

Sr No.	PhD Biochemistry & Molecular Biology
1	Find the missing term in the following series: 3,15,?,63,99,143...?
Alt1	27
Alt2	35
Alt3	45
Alt4	56

2	Choose word from the given options which bears the same relationship to the third word, as the first two bears: Horse : Jockey :: Car : ?
Alt1	Mechanic
Alt2	Chauffeur
Alt3	Steering
Alt4	Brake

3	Food is to Fad as Religion is to.....?.....
Alt1	Crucification
Alt2	Notion
Alt3	Superstition
Alt4	Mythology

4	Select the lettered pair that has the same relationship as the original pair of words: Fond: Doting
Alt1	Sollicitous: Concern
Alt2	Verbose: Wordiness
Alt3	Flurry: Blizzard
Alt4	Magnificent: Grandiose

5	Which of the following is the same as Emancipate, Free, Release?
Alt1	Liberate
Alt2	Quit
Alt3	Pardon
Alt4	Ignore

6	Spot the defective segment from the following:
Alt1	I met one of the mountaineers
Alt2	that have returned
Alt3	to their base camp
Alt4	the last week

7	Choose the meaning of the idiom/phrase from among the options given: To call names
Alt1	to abuse
Alt2	to recall something
Alt3	to count the prisoners
Alt4	to take attendance

8	Our tour programme fell ----- because of inclement weather.
Alt1	through
Alt2	off
Alt3	out
Alt4	down

9	Choose the option closest in meaning to the given word: POIGNANT
Alt1	unbearable
Alt2	maximal
Alt3	pathetic
Alt4	sharp

10	Choose the antonymous option you consider the best: WANTON
Alt1	rational
Alt2	abstemious
Alt3	dearth
Alt4	deliberate

11	Six people K, L, M, N, O and P are sitting around a table as per the following conditions. i. N and O are opposite each other ii. K is to the right of M iii. L and K are opposite each other iv. N is to the left of P Who is to the left of L ?
Alt1	P
Alt2	M
Alt3	N
Alt4	O

12	Study the following table carefully to answer the questions that follow (15 to 17) : Total number of employees in different departments in an organisation and (of these) percentage of females and males <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Department</th> <th>Total number of employees</th> <th>Percentage of female employees</th> <th>Percentage of male employees</th> </tr> </thead> <tbody> <tr> <td>IT</td> <td>840</td> <td>45</td> <td>55</td> </tr> <tr> <td>Accounts</td> <td>220</td> <td>35</td> <td>65</td> </tr> <tr> <td>Production</td> <td>900</td> <td>23</td> <td>77</td> </tr> <tr> <td>HR</td> <td>360</td> <td>65</td> <td>35</td> </tr> <tr> <td>Marketing</td> <td>450</td> <td>44</td> <td>56</td> </tr> <tr> <td>Customer Service</td> <td>540</td> <td>40</td> <td>60</td> </tr> </tbody> </table> What is the total number of male employees in the IT and Customer Service departments put together?	Department	Total number of employees	Percentage of female employees	Percentage of male employees	IT	840	45	55	Accounts	220	35	65	Production	900	23	77	HR	360	65	35	Marketing	450	44	56	Customer Service	540	40	60
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Alt1	115																												
Alt2	786																												

