Code No. W-12

ENTRANCE EXAMINATION - 2020

M.Sc. Molecular Microbiology

Time: 2 hours Maximum Marks: 100

HALL TICKET NO.

INSTRUCTIONS

Please read carefully before answering the questions:

1. Write your Hall Ticket Number in the OMR Answer Sheet given to you. Also write the Hall Ticket Number in the space provided above.

2. There is negative marking. Each wrong answer carries -0.33 mark.

3. Answers are to be marked only on the **OMR answer sheet** following the instructions provided there upon.

4. Hand over the OMR answer sheet at the end of the examination to the Invigilator.

5. No additional sheets will be provided. Rough work can be done in the question paper itself/space provided at the end of the booklet.

6. The question paper contains **100** questions (**Part-A**: Question Nos. **1-25** and **Part-B**: Questions Nos. **26-100**) of multiple-choice printed in **19** pages, including this page. One OMR answer sheet is provided separately. **Please check.**

7. Each question carries one mark.

8. The marks obtained in **Part-A** will be used for resolving the tie cases.

9. Calculators and mobile phones are NOT allowed.

PART - A

1. Identify the **mismatch**

   A. Vector used in human genome project - Yeast artificial chromosomes
   B. Salt and sugar preserve foods - because they are hypertonic
   C. Luminescent bacteria emit light – because they have the enzyme luciferase
   D. Tuberculosis is a – Water borne disease

2. Second law of thermodynamics says "no operator can operate in such a way that its only effect is to convert heat absorbed by a system completely into ---------- "

   A. energy added to the system
   B. work done by the system
   C. work done on the system
   D. energy removed from the system

3. The following are some of the commonly used biochemical tests in microbiology. Identify the **mismatch** from the following:

   A. Nesslers reagent test – Ammonification - Nitrate broth
   B. Iodine reagent test - Starch hydrolysis – Starch agar
   C. Phenol red test – Acid production – Phenol red malate broth
   D. Rose indole test – Indole production – SIM agar

4. Identify the **correct** matches

   i. Colonies produced by *Pseudomonas* on Mac Conkey's medium – Green colored
   ii. Fried egg appearance colonies on solid media – Mycoplasmas
   iii. Mycoplasmas reproduce by – Budding
   iv. Bacterial endotoxins are localized in – Lipopolysaccharide of Gram-stain-negative bacteria

   A. i, ii B. iii, iv C. ii, iv D. ii, iii

5. The major reason that antiparallel β-stranded protein structures are more stable than parallel β-stranded structures are that the latter

   A. do not have as many disulfide crosslinks between adjacent strands
   B. do not stack in sheets as well as antiparallel strands
   C. have fewer lateral hydrogen bonds than antiparallel strands
   D. have weaker hydrogen bonds laterally between adjacent strands

6. One scientist has asked his research scholar to prepare 100 ml of GTE buffer containing 1% glucose, 25 mM Tris and 10 mM EDTA. He gave him glucose powder and stock solution of 1M Tris and 0.5 M EDTA. How much quantity/volume is required to prepare the required concentration of GTE buffer?

   A. 1 gm glucose powder, 5 ml of Tris and 2 ml of EDTA
   B. 1 gm glucose powder, 2.5 ml of Tris and 2 ml of EDTA
   C. 0.1 gm glucose powder, 2.5 ml of Tris and 2 ml of EDTA
   D. 0.1 gm glucose powder, 2.5 ml of Tris and 20 ml of EDTA

7. A mutant cell loses parts of the ends of its chromosome every time it replicates its DNA. You suspect that it has a defect in its:

   A. homologous recombination B. ligase C. gyrase D. telomerase

8. Which statement is **incorrect** about the SDS-PAGE technique?

   A. Separations are run on gel-covered plates
   B. Sodium dodecyl sulfate is used to denature the samples being separated
   C. It is a type of gel exclusion chromatographic method of separation
   D. It is used to separate native proteins

