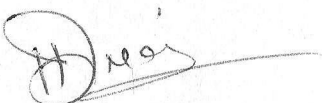
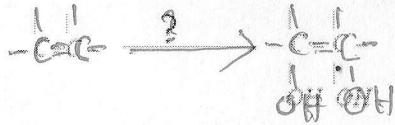


1. One joule of work is said to be done when\_\_ :  
(A) a force of 1 dyne causes a displacement of 1 cm.  
(B) a force of 1 dyne causes a displacement of 1 m.  
(C) a force of 1 N causes a displacement of 1 cm.  
(D) a force of 1 N causes a displacement of 1 m.
  
2. Consider the following physical quantities: 1.Entropy 2.Work 3.Momentum 4.Force  
Which of the above are vector quantities?  
(A) 1 & 2  
(B) 2 & 3  
(C) 3 & 4  
(D) 1 & 4
  
3. Which of the following electromagnetic waves in the EM spectrum has the highest wavelength?  
(A) X-rays  
(B) Visible  
(C) Infrared  
(D) UV-rays
  
4. Which of the following is correct?  
(A) 1 Rutherford (Rd) =  $10^3$  decays/second  
(B) 1 Rutherford (Rd) =  $10^4$  decays/second  
(C) 1 Rutherford (Rd) =  $10^5$  decays/second  
(D) 1 Rutherford (Rd) =  $10^6$  decays/second
  
5. What do we call an undoped semiconductor?  
(A) Intrinsic semiconductor  
(B) Extrinsic semiconductor  
(C) p-type semiconductor  
(D) None of the above
  
6. Which of the following statements is correct about Beta-decay?  
(A) In  $\beta^+$  decay, Mass number increases by 2  
(B) In  $\beta^-$  decay, Mass number decreases by 2  
(C) In  $\beta^-$  decay, the atomic number increases by 1  
(D) None of the above
  
7. What is the relationship between half-life period and initial concentration of the reacting species for a first order reaction?  
(A) Both are directly proportional to each other  
(B) Both are inversely proportional to each other  
(C) Both are independent of each other  
(D) The half-life is twice the concentration of reacting species



8. Which of the following reagent can be used to carry out the synthesis of glycol.



- (A) Benedict reagent
- (B) Baeyer's reagent
- (C) Bradford reagent
- (D) Seliwanoff reagent

9. Which of these polymers is used for controlled drug release in the body?

- (A) PLA
- (B) PHBV
- (C) PGA
- (D) PCL

10. The correct order of increasing nucleophilicity is

- (A)  $Cl^- < Br^- < I^-$
- (B)  $Br^- < Cl^- < I^-$
- (C)  $I^- < Br^- < Cl^-$
- (D)  $I^- < Cl^- < Br^-$

11. Formation of diploid embryosac from diploid vegetative structure, e.g., nucellus or integument etc., without meiosis is called:

- (A) Apospory
- (B) Apomixis
- (C) Diplospory
- (D) Adventives polyembryony

12. Process of water exudation through hydathodes is known as:

- (A) Guttation
- (B) Transpiration
- (C) Evaporation
- (D) Bleeding

13. Basal placentation is found in the family:

- (A) Malvaceae
- (B) Solanaceae
- (C) Fabaceae
- (D) Asteraceae

14. In a pond ecosystem, benthos means:

- (A) Zooplanktons on water surface
- (B) Large fishes eating small ones
- (C) Primary consumes in the bottom of a pond
- (D) All the phytoplankton

CO<sub>2</sub>

15. First CO<sub>2</sub> receptor in C<sub>4</sub> plants is:  
(A) PGA  
(B) PEP  
(C) RuBD  
(D) OAA
16. In which organ of the human body are the lymphocytes formed?  
(A) Pancreas  
(B) Bone marrow  
(C) Liver  
(D) Spleen
17. Which one of the following genetic diseases is sex linked?  
(A) Hypertension  
(B) Cystic fibrosis  
(C) Tay sachs disease  
(D) Haemophilia
18. Which of the following disease is caused by Vitamin B<sub>3</sub>?  
(A) Pellagra  
(B) Night blindness  
(C) Rickets  
(D) Berry berry
19. In which body, which one of the following hormones regulates blood calcium and phosphate?  
(A) Glucagon  
(B) Growth hormone  
(C) Parathyroid hormone  
(D) Thyroxine
20. Octopus is ~~\_\_\_\_\_~~  
(A) a molluscs  
(B) an echinoderm  
(C) an arthropod  
(D) a hemichordate
21. Human genome contains about  
(A) 2 billion base pairs  
(B) 3 billion base pairs  
(C) 4 billion base pairs  
(D) 5 billion base pairs
22. First molecular biology server Expasy was created in the year?  
(A) 1991  
(B) 1992  
(C) 1993  
(D) 1994