Alt3	768
Alt4	85

13	<p>Study the following table carefully to answer the questions that follow (15 to 17) :Total number of employees in different departments in an organisation and (of these) percentage of females and males</p> <table border="1"> <thead> <tr> <th>Department</th> <th>Total number of employees</th> <th>Percentage of female employees</th> <th>Percentage of male employees</th> </tr> </thead> <tbody> <tr> <td>IT</td> <td>840</td> <td>45</td> <td>55</td> </tr> <tr> <td>Accounts</td> <td>220</td> <td>35</td> <td>65</td> </tr> <tr> <td>Production</td> <td>900</td> <td>23</td> <td>77</td> </tr> <tr> <td>HR</td> <td>360</td> <td>65</td> <td>35</td> </tr> <tr> <td>Marketing</td> <td>450</td> <td>44</td> <td>56</td> </tr> <tr> <td>Customer Service</td> <td>540</td> <td>40</td> <td>60</td> </tr> </tbody> </table> <p>What is the total number of employees in all departments put together ?</p>	Department	Total number of employees	Percentage of female employees	Percentage of male employees	IT	840	45	55	Accounts	220	35	65	Production	900	23	77	HR	360	65	35	Marketing	450	44	56	Customer Service	540	40	60
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Alt1	3260																												
Alt2	3310																												
Alt3	3140																												
Alt4	3020																												

14	<p>Select the alternative that logically follows from the two given statements, but not from one statement alone:</p> <p>All Cats are dogs No dogs are rats</p>
Alt1	All cats are rats
Alt2	Some cats are rats
Alt3	No cat is rat
Alt4	None of the above

15	<p>In a certain code language, "When did you come" is written as 'ti na ki ja'. "Will you come again" is written as 'na pa sa ja' and "She will go" is written as 'pa da ra'. How is "again" written in that code language ?</p>
Alt1	Na
Alt2	sa
Alt3	ja
Alt4	da

16	<p>In each of the following questions some statements are followed by two conclusions (i) and (ii). Read the statements carefully and then decide which of the conclusions follow beyond a reasonable doubt. Mark your answer as</p> <p>Statement: The aspirants should apply through a proper channel for permission Conclusions: (i) Those who apply through proper channel will get permission (ii) Those who do not apply through proper channel will not get permission</p>
Alt1	If only conclusion (i) follows

Alt2	If only conclusion (ii) follows
Alt3	If neither conclusion (i) nor (ii) follows
Alt4	If both the conclusions follow

17	The average height of 3 children is 115 cms. If the heights of 2 children are 117 cms. And 112 cms. Respectively, the height of the third child is
Alt1	112 cms.
Alt2	113 cms.
Alt3	115 cms.
Alt4	116 cms.

18	What is the 30% of 40% of 2/5th of 5000?
Alt1	500
Alt2	800
Alt3	240
Alt4	720

19	There are n persons in a room. Each one is shaking hand with the other . Ultimately there are 66 hand-shakes. Then n=
Alt1	11
Alt2	12
Alt3	16
Alt4	33

20	A problem is given to students 10 students choose option A ; 6 students choose option B ; 2 students choose option C; Gopal choose option D; 5 students did not answer. which option is correct if the teacher tells that One-Twelth of the class gave the correct answer.
Alt1	B
Alt2	A
Alt3	C
Alt4	D

21	The glycosidic linkage in cellobiose is
Alt1	α 1-4
Alt2	β 1-4
Alt3	α 1-6
Alt4	β 1-6

22	A drug which prevents uric acid synthesis by inhibiting the enzyme xanthine oxidase is
Alt1	Aspirin
Alt2	Allopurinol
Alt3	Colchicine
Alt4	Probenecid

23	Which of the following aminoacid will be absent in (alpha) helix structure of protein?
Alt1	Glycine
Alt2	Galine
Alt3	Glutamic acid
Alt4	Proline

24	Semi conservative replication of DNA was first demonstrated in
Alt1	Escherichia coli
Alt2	Streptococcus pneumoniae
Alt3	Salmonella typhimurium
Alt4	Drosophila melanogaster

25	DNA synthesis can be specifically measured by estimating the incorporation of radio labeled
Alt1	uracil
Alt2	thymine
Alt3	adenine
Alt4	deoxyribose sugar