9. Presence of DNA-degrading enzymes in the extracellular medium, would prevent transfer of DNA by

   A. conjugal transfer by a self-transmissible plasmid
   B. generalized phage transduction
   C. natural transformation
   D. specialized transduction

10. An example of the oxidative deamination is

   A. glutamate = hexanoic acid + NH_3
   B. aspartate + α-ketoglutarate = glutamate + oxaloacetate
   C. glutamate = α-ketoglutarate + NH_3
   D. aspartate + hexanoic acid = glutamate + oxaloacetate

11. In ..... operation one or more components of mixture of liquid or solid phases are transferred to another liquid phase

   A. distillation B. extraction C. absorption D. adsorption

12. Raoult's law applies to .....

A. non – ideal solutions
B. ideal solutions
C. equilibrium mixture
D. any solution

13. Chaperones are concerned primarily with:

A. Post translational process
B. Degradation process
C. Denaturation state
D. Protein folding

14. Which of the following cells are epithelial cells located in the gastric gland?

A. Dendritic cells B. Parietal cells C. Goblet cells D. Chief cells

15. Identify the **correct** match

A. Mesosomes are the part of – Golgi apparatus
B. Enzyme hydrolyzing bacterial cell wall – Protease
C. The photorespiration involves – Glycolate cycle
D. Bioleaching is done by – Algae

16. Identify the **wrong** statement

A. Albumin is not a hemoprotein
B. Ciprofloxacin acts by inhibiting bacterial DNA gyrase
C. Zinc is required for the enzyme alcohol dehydrogenase
D. I cell disease is associated with mitochondria

17. The mode of nutrition of a parasitic protozoan is:

A. Archenozoic B. Parazoic C. Holozoic D. Mesozoic

18. Identify the **wrong** statement

A. The genus *Torula* is a common yeast which is often grown on wood liquor and is a good source of the amino acid, glutamic acid.
B. Botulism is the most common food borne disease caused by the spores of *Clostridium botulinum* which produce the neurotoxin botulinum.
C. Rancidity of stored foods is due to the activity of proteolytic microorganisms.
D. Virulence of the microorganisms can be reduced by attenuation.

19. Identify the **wrong** statement

A. WIDAL test is used for the detection of typhoid fever which detects agglutinating antibodies against the O and H antigens of *Salmonella typhi*.
B. *Corynebacterium diphtheriae* is the pathogenic bacterium that causes diphtheria. It is also known as the Klebs-Löffler *Bacillus*.
C. Acridine dyes are more effective against the obligate pathogens like *Mycoplasma*.
D. *Streptococcus pneumoniae* are non-motile, gram-stain-positive facultative anaerobic bacteria that belong to the phylum Firmicutes.

20. Identify the **wrong** statement

A. Cefepime is an antibiotic which acts by inhibiting cell wall synthesis.
B. Aminoglycosides are bacteriostatic.
C. Puromycin is a potential inhibitor of protein synthesis that acts as an analogue of aminoacyl-t-RNA.
D. Drug resistance in *Staphylococcus aureus* is most commonly acquired by transduction.

21. Which of the following statement(s) is/are **true** regarding *Agrobacterium*?

(i) *Agrobacterium tumefaciens* causes crown gall disease in monocotyledonous plants
(ii) *Agrobacterium rhizogenes* induces hairy root disease in dicotyledonous plants
(iii) Both *A. tumefaciens* and *A. rhizogenes* are Gram negative in nature
(iv) Both *A. tumefaciens* and *A. rhizogenes* uses vertical gene transfer to infect plants

A. (i) and (ii)
B. (ii) only
C. (ii) and (iii)
D. (iii) and (iv)

22. Which of the following **correctly** defines the primer?

A. Primers are the short sequences at the end of the nucleotide sequences which are used for amplification
B. Primers are the short sequences which are complementary to the nucleotides at the end of the sequence which is to be amplified
C. Primers are the short sequences present anywhere in the nucleotide sequence to be amplified
D. Primers are the short sequences which are complementary to the nucleotides anywhere in the sequence to be amplified

