

DU MPhil PhD in Bio Physics

Topic:- BIOPHY MPHIL

1) Which of these restriction enzymes produce blunt ends?[Question ID = 10943]

1. EcoRI [Option ID = 43769]
2. Sma I [Option ID = 43770]
3. XbaI [Option ID = 43771]
4. KpnI [Option ID = 43772]

2) If one sibling from a set of identical twins donates an organ to the second sibling, the donor organ[Question ID = 10944]

1. is rejected slowly as a result of minor histocompatibility antigens [Option ID = 43773]
2. is subject to hyperacute rejection [Option ID = 43774]
3. is not rejected, even without immunosuppression [Option ID = 43775]
4. is not rejected if a kidney is grafted, but skin grafts are rejected [Option ID = 43776]

3) A colour-blind man married a homozygous normal woman. After few years they had 2 children but unfortunately both had Turner syndrome, although one had normal vision and the other one was color-blind. Choose the correct statement: [Question ID = 10945]

1. In the color-blind child, the non-dysjunction occurred spontaneously [Option ID = 43777]
2. In the color-blind child, the non-dysjunction occurred in father [Option ID = 43778]
3. In the color-blind child, the non-dysjunction occurred in both the parents [Option ID = 43779]
4. In both the children, the non-dysjunction occurred in father [Option ID = 43780]

4) What fraction of V_{max} would be obtained at substrate concentration $[S] = \frac{1}{2} K_m$?[Question ID = 10946]

1. 0.67 [Option ID = 43781]
2. 0.33 [Option ID = 43782]
3. 0.91 [Option ID = 43783]
4. 0.11 [Option ID = 43784]

5) Cleavage of following peptide with chymotrypsin

$^+H_3N-Gly-Arg-Ala-Ser-Phe-Gly-Asn-Lys-Trp-Glu-Val-COO^-$ results in

[Question ID = 10947]

1. 2 fragments
[Option ID = 43785]
2. 3 fragments
[Option ID = 43786]
3. 4 fragments
[Option ID = 43787]
4. No cleavage
[Option ID = 43788]

6) In the bacterial cell wall, lysozyme acts on[Question ID = 10948]

1. Beta 1→6 linkage between NAG and NAM [Option ID = 43789]
2. Beta 1→6 linkage between NAM and NAG [Option ID = 43790]
3. Beta 1→4 linkage between NAG and NAM [Option ID = 43791]
4. Beta 1→4 linkage between NAM and NAG [Option ID = 43792]

7) A strand of short length of dsDNA has 80 thymines and 80 guanine bases. The total number of nucleotide bases in the full dsDNA fragment is:[Question ID = 10949]

1. 160 [Option ID = 43793]
2. 40 [Option ID = 43794]
3. 320 [Option ID = 43795]
4. 640 [Option ID = 43796]

8) Which of the following properties of a peptide bond is true?[Question ID = 10950]

1. It has a partial double bond character [Option ID = 43797]
2. Is ionized at physiological pH [Option ID = 43798]
3. Occurs most commonly in the cis configuration [Option ID = 43799]
4. Is cleaved by agents that denature proteins [Option ID = 43800]

9) Amino acid which has the greatest conformational freedom and occupies the four quadrants of Ramachandran plot is: [Question ID = 10951]

1. Alanine [Option ID = 43801]
2. Glycine [Option ID = 43802]
3. Proline [Option ID = 43803]

4. 4-hydroxyproline [Option ID = 43804]

10) What are the three basic steps of conventional PCR?[Question ID = 10952]

1. Denaturation, annealing, and strand displacement [Option ID = 43805]
2. Denaturation, annealing and extension [Option ID = 43806]
3. Strand displacement, synthesis and release [Option ID = 43807]
4. Reverse-transcription, annealing and extension [Option ID = 43808]

11) All of the following are true about protein denaturation except that it:[Question ID = 10953]

1. Results in a change of shape [Option ID = 43809]
2. Is always irreversible [Option ID = 43810]
3. May be caused by a pH change [Option ID = 43811]
4. Could result from a temperature change [Option ID = 43812]

12) Which of the following statements about initial rate enzyme inhibition kinetics is TRUE?[Question ID = 10954]

1. Competitive inhibition permanently lowers the maximum velocity of the enzyme. [Option ID = 43813]
2. You cannot perform kinetics in the presence of inhibitors since the enzyme is no longer active. [Option ID = 43814]
3. Whenever V_{max} decreases as a result of the presence of inhibitors, K_m also decreases. [Option ID = 43815]
4. A competitive inhibitor is a structural analogue of the enzyme's substrate. [Option ID = 43816]

