

QNo	QText	OpText	Marks
1	Most Research starts with	Index	
		Research Proposal	
		Hypothesis	Correct
		Research Plan	
2	Engineering Research should be based on	Industry based testing	Correct
		Survey of clients	
		Environmental issues	
		Social problems	
3	Research is not complete till	Thesis is submitted	
		Results have been presented publicly	Correct
		Supervisor has consented	
		Synopsis is completed	
4	Conclusions from research have to be substantiated from	Multiple investigations	Correct
		At least one investigation	
		By Simulation	
		By Experimenting	
5	The largest international engineering agreement on a common code of ethics is	Engineering ethics declaration	
		Commonwealth Declaration	
		Washington Accord	Correct
		Sydney Accord	
6	Research results and conclusions are valid only if they are substantiated through	Experimental standard tests	
		Numerical simulation	
		Logic and mathematics	
		At least two of these methods	Correct

7	Research can be undertaken successfully to impact society and humanity only if	Laboratory experiments at UG have been undertaken thoroughly	
		Calculations and theoretical framework have been done thoroughly	
		Undergraduate projects have a research component	
		All of these	Correct
8	Thesis writing is mainly about	Research writing format and referencing	
		Statistical analysis, result validation, referencing and clear conclusions	Correct
		Developing a new method	
		Establishing the research gap	
9	The most essential process of research for its application in real life is	Peer review of research outcome for its fail safe quality	Correct
		Understanding basic principles of the domain	
		Referencing existing material	
		Cost effective outcomes	

10	One of the major outcomes of research is to	Establishing the Research Gap	
		Contribute New Knowledge to the domain through rigorous peer review	Correct
		Write the References	
		Compare the results with current ones	
11	Publication is necessary in research in order to	Contribute New Knowledge to existing domain	
		Peer Review of outcomes	
		Establish that current knowledge has been reviewed	
		All of these	Correct
12	Reference of a paper in another published paper is called	Reference	
		Impact Factor	
		Citation	Correct
		Patent	
13	Impact Factor is the	Highest Number of Citation of a paper in a year	
		Yearly average of number of citations per paper published in the journal	Correct
		Scopus Journal rank	
		None of these	
14	Keyword in a research paper should	Not include trade names	Correct

		Be very specific and not general	
		Have highly technical terms from the paper	
		Have all the acronyms from the paper	
15	Research Proposal should primarily convince the Reviewers that	Proposed utilization of funds will be done	
		Supervisor has set the right research question	
		Research Method will lead to solution with enough scientific rigour	Correct
		Research will be completed within time limit	
16	Major component of a Research Proposal is	Project Title	
		Summary and description	
		Budget	
		All of these	Correct
17	For experimental tools to be used, researchers must ensure	Tools are properly calibrated	Correct
		Data acquisition is available	
		Statistical Analysis is done	
		Numerical Analysis is done	
18	One dimensional measurement can be represented by a	Line graph or a scatter plot	

		Histogram where standard deviation from mean shows variance	Correct
		Parabolic curves	
		All of these	
19	A brief summary of a research paper is called	Summary	
		Conclusions	
		Abstract	Correct
		Synopsis	
20	Unethical borrowing of details is called	Unauthorised Content	
		Unreferenced Content	
		Unethical Practice	
		Plagiarism	Correct
21	Find the missing Number in the series 218, 435,869,.....,3473	1727	
		1737	Correct
		1637	
		1638	
22	In Numerical Modelling, it is important to define	Boundary conditions	
		Surrounding media and its properties	
		Discretized area	
		All of these	Correct
23	While comparing results a simple technique is to reduce the RMS error which stands for	Root Mean Squared	Correct
		Relative Mean Square	
		Relational Minimum Size	
		Root Mean Series	
24	Conclusions and research outcomes come under doubt when	Literature review summary is not given	

		Specific conclusions are not mentioned in abstract	
		Statistical and error analysis are not done properly	Correct
		Future scope is not included	
25	Submission of Patent must be done	Along with paper publication	
		After paper publication	
		Before submission of any publication	Correct
		With declaration in newspaper	
26	The Design or structure of Research Method proposed should be	Logically rigorous	
		Internally consistent and Mathematically correct	
		None of these	
		All of these	Correct
27	Performance Validation of Engineering Research Problem is	Qualitative : As the essence of data and the perceived outcomes are important	