23. Match the following:

1. *Rhodobacter sphaeroides*	i. Bacteria cell wall
2. *Chlamydomonas*	ii. Fungi
3. Heterotroph	iii. Hydrogen sulphide
4. Murein	iv. Algae
5. Bacterial photosynthesis	v. Purple non-sulfur bacterium
	vi. Cyanobateria

A. 1-v, 2-iv, 3-ii, 4-i, 5-iii
B. 1-v, 2-iv, 3-vi, 4-i, 5-iii
C. 1-i, 2-iv, 3-ii, 4-v, 5-vi
D. 1-vi, 2-v, 3-i, 4-ii, 5-iii

24. Given below are the statements on primosomes and replisomes that are involved in prokaryotic DNA replication.

(i) Primosome is a helicase plus a DNA polymerase III
(ii) Replisome includes a primosome plus two copies of DNA polymerase III
(iii) Primosome opens the DNA and creates RNA primers on lagging strands
(iv) Replisome coordinates replication on both the leading and lagging strands at the Y-junction

Which of the above are **correct**?

A. (i), (ii) and (iii)
B. (ii), (iii) and (iv)
C. (i), (iii) and (iv)
D. (ii), (ii), (iii) and (iv)

25. Consider the following statements that describe the function of the eukaryotic promoter.

I. typically lies towards the 5' region of the gene
II. many eukaryotic genes have a conserved promoter sequence called the TATA box
III. it is the region of translational start site
IV. serves as sequence to which transcription apparatus binds

Which of the following statements related to the above are **correct**?

A. Statements I, II and III are correct
B. Statements I, II and IV are correct
C. Statements I, III and IV are correct
D. Statements II, III and IV are correct

PART - B

26. Uricotelic animals are those that excrete nitrogenous waste in the form of uric acid. Which among the following is a uricotelic organism?

A. Mammals B. Frogs C. Bony Fish D. Birds

27. When DNA is denatured, it:

A. becomes single-stranded
B. is precipitated in alcohol
C. is degraded into single nucleotides
D. becomes a gelatinous mass, just like cooked egg white

28. How many chiral carbon atoms are present in a glucose molecule?

A. 6 B. 8 C. 4 D. 12

29. What are the amino acids which are biosynthesized from oxaloacetate?

A. Asparagine, Methionine, Threonine, Lysine
B. Lysine, Serine, Methionine, Asparagine
C. Leucine, Isoleucine, Lysine, Arginine
D. Threonine, Valine, Isoleucine, Proline

30. A DNA stretch of length 25.68 kb (kilobase pair) is equivalent to ___ mb (megabase pair).

A. 2.568 B. 0.2568 C. 0.02568 D. 0.002568

31. What is the function of sieve cells and where are they located in the root system?

A. They are located in the xylem and function to transport water.
B. They are located in the xylem and function to transport organic compounds.
C. They are located in the phloem and function to transport water.
D. They are located in the phloem and function to transport organic compounds.

32. Given that the molecular weight of NaCl is 58.44, how many grams of NaCl is required to prepare a 0.3 M (Molar) solution?

A. 0.1753 B. 1.753 C. 17.53 D. 175.3

33. Vasa efferentia is the part of one of the most important human organs which arises from

A. Kidney B. Veins C. Ovary D. Testis

34. The process of translation requires the presence of:

A. mRNA, tRNA and ribosomes
B. mRNA, ribosomes and RNA polymerase
C. DNA, mRNA and RNA polymerase
D. free nucleotide bases, amino acids and ribosomes

35. Consider the following statements comparing the organization and composition of prokaryotic (*E. coli*) and eukaryotic (mouse) ribosomes.

(i) *E. coli* has 70S ribosomes made of 30S and 40S subunits
(ii) Mouse has 80S ribosomes made of 40S and 50S subunits
(iii) 16S rRNA is present in the smaller subunit of *E. coli* ribosome
(iv) 18S rRNA is present in the smaller subunit of mouse ribosome

Which of the following statements are **correct**?

