reactor without back mixing such culture type comes under</p>				a,b,c,d								
	a) Batch culture	b) Continuous culture	c) Synchronous culture	d) Axenic culture	b								
119	<p>Identify the microbe employed to separate the fibers of jute, hemp, and flax for making ropes, bags, and other items.</p>				a,b,c,d								
	a) <i>Clostridium butyricum</i>	b) <i>E. coli</i>	c) <i>Lactobacillus bulgaricus</i>	d) <i>Lactobacillus salivarius</i>	a								
120	<p>Match the correct biological indicators against various sterilization techniques:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">A. <i>Clostridium species</i></td> <td style="width: 50%;">i. Moist heat sterilization</td> </tr> <tr> <td>B. <i>Bacillus subtilis</i></td> <td>ii. Filtration sterilization</td> </tr> <tr> <td>C. <i>Geobacillus stearothermophilus</i></td> <td>iii. Dry heat sterilization indicator</td> </tr> <tr> <td>D. <i>Serratia marcescens</i></td> <td>iv. Gaseous sterilization</td> </tr> </table>				A. <i>Clostridium species</i>	i. Moist heat sterilization	B. <i>Bacillus subtilis</i>	ii. Filtration sterilization	C. <i>Geobacillus stearothermophilus</i>	iii. Dry heat sterilization indicator	D. <i>Serratia marcescens</i>	iv. Gaseous sterilization	a,b,c,d
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121	<p>Find the incorrect explanation of the following algal division:</p> <p>A. Bacillariophyceae – Shows a unique “shrinking division”</p> <p>B. Phaeophyceae – Food reserve is a carbohydrate called laminarin and mannitol.</p> <p>C. Chlorophyceae – Green algae devoid of asexual reproduction</p> <p>D. Rhodophyceae – Red algae usually form motile zoospores during sexual reproduction.</p>				a,b,c,d								
	a) A and B only	b) B and C only	c) C and D only	d) D and A only	c								
122	<p>Assertion (A): In-situ bioremediation is the onsite treatment of toxic materials produced by natural and anthropogenic activities.</p> <p>Justification (B): Biopiles, Windrow, and Land farming are different strategies to address toxic material produced by natural and anthropogenic activities.</p>				a,b,c,d								

	a) Both A and B are correct and B is the correct explanation for A	b) Both A and B are correct but B is not the correct explanation for A	c) A is correct but B is incorrect	d) Both A and B are incorrect	b
123	The process of eliminating the factors that limit the biodegradation of pollutants, usually introducing nutrients and oxygen in the saturated zone, groundwater to increase the number and activity of microorganisms capable of biodegradation is-				a,b,c,d
	a) Biosparging	b) Bioventing	c) Bioaugmentation	d) Biostimulation	d
124	The end product of biodegradation (bacteria) of Dicamba via dechlorination and demethylation of the molecule is-				a,b,c,d
	a) 3,6-Dichlorogentisate	b) 2-Chloromaleylpyruvate	c) 3-Chlorogentisate	d) 3,6-Dichlorosalicylate	b
125	Identify the incorrect pairs based on the biodegradation of DDT by bacteria:				a,b,c,d
	A. DDT to DDE		i. Aerobic environment		
	B. DDT to DDD		ii. Anaerobic environment		
	C. DDMU to DDOH		iii. Dehydrochlorinase		
	D. DDOH to DDA		iv. Decarboxylase		
	a) A	b) B	c) C	d) D	c
126	Find the incorrect information from the following:				a,b,c,d
	<p>A. Theodor Schwann gave the idea for growing cells outside an original host body as long as stringent external conditions are created.</p> <p>B. Gottlieb Haberlandt was the first person to attempt the <i>in-vivo</i> culture of plants.</p> <p>C. Skoog and Miller discovered haploid plants by Anther culture.</p> <p>D. Melchers developed a somatic hybrid called pomato.</p>				
	a) A only	b) B only	c) C only	d) D only	c
127	Assertion (A): Ethylene hormone blocks the organogenesis during <i>in vitro</i> plant regeneration but enhances the development during primordia formation.				a,b,c,d
	Justification (B): This hormone is regarded multi-functional phytohormone that regulates growth and senescence.				
	a) Both A and B are correct and B is the correct explanation for A	b) Both A and B are correct but B is not the correct explanation for A	c) A is correct but B is incorrect	d) Both A and B are incorrect	a