13) The pI (isoelectric point) of a protein is 6.0. At pH 7.0, when electric field is applied, the protein:[Question ID = 10955]

1. Moves towards anode [Option ID = 43817]
2. Moves towards cathode [Option ID = 43818]
3. Does not move [Option ID = 43819]
4. Moves in a random fashion [Option ID = 43820]

14) To purify a specific antibody from serum, it is preferred to use:[Question ID = 10956]

1. Affinity chromatography [Option ID = 43821]
2. SDS-PAGE [Option ID = 43822]
3. Exclusion chromatography [Option ID = 43823]
4. Reverse phase chromatography [Option ID = 43824]

15) Malignant cancer cells have all of the following properties except:[Question ID = 10957]

1. Ability to metastasize [Option ID = 43825]
2. Inhibition of angiogenesis [Option ID = 43826]
3. Unregulated cell division [Option ID = 43827]
4. Resistance to apoptosis [Option ID = 43828]

16) Sanger's method of sequencing is:[Question ID = 10958]

1. Sequencing by chain synthesis [Option ID = 43829]
2. Sequencing by chain cleavage [Option ID = 43830]
3. Sequencing by chain termination [Option ID = 43831]
4. Sequencing by chain ligation [Option ID = 43832]

17) The culture media containing heat labile constituents are best sterilized by:[Question ID = 10959]

1. UV-irradiation [Option ID = 43833]
2. Filtration using membrane filter [Option ID = 43834]
3. Dry heat at 180°C for 30 min [Option ID = 43835]
4. Autoclaving at 15 psi for 30 min [Option ID = 43836]

18) Universal primers used in Sanger's sequencing of plasmid DNA are:[Question ID = 10960]

1. Primers complementary to the vector sequences flanking the multiple cloning site [Option ID = 43837]
2. Primers complementary to the antibiotic resistance gene of the vector [Option ID = 43838]
3. Primers complementary to the multiple cloning sequence of the vector [Option ID = 43839]
4. Primers of random sequence of length 18 nucleotides [Option ID = 43840]

19) Pathogen associated molecular patterns (PAMP) are detected by:[Question ID = 10961]

1. B cell receptors [Option ID = 43841]
2. Non-leucine rich receptors [Option ID = 43842]
3. Toll-like receptors [Option ID = 43843]
4. T cell receptors [Option ID = 43844]

20) Which one of the following, studies the transcripts and proteins expressed by a genome?[Question ID = 10962]

1. Structural genomics [Option ID = 43845]
2. Comparative genomics [Option ID = 43846]
3. Proteo genomics [Option ID = 43847]
4. Functional genomics [Option ID = 43848]

21) The migration of a protein on an SDS polyacrylamide gel doesn't depends on[Question ID = 10963]

1. Isoelectric point of protein [Option ID = 43849]
2. Concentration of polyacrylamide in the gel [Option ID = 43850]
3. Molecular weight of the protein [Option ID = 43851]

4. Number of amino acids in the protein [Option ID = 43852]

22) Which of the following receptors is NOT present on cell surface?[Question ID = 10964]

1. Steroid hormone receptors [Option ID = 43853]
2. Enzyme linked receptors [Option ID = 43854]
3. Ion-channel linked receptors [Option ID = 43855]
4. G protein coupled receptors [Option ID = 43856]

23) Which one of the following is a correct representation of cloning vectors in descending order (from L to R) of insert size that may be cloned in the vector?[Question ID = 10965]

1. L : BAC - YAC - Phagemid - Cosmid : R [Option ID = 43857]
2. L : Plasmid - Cosmid - MAC - YAC : R [Option ID = 43858]
3. L : YAC - BAC - Cosmid - Phage : R [Option ID = 43859]
4. L : MAC - YAC - Plasmid - Cosmid : R [Option ID = 43860]

24) A program that observes the base trace, makes base calls, and assigns quality values (qv) of bases in the sequence. [Question ID = 10966]

1. UNIX [Option ID = 43861]
2. Phrap [Option ID = 43862]
3. Consed [Option ID = 43863]
4. Phred [Option ID = 43864]

25) Which of the following is NOT a primary nucleotide sequence database[Question ID = 10967]