26	Lysosomes have
Alt1	Single-layered membrane
Alt2	Double-layered membrane
Alt3	Three-layered membrane
Alt4	No membrane

27	The function of contractile vacuule
Alt1	Nutrition
Alt2	Reproduction
Alt3	Osmoregulation
Alt4	Locomotion

28	Agar-agar is obtained from
Alt1	Gelidium
Alt2	Polisyphonia
Alt3	Fucus
Alt4	Laminaria

29	The number of moles of solute present in 1 kg of a solvent is called its
Alt1	Molality
Alt2	molarity
Alt3	normality
Alt4	formality

30	The purity of an enzyme at various stages of purification is best measured by:
Alt1	Total protein
Alt2	Total enzyme activity
Alt3	Specific activity of the enzyme

Alt4	Percent recovery of protein
31	Which would be best to separate a protein that binds strongly to its substrate?
Alt1	Gel filtration
Alt2	Affinity chromatography
Alt3	Cation exchange
Alt4	Anion exchange
32	Hanging drop method for motility study was first introduced by
Alt1	Robert Koch
Alt2	Louis Pasteur
Alt3	Jenner
Alt4	Leeuwenhock
33	In the F1 generation of a monohybrid cross, the phenotypic ratio would be:
Alt1	3:1
Alt2	1:2:1
Alt3	1:3:1
Alt4	1:1:2
34	Mitosis involves separation of only sister chromatids while meiosis involves?
Alt1	Also separation of only sister chromatids.
Alt2	Separation of only homologous chromosomes.
Alt3	Separation of homologous chromosomes as well as sister chromatids.
Alt4	Separation of sister chromatids twice.
35	Intestinal villi are numerous and larger in posterior part of small intestine because
Alt1	Digestion is faster in posterior part
Alt2	Blood supply is poor in anterior part
Alt3	Blood supply is poor in posterior part.
Alt4	There is more digested food in posterior part
36	Which of the following phospholipids is localized to a greater extent in the outer leaflet of the membrane lipid bilayer?
Alt1	Choline phosphoglycerides
Alt2	Ethanolamine phosphoglycerides
Alt3	Inositol phosphoglycerides
Alt4	Serine phosphoglycerides
37	DNA glycosylase is an enzyme involved in base excision repair. The function is
Alt1	addition of correct base
Alt2	addition of correct nucleotide
Alt3	removal of incorrect base
Alt4	removal of phosphodiester bond
38	Phycobillins (phycoerythrin and phycocyanin) are accessory pigments found in
Alt1	green plants

Alt2	blue green algae and red algae
Alt3	blue green algae and diatoms
Alt4	red algae and brown algae

39	Which pair of hormones has opposite, antagonistic effects?
Alt1	insulin--glucagon
Alt2	insulin--progesterone
Alt3	estrogen--thyroxin
Alt4	thyroxin--parathyroid hormone

40	Which of the following reactions used for the purpose of recycling enzymes in bioprocesses
Alt1	Isomerisation
Alt2	phosphorylation
Alt3	immobilization
Alt4	polymerization

41	Tetracyclin blocks protein synthesis by
Alt1	inhibiting binding of aminoacyl t-RNA to ribosome
Alt2	inhibiting initiation of translation
Alt3	inhibiting peptidyl transferase
Alt4	inhibiting translocase enzyme

42	Function of β -mercaptoethanol in SDS-PAGE is
Alt1	To give negative charges to aminoacids in the proteins
Alt2	for the oxidation of disulphide bonds in the proteins
Alt3	for the reduction of disulphide bonds in the proteins
Alt4	for breaking hydrogen bonds in the proteins

43	Radioisotope for treating cancer tumors and cells is
Alt1	Phosphorous-32
Alt2	carbon-14
Alt3	cobalt-60
Alt4	cobalt-59

44	Which of the following classical transcription factors binds first to TATA box?
Alt1	TF IIA
Alt2	TF IIB
Alt3	TF IIC
Alt4	TF IID

45	Which of the following proteins is not part of the replication fork of a prokaryotic DNA
Alt1	Primase
Alt2	Ribonuclease
Alt3	Helicase
Alt4	DNA Polymerase III