H. Hoj

23. An example of Homology & similarity tool? <sup>h</sup> <sub>u</sub>

- (A) PROSPECT
- (B) EMBOSS
- (C) RASMOL
- (D) BLAST

24. The first bioinformatics database was created by

- (A) Richard Durbin
- (B) Dayhoff
- (C) Michael j. Dunn
- (D) Pearson

25. The first published completed <sup>genome</sup> gene sequence was of <sub>u</sub>

- (A) M 13 phage
- (B) T 4 phage
- (C)  $\Phi$ X174
- (D) Lambda phage

26. The first computers' language developed was ;

- (A) COBOL
- (B) BASIC
- (C) FORTRAN
- (D) PASCAL

27. What is the commonly used unit for measuring the speed of data transmission?

- (A) Bits per second
- (B) Mega Hertz
- (C) Characters per second
- (D) Byte per second

28. Expansion of RDBMS is ;

- (A) Relational database Management System
- (B) Repairable Database Management System
- (C) Relational database Memory System
- (D) Random Database Management System

29. Correct expansion of the term 'http' in internet address is ;

- (A) hypertext transfer protocol
- (B) hybrid text transfer protocol
- (C) higher transfer text protocol
- (D) higher text transfer protocol

30. 'IC-Chips' for computer are usually made of
- (A) Lead
  - (B) Gold
  - (C) Chromium
  - (D) Silicon
31. When the number of rows and the number of columns of a matrix are equal, the matrix is \_\_\_\_\_.
- (A) square matrix
  - (B) row matrix
  - (C) column matrix.
  - (D) none of these.
32. If  $x$  and  $y$  are complementary angles, then
- (A)  $\sin x = \sin y$
  - (B)  $\tan x = \tan y$
  - (C)  $\cos x = \cos y$
  - (D)  $\sec x = \operatorname{cosec} y$
33. If the scalar product (dot product) of two unit vectors is zero, they are \_\_\_\_\_
- (A) linearly dependent
  - (B) forming an orthonormal basis
  - (C) pointing in the same direction
  - (D) at an angle of 180 degrees to each other.
34. An event in the probability that will never be happened is called as -
- (A) Unsure event
  - (B) Sure event
  - (C) Possible event
  - (D) Impossible event
35. What is the probability of getting an even number when a dice is thrown?
- (A)  $1/6$
  - (B)  $1/2$
  - (C)  $1/3$
  - (D)  $1/4$
36. Find the mode and median of the 9 consecutive number 12,7,8,14,21,23,27,7,11.
- (A) 12, 9
  - (B) 7, 9
  - (C) 7, 12
  - (D) 11, 9

*Handwritten signature*

37.  $E(X) = \lambda$  is used for which distribution?

- (A) Binomial distribution
- (B) Poisson's distribution
- (C) Bernoulli's distribution
- (D) Laplace distribution

38. Find the mean deviation according to the Mean of the given data sets  
7, 47, 8, 42, 47, 95, 42, 96, 3 .

- (A) 11
- (B) 111
- (C) 112
- (D) 113

39. The Mean of a random variable K is given by equation \_\_\_\_\_

- (A)  $E(K)$
- (B)  $(EK)^2$
- (C)  $E^2 - K^2$
- (D) None of these

40. Poisson distribution is applied for \_\_\_\_\_

- (A) Regular Random Variable
- (B) Constant time function
- (C) Discrete Random Variable
- (D) Irregular Random Variable

41. Which of the following molecules is useful as a measure of relatedness beyond species level between organisms:

- (A) mRNA
- (B) tRNA
- (C) rRNA
- (D) miRNA

42. Explants used for plant tissue culture can be taken from:

- (A) Bud
- (B) Root tip
- (C) Nodal stem segments
- (D) All of these

43. Klenow fragment is derived from:

- (A) DNA Pol-I
- (B) RNA Pol II
- (C) DNA Ligase
- (D) Reverse Transcriptase

44. Hairy root cultures are produced by using:

- (A) *Agrobacterium tumefaciens*
- (B) *Agrobacterium rhizogenes*
- (C) *Agrobacterium vitis*
- (D) *Agrobacterium rubi*

45. Indole -3-acetic acid is:

- (A) A gibberellin
- (B) A cytokinin
- (C) An auxin
- (D) None of these

46. The technique used to detect the presence of DNA or RNA in a non-fractionated DNA sample is

- (A) colony hybridization
- (B) in situ hybridization
- (C) dot blot technique
- (D) western blotting

47. Which of the following has a <sup>cyclic</sup> spiral metabolic pathway?

- (A) Glycolysis
- (B) Citric acid cycle
- (C) Glyoxylate cycle
- (D) Fatty acid biosynthesis

48. In which of the following phenomenon the end product act as co-repressor and repress the synthesis of metabolic enzymes?