1. DDBJ [Option ID = 43865]
2. GenBank [Option ID = 43866]
3. EMBL [Option ID = 43867]
4. PDB [Option ID = 43868]

26) Non-homologues genes/proteins that have descended from unrelated ancestors but converge to have/perform similar functions is called as[Question ID = 10968]

1. paralogs [Option ID = 43869]
2. analogs [Option ID = 43870]
3. homologs [Option ID = 43871]
4. orthologs [Option ID = 43872]

27) The correct combination of gene prediction algorithm among the following algorithm is

- A. Neural network
- B. Needleman and Wunsch
- C. Hidden Markov model
- D. Smith Waterman
- E. Rule-based system

Choose the *correct* answer from the options given below:

[Question ID = 10969]

1. All of these
[Option ID = 43873]
2. A, C and D
[Option ID = 43874]
3. A, C and E
[Option ID = 43875]
4. A, B, C and D
[Option ID = 43876]

28) Local alignment is best for[Question ID = 10970]

1. Divergent sequences of equal length. [Option ID = 43877]
2. Closely related sequences of equal length [Option ID = 43878]
3. Divergent sequences of unequal length [Option ID = 43879]
4. Closely related sequences of unequal length [Option ID = 43880]

29) Electronic journal usually have the following features:

- A. HTML/ PDF formats
- B. Part of bibliographic databases
- C. Can be accessed by payment only
- D. ISSN & DOI number

Choose the *correct* answer from the options given below:

[Question ID = 10971]

1. B, D, C

[Option ID = 43881]

2. B, C, A

[Option ID = 43882]

3. A, C, D

[Option ID = 43883]

4. A, B, D

[Option ID = 43884]

30) What is an outlier?[Question ID = 10972]

1. A score that is left out of the analysis because of missing data [Option ID = 43885]

2. A compulsive liar who is proud to lie [Option ID = 43886]

3. An extreme value at either end of a distribution [Option ID = 43887]

4. A type of variable that cannot be quantified [Option ID = 43888]

31) Questionnaire is a[Question ID = 10973]

1. Research method [Option ID = 43889]

2. Data analysis technique [Option ID = 43890]

3. Measurement technique [Option ID = 43891]

4. Tool for data collection [Option ID = 43892]

32) What is the purpose of informed consent?[Question ID = 10974]

1. To ensure that the participant make an informed choice about their participation and not undertake to do something which they may otherwise have declined to do. [Option ID = 43893]

2. To make sure that participants know exactly what to expect from the research and to communicate their right to withdraw at any stage. [Option ID = 43894]

3. To ensure that participants are aware about the time commitment involved in their participation [Option ID = 43895]

4. All of these. [Option ID = 43896]

33) A statistical technique used to test the differences between three or more independent population groups is called[Question ID = 10975]

1. t-test [Option ID = 43897]

2. Regression [Option ID = 43898]

3. ANOVA [Option ID = 43899]

4. Chi Square [Option ID = 43900]

34) One of the following search engine is exclusively meant for scientific information :[Question ID = 10976]

1. Google [Option ID = 43901]

2. Altavista [Option ID = 43902]

3. Science Indirect [Option ID = 43903]

4. SciFinder [Option ID = 43904]

35) What does quaternary structure of a protein involve?[Question ID = 10977]

1. The association of two or more peptide chain [Option ID = 43905]

2. The complete three-dimensional conformation [Option ID = 43906]

3. Partial denaturation [Option ID = 43907]

4. Random coil alternating with alpha helix [Option ID = 43908]

36) The Ramachandran plot illustrates the fact that[Question ID = 10978]

1. the conformation in which both Φ and ψ are 0 is prohibited [Option ID = 43909]

2. the peptide bond is non-planar [Option ID = 43910]

3. each Φ and ψ pair can assume two different conformation [Option ID = 43911]

4. each Φ and ψ pair can assume any conformation [Option ID = 43912]

37) There are several sources and methods for discovering new compounds, which of the following is most likely to lead to the discovery of a complex structure which is likely to be different from other previously discovered?[Question ID = 10979]

1. Screening plant extract [Option ID = 43913]

2. Database mining [Option ID = 43914]

3. Me too drugs [Option ID = 43915]

4. Combinatorial chemistry [Option ID = 43916]

38) Protein lysates were immunoprecipitated with antibody against human protein "X". Which was raised in mouse. Immunoprecipitated complex was subjected to SDS-PAGE, following with western blotting with antibodies to human "X" antibody (raised in mouse), then probed with HRP conjugated secondary antibody to mouse, results in appearance of three distinct protein bands. This indicates[Question ID = 10980]