46	Transducin regulates which of the following?
----	--

Alt1	cGMP Phosphodiesterase
Alt2	Adenyl cyclise
Alt3	Phospholipase C
Alt4	PI 3K

47	In MRI which of the following nuclei is used for imaging?
Alt1	^1H of water
Alt2	^{13}C of protein
Alt3	^{31}P of phosphate
Alt4	^{19}F of probe molecule

48	Which of the following RNA molecules is involved in RNA editing?
Alt1	RNA
Alt2	s RNA
Alt3	g RNA
Alt4	mi RNA

49	In order to find the direction of synthesis of protein chain, an in vitro translation system of globin protein was used. ^{14}C -Leu was added to the medium and the protein synthesis was allowed to continue for one min. The completed globin chains were isolated and sequenced. Which of the following statements is true?
Alt1	^{14}C Leu was at the amino terminus
Alt2	^{14}C Leu was at the carboxy terminus
Alt3	^{14}C Leu was uniformly distributed in the protein
Alt4	^{14}C Leu was not incorporated into the protein

50	A zinc metalloprotein was found to contain 0.182% by weight Zinc(atomic weight of $\text{Zn} = 65.4$). The minimum molecular weight of the protein is
Alt1	36 KD
Alt2	65.4 KD
Alt3	72 KD
Alt4	108 KD

51	DNA polymerase and ligase enzymes
Alt1	DNA polymerase and ligase enzymes
Alt2	DNAase and ligase enzymes
Alt3	Ribozymes and abzymes
Alt4	Transposase enzyme

52	If 10 moles of sodium were reacted with 4 moles of chlorine gas, how many moles of NaCl will be obtained ?
Alt1	10
Alt2	4
Alt3	14
Alt4	8

53	Which of the following is always a protein
----	--

Alt1	Antigen
Alt2	Enzyme
Alt3	Hormone
Alt4	Antibody

54	In an enzyme catalysed reaction, if an inhibitor affects KM but not VMAX such an inhibitors is
Alt1	Competitive
Alt2	Non competitive
Alt3	Un competitive
Alt4	There is no such inhibitor

55	Gas evolved during photo respiration
Alt1	O2
Alt2	CO2
Alt3	N2
Alt4	No gas is evolved

56	Abortive cycling is done by
Alt1	DNA Pol III
Alt2	RNA pol II
Alt3	Topoisomerase II
Alt4	Ribosome

57	The role of swi/snf complex is in
Alt1	Histone modification
Alt2	Chromatin remodelling
Alt3	Transcription factor binding
Alt4	Heterochromatinization

58	What is the genotype of the couple having four children, each child represented by one Blood group
Alt1	IAIA X ii
Alt2	IBi X ii
Alt3	IAi X ii
Alt4	IAi X IBi

59	The pI of ala is 6. If ala is dissolved in a buffer of pH 3 and subjected to electrophoresis at pH 3, it would
Alt1	Not move
Alt2	Move towards the anode
Alt3	Move towards the cathode
Alt4	Decompose giving CO2

60	The t $\frac{1}{2}$ of an enzyme catalysed reaction is 30 min. How much time is needed to complete 75% of the reaction?
Alt1	30 min
Alt2	45 min

Alt3	60 min
Alt4	Cannot be calculated from the given data

61	The sequence of a strand of DNA is 5' – CATTAG – 3' what will be the sequence of the complimentary strands
Alt1	5 – GTAATC – 3'
Alt2	5' – CATTAG – 3'
Alt3	5' – CTAATG – 3'
Alt4	5' – GATTAC – 3'

62	Helicobacter pylori:
Alt1	Is the presumed cause of colon cancer
Alt2	Is the cause of most cases of acute food poisoning
Alt3	Is urease negative
Alt4	Is the cause of about 90% of peptic ulcers

63	Which of the following is an essential micronutrient associated with urease of higher plants?
Alt1	Nickel
Alt2	Molybdenum
Alt3	Copper
Alt4	Zinc