		Quantitative: As it has to demonstrate the measure of outcomes vs the objectives and establish that the outcome can be applied to domains broader than the chosen example	Correct
		None of these	
		All of these	
28	A Sampling is	A representation of a population suited in terms of cost and time	Correct
		Done to substitute experimentation	
		Always taken as 5% of population	
		Error proof method of research	
29	In an experimental research method, the independent variable is	Changed as compared to being constant in control group	Correct
		Kept constant in both experimental and control groups	
		Both Changed as compared to being constant in control group and Kept constant in both experimental and control groups	
		None of these	

30	Which of following should not be included while writing references in a research paper	Authors	
		Title	Cancelled Question
		All of these	
		Details of publication	
31	Bibliography includes	Only the papers referred by author	
		All the material related to the theme such as reference books and papers	Correct
		Only text books referred by author	
		Only papers written by the author	
32	In steps of Research Process, which is the next step after Literature Review and Forming the Hypothesis	Research Paper	
		Collection of data	
		Research Design	Correct
		Experimentation and Analysis	
33	Conclusions should	Be confined to those justified by result analysis of research	Correct
		Include those that are defined in theoretical principles	
		Include explanation of theoretical background	
		None of these	
34	Experimental research often needs	Scaling tools	
		Prototype testing	

		Validation with mathematical model	
		All of these	Correct
35	Qualitative research method is mostly used for	Marketing and Business analysis	Correct
		Engineering outcomes	
		Coding and Data Interpretation	
		Measuring Experimental errors	
36	Result Analysis can be showed as	Graphical Maps	
		Tabular values	
		Interpretation and Trend observed in the Graphical and Data mapping	Correct
		None of these	
37	Standard Deviation is a measure used in	Standard Data Collection Method	
		Theoretical Solutions	
		Equation solver	
		Statistical Method of Analysis	Correct
38	Regression Analysis is used to	Find results from graphs	
		Create data mapping	
		Determine statistical relation between two variables	Correct
		None of these	
39	Chi square test is	A statistical measure for sampling analysis	Correct

		A numerical method	
		Derived equation	
		Comparison of two values	
40	Research findings can be used only when they are followed up with	Interpretations of results	Correct
		All experimental results are tabulated as they are obtained	
		All results are charted graphically	
		All experimental results are tabulated as they are obtained and All results are charted graphically	
41	The important components of Thesis writing are	Research Plan and References	
		Logical analysis and interpretation of results	
		None of these	
		Both Research Plan and References and Logical analysis and interpretation of results	Correct
42	Research Proposal and Research Paper are distinguished by	Significant outcomes	
		Budgetary provision	Correct
		Literature Review	
		Research Design	
43	Inductive Reasoning is aimed at testing	New theory emerging from the data and results	Correct
		Existing theory	

		Enhancement in current theory	
		None of these	
44	Research related to abstract ideas is	Quantitative research	
		Theoretical research	
		Empirical research	
		Qualitative research	Correct
45	Validation using different methods is necessary as	Repeated experimental work may not be possible	
		There is no prior work resembling it	
		Theoretical framework may be too simplistic	
		All of these	Correct
46	While reading literature critically you should list	Positive and negative impact of paper	Correct
		Describe the entire research methodology	
		Describe whether references are adequate	
		Write a summary of the paper	
47	Literature Review is mainly aimed at	Understanding the concepts	
		Learning about new findings	
		Finding Research Gap	Correct
		Learning New Techniques	

48	Engineering Standards are provided to	Experimental technique	
		Requirement specifications	
		None of these	
		Both Experimental technique and Requirement specifications	Correct
49	Research Papers should preferably be published in	Peer reviewed standard ranked journals	Correct
		On line open end journals	
		Conference abstracts	
		All of the these	
50	Patent is characterized by	Sponsoring agency	
		Current scenario in field	
		Patent Number, patent code and authors	Correct
		Prior art	
51	Cell uses centrioles in the process of _____.	Energy generation	
		Cell division	Correct
		Protein synthesis	
		All of these	
52	_____ are prokaryotes, but have the ability to carry out oxygenic photosynthesis	Cyanobacteria	Correct
		Chlorobium	
		Photorhizobium	
		Rhodespirillum	
53	The longest stage in the cell cycle is	Anaphase	
		Interphase	Correct
		Metaphase	