- (A) Allosteric regulation
- (B) Feedback repression
- (C) Feedback inhibition
- (D) Regulation by phosphorylation

49. Amino acid selenocysteine is coded by \_\_\_\_\_.

- (A) UAA
- (B) UAG
- (C) UGA
- (D) AUG

50. Which of the following amino acid is a 'α-helix terminator'?

- (A) tryptophan
- (B) phenyl alanine
- (C) tyrosine
- (D) proline

51. The naturally occurring form of amino acid in proteins are

- (A) L-amino acids only
- (B) D-amino acids only
- (C) both L and D amino acids
- (D) none of these

52. Absorbance at 280nm exhibited by protein is due to

- (A) Aliphatic Amino Acids
- (B) All Amino Acids
- (C) Non-Polar Amino Acids
- (D) Aromatic Amino Acids

53. Which of the following name is given to molecular chaperones?

- (A) Allosteric protein
- (B) Heat shock protein
- (C) Denaturation protein
- (D) Ribonuclease

54. Quantasomes are found in:

- (A) Cristae of mitochondria
- (B) Thylakoid membrane of chloroplasts
- (C) Nucleus membrane
- (D) Lysosome

55. Which of the following statement is true regarding ATP synthase?

- (A) Located in outer mitochondrial membrane; F<sub>1</sub> unit made up of  $\gamma\beta\beta_3\alpha\delta\epsilon$
- (B) Located in inner mitochondrial membrane; F<sub>1</sub> unit made up of  $\gamma\beta\beta_3\alpha\delta\epsilon$
- (C) Located in mitochondrial matrix; F<sub>1</sub> unit made up of  $\gamma\beta\beta_3\alpha\delta\epsilon$
- (D) Located in inner mitochondrial membrane; F<sub>1</sub> unit made up of  $\gamma\beta\beta_3\alpha_3\delta\epsilon$

56. Match the following

**Column I**

- (A) Helicase
- (B) Peptidyl transferase
- (C) DNA polymerase
- (D) DNA ligase
- (E) Aminoacyl synthetase enzyme
- (F) RNA primase

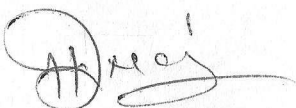
**Column II**

- (M) activation of amino acid
- (N) joins DNA fragments
- (O) unwinds DNA helix
- (P) peptide bonds between amino acids
- (Q) DNA synthesis
- (R) synthesis of RNA primer

- a) A-O, B-P, C-Q, D-N, E-M, F-R
- b) A-R, B-M, C-N, D-Q, E-P, F-O
- c) A-M, B-R, C-P, D-Q, E-N, F-O
- d) A-R, B-Q, C-A, D-M, E-P, F-N



57. Turner's syndrome is \_\_\_\_\_
- (A) XO
  - (B) XXY
  - (C) XXX
  - (D) XYY
58. Which is the false statement?
- (A) Sickle cell anemia is a recessive autosomal disorder
  - (B) Phenylketonuria is a recessive allosomal disorder
  - (C) Haemophilia is a recessive sex linked disorder
  - (D) Colour blindness is a recessive allosome linked disorder
59. Tetracycline blocks protein synthesis by \_\_\_\_\_
- (A) inhibiting binding of aminoacyl tRNA to ribosome
  - (B) inhibiting initiation of translation
  - (C) inhibiting peptidyl transferase
  - (D) inhibiting translocase enzyme
60. What is the function of the  $\omega$  subunit of RNA polymerase?
- (A) Subunit association
  - (B) Promoter binding
  - (C) Initiation and elongation
  - (D) Cation binding
61. At what temperature do annealing of DNA and primer takes place in Polymerase Chain Reaction process?
- (A) 42°C
  - (B) 54°C
  - (C) 74°C
  - (D) 96°C
62. Which of the following is an example of RNA virus?
- (A) SV 40
  - (B) T4 phage
  - (C) Severe acute respiratory syndrome coronavirus 2
  - (D) Adeno virus
63. Plasmids are ideal vectors for gene cloning as \_\_\_\_\_
- (A) They can be multiplied by culturing
  - (B) They can be multiplied in the laboratory using enzymes
  - (C) They can replicate freely outside the bacterial cell
  - (D) They are self replicating within the bacterial cell
64. Antigenic specificity is due to \_\_\_\_\_
- (A) Chemical complexity
  - (B) Solubility
  - (C) Steric configuration
  - (D) All of these



65. Limit of resolution of compound microscope is :

- (A)  $0.018 \text{ \AA}$
- (B) 0.1 mm
- (C) 5 mm
- (D) 1 mm

66. Mycobacteria are stained with \_\_\_\_\_

- (A) Gram's staining
- (B) Simple staining
- (C) Both a and b
- (D) Ziehl - Neelsen's staining

67. The technique involved in comparing the DNA components of two samples is known as

- (A) Monoclonal antibody techniques
- (B) Genetic finger printing
- (C) Recombinant DNA technology
- (D) Polymerase chain reaction

68. Nucleic acids are highly charged polymers due to

- (A) There is phosphodiester bond between 5'-hydroxyl of one ribose and 3'-hydroxyl of next ribose
- (B) They have positive and negative ends
- (C) Nucleotides are charged structures
- (D) Nitrogenous bases are highly ionized compounds

69. The most important function of a gene is to synthesize :

- (A) Enzymes
  - (B) Hormones
  - (C) RNA
  - (D) DNA
- (A) Proteins  
(B) RNA  
(C) DNA  
(D) Proteins and RNA

70. In which medium the hybridoma cells grow selectively?

- (A) Polyethylene glycol
- (B) Hypoxanthine aminopterin thymine
- (C) Hypoxanthine-guanine phosphoribosyl transferase
- (D) Both B and C

- Questions from math are not given