64	The frequency of allele 'A' and 'a' in a population at Hardy-Weinberg equilibrium are 0.7 and 0.3 respectively. In a random sample of 250 individuals taken from the population, how many individuals will be heterozygous?
Alt1	81
Alt2	105
Alt3	112
Alt4	145

65	How is dosage compensation achieved in Drosophila?
Alt1	One of the X-chromosomes in females is inactivated
Alt2	The activity of the single X-chromosome in males is up regulated
Alt3	The activity of the two X-chromosomes in females is down regulated
Alt4	The activity of the autosomes in females is down regulated

66	According to the biological species concept, horses and donkeys are not considered in the same species because
Alt1	they are unable to mate.
Alt2	they do not produce fertile offspring.
Alt3	they look different.
Alt4	they do not share a relatively recent common ancestor

67	How many base pairs are present per helical turn in Z-DNA?
Alt1	10
Alt2	11
Alt3	12

Alt4	13
------	----

68	How many moles of CO ₂ will contain 16 gm of oxygen?
Alt1	1 mol
Alt2	0.5 mol
Alt3	0.25 mol
Alt4	0.1 mol

69	Which of the following is called the Hydronium ion?
Alt1	H ⁺
Alt2	OH ⁻
Alt3	H ₂ ⁺
Alt4	H ₃ O ⁺

70	In an octahedral complex, which of the following type of hybridization is involved?
Alt1	sp ³
Alt2	dsp ²
Alt3	d ² sp ³
Alt4	d ³ sp ²

71	The limbs of humans and many other vertebrates have similarity among them. This is an example of
Alt1	Convergent evolution.
Alt2	Divergent evolution.
Alt3	Homoplasy
Alt4	Homology

72	In the ATP synthase molecule which subunit rotates?
Alt1	Alpha
Alt2	Beta
Alt3	Gamma
Alt4	delta

73	In 1972, Temin discovered that
Alt1	RNA can be synthesized from DNA
Alt2	DNA can be synthesized from RNA
Alt3	RNA can undergo splicing
Alt4	RNA can replicate itself

74	3' overhang/sticky end can be converted into blunt end for ligation by using
Alt1	S ₁ nuclease.
Alt2	Klenow fragment
Alt3	DNA ligase
Alt4	Reverse transcriptase enzyme

75	A gene was cloned into a plasmid vector. The plasmid has two restriction sites, one for ECoR1 and one for Bam H1. A double digest will result in how many fragments?
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Alt1	1
Alt2	2
Alt3	3
Alt4	4

76	Mobile genetic elements in human genome
Alt1	P-elements
Alt2	IS elements
Alt3	LINES
Alt4	ARS

77	The only nucleotide with a Base-to-sugar linkage as C-C is found in
Alt1	mRNA
Alt2	tRNA
Alt3	rRNA
Alt4	miRNA

78	Which of the following techniques could be used to demonstrate protein binding to specific DNA sequences?
Alt1	Western blot
Alt2	Northern blot
Alt3	Southern blot
Alt4	Electrophoretic mobility shift assay

79	Which enzyme would be impaired in a biotin deficiency?
Alt1	Pyruvate Carboxylase
Alt2	Succinate dehydrogenate
Alt3	Pyruvate kinase
Alt4	Malate dehydrogenase

80	Which of the following is present in liver, and absent in muscle?
Alt1	Aldolase
Alt2	Glycogen synthetase
Alt3	Pyruvate dehydrogenase
Alt4	Glucose 6-phosphatase

81	Hyperplasia refers to
Alt1	Increased cell size
Alt2	Increased cell number
Alt3	Loss of cell differentiation
Alt4	Proliferation of single cell into a clone

82	Which of the following enzyme is not regulated by calcium or calmodulin?
Alt1	Hexokinase
Alt2	Adenylate cyclase
Alt3	Glycogen synthase
Alt4	Guanylyl cyclase