		None of these	
54	Simple nerve reflexes use signaling molecules called	Nitric oxides	
		G proteins	
		Neurotransmitters	Correct
		Proteases	
55	Which of the following statements about G proteins is false?	They become activated when bound to GDP	Correct
		They must be active before the cell can make needed cAMP	
		They are involved in signal cascades	
		They bind to and are regulated by guanine nucleotides	
56	Carbohydrate the most abundant biomolecule on earth, is produced by	All bacteria, fungi and algae	
		Viruses, fungi and bacteria	
		Some bacteria, algae and green plant cells	Correct
		Fungi, algae and green plant cells	
57	Which of the following type of DNA polymerase has 3' to 5' exonuclease activity?	DNA polymerase I	Correct
		DNA polymerase II	
		DNA polymerase III	
		DNA polymerase IV	
58	Which subunit is not a part of core DNA polymerase?	Alpha	
		Theta	
		Beta	Correct

		Eta	
59	DNA was produced in test tube by	McClintock	
		Kornberg	Correct
		Rosalind	
		Watson and Crick	
60	The functional chromosome has	Centromere	
		origin of replication	
		Telomere	
		All of these	Correct
61	Which of the following techniques would be most useful to identify and quantify the presence of a known impurity in a drug substance?	NMR	
		HPLC	Correct
		IR	
		MS	
62	Isoelectric focusing separates protein on the basis of	Relative content of negatively charged groups	
		Relative content of positively charged groups	
		Both Relative content of negatively charged groups and Relative content of positively charged groups	Correct
		None of these	
63	CF is caused due to deletion in _____ Chromosome.	7	Correct
		21	
		9	
		13	

64	Which DNA polymerase removes RNA primers in DNA synthesis?	Polymerase I	Correct
		Polymerase II	
		Polymerase III	
		None of these	
65	Which one of the following is NOT an algorithm for building phylogenetic trees?	Maximum parsimony	
		Bootstrap	Correct
		Neighbor joining	
		Maximum likelihood	
66	Allergy symptoms are produced when antigen binds to IgE on FcR on	Mast cells	Correct
		Neutrophils	
		Macrophages	
		T cells	
67	Identify the character based method(s) used for the construction of a phylogenetic tree.	Maximum parsimony	
		Maximum likelihood	
		Neighbor joining	
		Both Maximum parsimony and Maximum likelihood	Correct
68	_____ family of viruses have single stranded DNA	Parvoviridae	Correct
		Herpesviridae	
		Poxviridae	
		Retroviridae	
69	Which vehicles are often used for gene therapy to carry a healthy gene ?	Plastic capsules	
		Powder balls	
		Viruses	Correct
		Bacteria	
70	Fetal hematopoietic stem cells used in gene therapy can be obtained from	The fetus	

		The placenta	Correct
		The yolk sac	
		The embryo	
71	Gene mutation occurs at the time of	DNA repair	
		Cell division	
		DNA replication	Correct
		RNA transcription	
72	Blood agar is an example of which type of media?	Selective	
		Differential	Correct
		Enriched	
		Enrichment	
73	What is the use of calcium in media?	Production of phospholipids	
		Production of nucleic acids	
		Stabilization of cell walls	Correct
		Production of vitamins	
74	Synthetic seeds are produced by encapsulating somatic embryo with	Sodium acetate	
		Sodium alginate	Correct
		Sodium chloride	
		Sodium nitrate	
75	The transformation method that uses tungsten or gold particles coated with DNA accelerated at high velocity is called	Acceleration method	
		High velocity method	
		Particle gun delivery method	Correct
		DNA particle delivery method	