1. One band is "X" protein and other two protein bands are IgG H chain, and IgG L chain [Option ID = 43917]

2. One band is "X" protein, other two bands are non specific [Option ID = 43918]

3. All three protein bands are of "X" protein [Option ID = 43919]

4. Degradation product of Protein "X" [Option ID = 43920]

39) What you mean by a lead compound in drug discovery?[Question ID = 10981]

1. A compound that acts as the starting point for drug design [Option ID = 43921]
2. A drug which is normally the first to be prescribed for a particular ailment [Option ID = 43922]
3. A drug containing the element lead [Option ID = 43923]
4. A leading drug in a particular area of medicine [Option ID = 43924]

40) Which of the following is NOT a part of the primary structure of proteins?[Question ID = 10982]

1. The disulphide linkages [Option ID = 43925]
2. The amino acid sequences [Option ID = 43926]
3. The conformation of the polypeptide backbone [Option ID = 43927]
4. The planar nature of the amide linkage [Option ID = 43928]

41) A mutation is most likely to change three-dimensional conformation of a protein if[Question ID = 10983]

1. It changes the amino-terminal amino acid [Option ID = 43929]
2. It changes the carboxy-terminal amino acid [Option ID = 43930]
3. It introduces proline in the middle of an alpha helix [Option ID = 43931]
4. There is a substitution of lysine in place of iso lysine [Option ID = 43932]

42) What do MDR-TB and XDR-TB stand for[Question ID = 10984]

1. Maximum-drug resistant tuberculosis and Extremely-drug resistant tuberculosis [Option ID = 43933]
2. Maximum-drug resistant tuberculosis and X-drug resistant tuberculosis [Option ID = 43934]
3. Multi-drug resistant tuberculosis and Extensively-drug resistant tuberculosis [Option ID = 43935]
4. Multi-drug resistant tuberculosis and X-drug resistant tuberculosis [Option ID = 43936]

43) Which of the following versions of BLAST can be used to search DNA sequence against a protein database?[Question ID = 10985]

1. BLAST-X [Option ID = 43937]
2. BLAST-P [Option ID = 43938]
3. BLAST-N [Option ID = 43939]
4. Mega-BLAST [Option ID = 43940]

44) "Once a gap, always a gap" in the alignment is observed in[Question ID = 10986]

1. Progressive multiple sequence alignment method [Option ID = 43941]
2. Needleman & Wunsch method [Option ID = 43942]
3. Smith & Waterman method [Option ID = 43943]
4. Heuristic method such as BLAST [Option ID = 43944]

45) The approach that can be used to predict the 3D structure of a protein with no template is[Question ID = 10987]

1. homology modeling [Option ID = 43945]
2. comparative modeling [Option ID = 43946]
3. fold recognition [Option ID = 43947]
4. ab initio modeling [Option ID = 43948]

46) Semi-independent folding units in proteins are referred to as -[Question ID = 10988]

1. Oligomers [Option ID = 43949]
2. Domains [Option ID = 43950]
3. Active site [Option ID = 43951]
4. Subunits [Option ID = 43952]

47) Approximately, how many amino acid residues are present in one turn of an alpha helix[Question ID = 10989]

1. 1 [Option ID = 43953]
2. 2 [Option ID = 43954]
3. 4 [Option ID = 43955]
4. 5 [Option ID = 43956]

48) RNAseq is a technique used for:

[Question ID = 10990]

1. Finding differentially expressed genes between two conditions
[Option ID = 43957]
2. To obtain profile of gene activity across the life cycle (gene expression atlas)
[Option ID = 43958]
3. Improving structural annotation (location of genes/isoforms) of respective genome
[Option ID = 43959]
4. All of these
[Option ID = 43960]

49) Genes, arising due to speciation. and performing same function, are[Question ID = 10991]

1. Orthologs [Option ID = 43961]
2. Paralogs [Option ID = 43962]
3. Analogs [Option ID = 43963]
4. Conserved gene [Option ID = 43964]

50) Changing three amino acids in a particular enzyme increases its catalytic efficiency. Which one of the following method can be used to change those three amino acids?[Question ID = 10992]

1. PCR [Option ID = 43965]
2. Gene knockout [Option ID = 43966]
3. Site directed mutagenesis [Option ID = 43967]
4. Knock in particular protein [Option ID = 43968]