83	Which of the following is required for Insulin crystallization and storage?
Alt1	Ca ⁺⁺
Alt2	Mn ⁺⁺
Alt3	Zn ⁺⁺
Alt4	Mg ⁺⁺

84	Specific activity is a measure of
Alt1	Enzyme synthesis
Alt2	Enzyme volume
Alt3	Enzyme purity
Alt4	Enzyme inhibition

85	The most effective buffer in plasma is
Alt1	Citrate
Alt2	Bicarbonate
Alt3	Heamoglobin
Alt4	Phosphate

86	Paper Chromatography separates compounds based on
Alt1	Size
Alt2	Charge
Alt3	Partition coefficient
Alt4	Size and Charge

87	Substrate level phosphorylation is for the formation of
Alt1	ADP
Alt2	Pyrophosphate
Alt3	ATP
Alt4	AMP

88	Chromosomes can be counted best at the stage of
Alt1	Telophase
Alt2	Late anaphase
Alt3	Metaphase
Alt4	Late prophase

89	Eukaryotic chromosome is metabolically active in
Alt1	Metaphase
Alt2	Anaphase
Alt3	Interphase
Alt4	Prophase

90	Light reactions of photosynthesis take place in
Alt1	Leucoplasts
Alt2	Chloroplasts
Alt3	Cytosol

Alt4	Endoplasmic reticulum
91	Which of the following best applies to glucokinase?
Alt1	The K_m is above the concentration of glucose in the blood.
Alt2	It is found in muscle.
Alt3	It is synthesized in response to glucagon.
Alt4	It readily phosphorylates fructose and galactose.
92	Reverse cholesterol transport
Alt1	Is involved in the transport of cholesterol from liver to peripheral tissues
Alt2	Functions to remove cholesterol in bile
Alt3	Involves action of lipoprotein lipase
Alt4	Requires cholesterol acetyl transferase
93	Which one of the following decreases fluidity of a biological membrane?
Alt1	Increased cholesterol content
Alt2	Increased number of cis-double bonds
Alt3	Increased temperature
Alt4	Increased content of short-chain fatty acyl groups
94	An enzyme in liver is part of both glycolytic and gluconeogenic pathways
Alt1	Glucose 6-phosphatase
Alt2	PEP carboxykinase
Alt3	Fructose 1,6-bisphosphatase.
Alt4	Glyceraldehyde 3-phosphate dehydrogenase
95	A nonsense mutation involves:
Alt1	A regulatory sequence.
Alt2	An AG splice acceptor site.
Alt3	The creation of a different amino acid.
Alt4	The creation of a stop codon.
96	When a gene controls the expression of more than one character it is known as
Alt1	Supplementary gene
Alt2	Complementary gene
Alt3	Epistatic gene
Alt4	Pleiotropic gene
97	Which of the following is an element of innate immunity, but NOT considered part of the inflammatory response?
Alt1	Histamine secretion
Alt2	Attack by NK cells
Alt3	Antibody production
Alt4	Interferon release
98	Even when a gene is available and its sequence of nucleotides is known, chemical studies of the protein are still required to determine:

Alt1	The location of disulfide bonds.
Alt2	The number of amino acids in the protein
Alt3	The amino-terminal amino acid
Alt4	Molecular weight of the protein

99	During normal screening for phenylketonuria, a newborn showed a higher serum phenylalanine concentration. Signs of tyrosine deficiency are also apparent. Enzymatic analysis showed normal activity of phenylalanine hydroxylase. A possible explanation for this is that there is a deficiency of one of the following coenzymes
Alt1	Pyridoxal phosphate
Alt2	Biopterin
Alt3	Tetrahydrofolic acid
Alt4	Dihydroquinone

100	Heart is recognised as an endocrine organ. The hormone produced by heart is
Alt1	Erythropoietin
Alt2	EGF
Alt3	CREB
Alt4	ANF