76	The corona virus structure consists of	Club shaped glycoprotein spikes protrude through a lipid bilayer	Correct
		An icosahedral structure with an envelope	
		Large regimented barrel shaped virus	
		An icosahedral large pleomorphic virus	
77	The most commonly used diagnostic technique in virus laboratory is _____.	Virus isolation in cell culture	
		NGS	
		RT-PCR	Correct
		Immuno-serology	
78	Which of the following pathogenic fungi is the member of human microbiota?	<i>Aspergillusniger</i>	
		<i>Candida albicans</i>	Correct
		<i>Cryptococcus neoformans</i>	
		<i>Rhizopusoryzar</i>	
79	Which of the following terms describes the potential of zygotes?	Multipotent	
		Pluripotent	
		Totipotent	Correct
		Omnipotent	
80	The specificity of an antibody is due to	Its valence	
		The heavy chain	
		The Fc portion of the molecule	
		The variable portion of the heavy and light chain	Correct

81	Slide agglutination reaction is used for the identification of culture of	Shigella	
		Vibrio cholera	
		Salmonella	
		All of these	Correct
82	Which of the following is a hapten	Cyanide	
		Paracetamol	
		Penicillin	Correct
		None of these	
83	Type III hypersensitivity is triggered by	Mast cells and IgE	
		Deposition of antigen complex	Correct
		Nk cells	
		T _H cells	
84	What is the usual sequence of a pribnowbos?	TATAAT	Correct
		UUUUU	
		AUAUA	
		TTGACA	
85	The inducer for Lac operon is	Lactose	
		Allolactose	Correct
		β galactosidase	
		Galactose	
86	Plasmids which are maintained as multiple copy number per cell are known as	Stringent plasmids	
		Cryptic plasmids	
		Relaxed plasmids	Correct
		None of these	
87	Bt toxins are	intracellular lipids	
		18	
		intracellular polysaccharides	
		extracellular crystalline proteins	
		intracellular crystalline proteins	Correct
88	The most high throughput assay for DNA analyzing variants is	SNP genotyping	Correct

		Sequencing	
		Arrays	
		Karyotyping	
89	Why are vent polymerase and Pfu more efficient than the Taq polymerase?	Because of more efficient polymerase activity	
		Because of proofreading activity	Correct
		Both Because of more efficient polymerase activity and Because of proofreading activity	
		None of these	
90	The BLAST search programs used to identify homologs of a genomic DNA query in a protein sequence database is	blastn	
		blastp	
		blastx	Correct
		tblastn	
91	What is the value of ΔG , when a system is in equilibrium?	$\Delta G = 0$	Correct
		$\Delta G = 1$	
		$\Delta G = -1$	
		$\Delta G = \Delta G^\circ$	
92	Unfolding of regular secondary protein structure causes _____	Large decrease in the entropy of the protein	
		Large increase in the entropy of the protein	Correct
		No change in the entropy of the protein	

		Little increase in the entropy of protein	
93	In eukaryotes, the mismatch repair mechanism is initiated and directed by	Methylated DNA strand	
		Acetylated DNA strand	
		Strand specific nicks	Correct
		Double stranded break	
94	What is the deposition of cDNA into the inert structure called?	DNA microarrays	Correct
		DNA fingerprinting	
		DNA probes	
		DNA polymerase	
95	Which of these projects would be best suited for Next Generation Sequencing?	To determine if a tumour sample contains a common missense mutation	
		To genotype ten genomic DNA samples for a known single nucleotide polymorphism	
		To find the transcriptome of a tumour sample	Correct
		All of these	
96	Guanine specific cleavage in Maxam-Gilbert method is done by using	Formic acid	
		Dimethyl sulphate	Correct
		Hydrazin	
		Piperdine	
97	The most sensitive method for quantification of gene expression is	PCR	
		Northern blot assay	

		Real time PCR	Correct
		DNA sequencing	
98	Sanger's method of DNA sequencing uses _____ for chain termination	DNA modifying chemicals	
		Dideoxynucleotides	Correct
		Polymerase Chain Reaction	
		Random primers	
99	Fed batch cultivation is suitable for which of the following?	Processes with substrate inhibition	
		Processes with product inhibition	
		High cell density cultivation	
		Both Processes with substrate inhibition and Processes with product inhibition	Correct
100	Which one of the following bioreactor configurations is the basis for a trickling biological filter?	Packed bed	Correct
		Air lift	
		Stirred tank	
		Fluidized bed	