A. (i) and (ii)
B. (ii) and (iii)
C. (iii) and (iv)
D. (i) and (iv)

36. The ratio of SDS to protein in SDS-PAGE

A. 1:01.4 B. 1.4:1 C. 1:4 D. 4:1

37. Effective chemotherapeutic agents are difficult to develop for the treatment of fungal infections because

A. Fungi have cell wall.
B. Fungi have better mechanisms to inactivate drugs.
C. Fungi are eukaryotic cells and their cellular machinery is similar to that of the host.
D. Fungal pathogens typically infect organs inaccessible for antibiotic treatment

38. The purity of an enzyme at various stages of purification is best measured by

A. Total protein
B. Total enzyme activity
C. Specific activity of the enzyme
D. Percent recovery of protein

39. Match the human syndrome given in Panel A with the chromosomal imbalance described in Panel B

Panel A	Panel B
I. Down's syndrome	a. caused by an extra chromosome of 18
II. Kleinfelter's syndrome	b. caused by an extra chromosome of 13
III. Patau's syndrome	c. caused by an extra chromosome of 21
IV. Edward's syndrome	d. caused by an extra X chromosome in males

A. I-b; II-d; III-a; IV-c
B. I-b; II-c; III-d; IV-a
C. I-c; II-d; III-b; IV-a
D. I-c; II-d; III-a; IV-b

40. A special voice box which is characteristic of birds and is located at the posterior end of the trachea and its junction with the bronchi for producing sound is called as:

A. Pygostyle B. Synsacrum C. Larynx D. Syrinx

41. The sex of a child is dictated by the inheritance of:

A. The number of X chromosomes from the mother
B. A single Y chromosome from the mother
C. A single Y chromosome from the father
D. Y chromosomes from the mother and father

42. Which of the following is not a dietary antioxidant?

A. Vitamin C B. Vitamin K C. Vitamin D D. Vitamin E

43. Lacteals are associated with

A. Lymphatic system B. Reproductive system
C. Endocrine system D. Nervous system

44. If a strand of a helix has 30% adenine, which of the following inferences is **true**?

A. The strand has 30% thymine B. The opposite strand has 60% adenine
C. The strand has 40% guanine D. The opposite strand has 30% thymine

45. In mice, the yellow coat color is always found in heterozygous condition as homozygosity for the allele determining yellow coat color causes lethality. A cross is made between two yellow coat colored mice which has yielded 2/3 progeny that are yellow coat color and 1/3 progeny that are normal coat color. This is the best example of

A. recessive lethal allele
B. dominant lethal allele
C. X-linked lethal allele
D. Y-linked lethal allele

46. Match the following:

1. Ramachandran plot	i. Purification
2. Protein sequence	ii. Pentose phosphate pathway
3. Dialysis	iii. Torsional angles
4. Enzyme	iv. Edman degradation
5. Ribose 5-phosphate	v. Substrate
	vi. Tertiary structure

A. 1-vi, 2-iv, 3-i, 4-iii, 5-ii
B. 1-iii, 2-vi, 3-v, 4-i, 5-iv
C. 1-iii, 2-iv, 3-i, 4-v, 5-ii
D. 1-vi, 2-iii, 3-iv, 4-i, 5-ii

47. The synthesis of glucose from lactate, glycerol, or amino acids is called:

A. Glycogenolysis
B. Glycolysis
C. Lipolysis
D. Gluconeogenesis

48. The cyclostomata is:

A. A class in vertebrata
B. Stomata having circular structure
C. Chloroplast with circular shape
D. Fish which emits light

49. The antiviral drug Vidarabine

A. is a nucleoside analogue inhibits the synthesis of viral DNA.
B. is an analogue of aminoacyl-tRNA, inhibits the protein synthesis.
C. binds to small ribosomal subunit (30S) and interferes with protein synthesis.
D. blocks the penetration and uncoating of virus particles.