128	Vinegar consists of acetic acid and water made by a two-step fermentation process. The ambient temperature necessary for the production of Vinegar is-				a,b,c,d
	a) 15-32 ^o C	b) 15-34 ^o C	c) 15-36 ^o C	d) 15-38 ^o C	b
129	During protoplast culture, the desired protoplasts are kept above the irradiated protoplast along with a nutrient solution in feeder layer culture, why?				a,b,c,d
	a) To activate cell division with good metabolic activity	b) To inhibit cell division with slow metabolic activity	c) To inhibit cell division with good metabolic activity	d) To activate cell division with slow metabolic activity	c
130	Choose the correct option given below:				a,b,c,d
	A. Non-ionic osmotica		i. Polyethylene Oxide and Hydroxyl Starch		
	B. Ionic osmotica		ii. Mannitol and Sorbitol		
	C. Permeating cryoprotectant		iii. Calcium chloride and Magnesium phosphate		
	D. Non-permeating cryoprotectant		iv. Ethane diol and Glycerol		
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-iii, C-iv, D-i	c) A-iii, B-iv, C-i, D-ii	d) A-iv, B-i, C-ii, D-iii	b
131	Identify the false statement from the given options:				a,b,c,d
	A. Synthetic seeds are true seeds coated - hydrogel capsules B. Most suitable gelling agent - Alginate C. Production of dehydrated seeds - Polyox D. Production of hydrated seeds - Calcium-alginate encapsulation				
	a) A only	b) B only	c) C only	d) D only	a
132	Which of the following is a region flora?				Answer option (a,b,c or d)
	a) Genera Plantarum	b) Flora of British India	c) Flora of Arunachal	d) Flora of Madras	b
133	Which of the following is periodical taxonomic literature?				Answer option (a,b,c or d)
	a) Flora of Assam	b) Flora of America	c) Taxon Journal	d) Flora of India	c
134	Which of the following is true?				Answer option (a,b,c or d)
	A. <i>Bauhinia</i> has emarginate leaf B. <i>Bauhinia</i> has acute leaf C. <i>Bauhinia</i> has subacute leaf D. None of the above				
	a) A only	b) B only	c) C only	d) D only	a

13 5	Correlate the following assertion and justification: A: Assertion: Magnoliales are primitive gymnosperms B: Justification: Magnoliales are primitive angiosperms				Answer option (a,b,c or d)
	a) Both A and B are false	b) Both A and B are related and true	c) B is false but A is true	d) B is true but not related with A	d
13 6	Match the following pairs:				Answer option (a,b,c or d)
	A. Hook		i. J.D. Hooker		
	A. DC		ii. William Hooker		
	B. ADC		iii. Augustus Pyramus de Candolle		
	C. Hook.f.		iv. Alphonse Pyramus de Candolle		
	a) A = ii, B=i, C=iii, D=iv	b) A=ii, B=iii, C=iv, D=i	c) A=iii, B=iv, C=i, D=ii	d) A=i, B=iv, C=iii, D=ii	b
13 7	Which of the following is known as permineralized fossil types?				Answer option (a,b,c or d)
	a) Compression	b) Impression	c) Compaction	d) Petrification	d
13 8	<i>Lyginopteris oldamia</i> is also known as				Answer option (a,b,c or d)
	a) Seed Fern	b) Calamocarpon	c) Eucalamite	d) Spenophyllum	a
13 9	Which of the following is a True statement? A. Paleobotany deals with plant of the past B. Paleobotany deals with scientific investigation and nomenclature of the fossil plants of the past C. Paleobotany deals with both living and dead plant of the Paleocene D. None of the above				Answer option (a,b,c or d)
	a) Both A & B	b) Only B	c) Only C	d) Both A & C	b
14 0	Which of the following assertion and justification is true? A: Assertion: <i>Pentoxylon sahanii</i> was discovered by Prof Birbal Sahani B: Justification: It was discovered from Rajmahal Hills, India				Answer option (a,b,c or d)
	a) Both A and B are false	b) Both A and B are related and true	c) A is true but B is false	d) B is true but not related with A	b
14 1	Which of the following is not Pteridophyte?				Answer option (a,b,c or d)
	a) Marchantia	b) Lycopodium	c) Pteris	d) Equisetum	a

14 2	Conidium developed by the transformation of the swollen tip of a hypha into spore is called:				Answer option (a,b,c or d)
	a) Porospore	b) Phailospores	c) Gangliosporos	d) Blastospores	c
14 3	The main and first-formed hyphae produced directly from secondary hyphae in Basidiomycota is called:				Answer option (a,b,c or d)
	a) Generative hyphae	b) Skeletal hyphae	c) Binding hyphae	d) Mono hyphae	a
14 4	Young, aborted or sterile basidia, which support the basidia in the palisade are called:				Answer option (a,b,c or d)
	a) Cystidia	b) Basidioles	c) Hyphidia	d) Setae	b
14 5	The dissemination of the peridioles in Agaricomycota is brought about by:				Answer option (a,b,c or d)
	a) Wind	b) Temperature	c) Raindrops	d) Insects	c
14 6	Ectomycorrhizae forms a sheath around the rootlets and also enters the root, forming in the outer cortex an intercellular net of hyphae called:				Answer option (a,b,c or d)
	a) Hinge Net	b) Hartig Net	c) Broad Net	d) Conidia Net	b
14 7	The Oomycota radically differ from true fungi in:				Answer option (a,b,c or d)
	a) Glycine biosynthetic pathway	b) Lysine biosynthetic pathway	c) Lignin biosynthetic pathway	d) Glycogen biosynthetic pathway	b
14 8	The cleistothecia which is spherical and small contains:				Answer option (a,b,c or d)
	a) 7 spores	b) 8 spores	c) 9 spores	d) 10 spores	b
14 9	What role do Xylariales play in ecosystems?				Answer option (a,b,c or d)

	a) Predators of other fungi	b) Pollinators of flowering plants	c) Decomposers of wood	d) Symbionts with algae	c
150	Which of the following is not the character of Orchidaceae?				Answer option (a,b,c or d)
	a) Gynostemium	b) Labellum	c) Multi-stamen	d) Sepal and Petal indistinct	c