50. Match the chemical mutagen (A) with their respective mode of action (B)

(A)	(B)
a. 5-bromouracil	(i) Adenine base analogue
b. Proflavin	(ii) Removes purine rings
c. 2-aminopurine	(iii) Thymine base analogue
d. Ethyl ethane sulfonate	(iv) Converts C to U and A to hypoxanthine
e. Nitrous acid	(v) Intercalates between base pairs

A. a(iii), b(v), c(i), d(ii), e(iv)
B. a(i), b(v), c(iv), d(iii), e(ii)
C. a(iii), b(ii), c(i), d(v), e(iv)
D. a(i), b(iv), c(iii), d(ii), e(v)

51. A and B genes are very tightly linked and no crossing occurs between these two loci. *Drosophila* fly of genotype Ab/aB is test crossed to ab/ab. What proportion of the progeny will be aaBb?

A. 25% B. 50% C. 75% D. 100%

52. The immunoglobulin that results in histamine release is

A. IgA B. IgD C. IgE D. IgM

53. Identify the target cell receptor for cholera toxin

A. Synaptic vesicle B. Capillary morphogenesis protein-2
C. CR3 Integrin D. Ganglioside

54. Higher plants are unable to fix dinitrogen because they do not have genes which encode

A. A membrane-limited nuclear compartment
B. Dinitrogenase enzyme complex
C. Glutamate synthase enzyme
D. Glutamine synthetase enzyme

55. When a boundary of a system does not permit the transport of matter between system and surroundings then the system is said to be.....

A. Open system B. Closed system C. Isothermal system D. Adiabatic system

56. Barbara Mcclintock first discovered transposable elements by experimentation with

A. *Drosophila melanogaster*
B. *Zea mays*
C. *Arabidopsis thaliana*
D. *Neurospora crassa*

57. The enzyme fumarate hydratase is a

A. Hydrolase
B. Lyase
C. Ligase
D. Oxidoreductase

58. The mechanism by which resistance to a virulent strain of plant pathogenic virus is conferred by prior exposure of plants to a less or inactive form of the virus is known as:

A. Incineration
B. Infestation
C. Cross protection
D. Crossing over

59. Which of the following statements is **true** about amino acids?

A. All protein forming amino acids are chiral except glycine
B. Threonine has three chiral centres (α-, β- and γ-carbons)
C. Only L-amino acids occur in living organisms
D. All amino acids have a pI-value except alanine

60. Chlorofluorocarbons pose a danger to the natural concentration of

A. Carbon dioxide
B. Oxygen
C. Nitrogen
D. Ozone

61. Some stereoisomers are mirror images of each other; they are called----

A. Diastereomers
B. Enantiomers
C. Cis-Trans isomers
D. Geometric isomers

62. Usually the two sugar molecules bind with glycosidic bond. What type of bond joins sugar molecules?

A. Ionic
B. Hydrogen
C. Van der Walls
D. Covalent

63. If the average molecular weight of one amino acid is 110 Daltons, the molecular weight of a peptide made up of 10 amino acids is expressed to be

A. 1100
B. 938
C. 920
D. 789

64. The peptide, Ala-Arg-Gln-Met-Thr-Trp-Lys-Val, was digested with cyanogen bromide to produce

A. Ala-Arg-Gln-Met + Thr-Trp-Lys-Val
B. Ala-Arg-Gln-Met-Thr-Trp + Lys-Val
C. Ala-Arg + Gln-Met-Thr-Trp-Lys-Val
D. Ala-Arg-Gln + Met-Thr-Trp-Lys-Val

65. A solution has a pH of 3.5. What is its pOH?

A. 13.5 B. 12.5 C. 11.5 D. 10.5

66. Consider the statements about sex determination in *Drosophila melanogaster* and choose the correct answer

I. The flies with sex chromosome complement XO and two sets of autosomes (AA) are sterile males
II. The flies with sex chromosome complement XXY and two sets of autosomes (AA) are fertile males
III. The flies with sex chromosome complement XY and two sets of autosomes (AA) are fertile males
IV. The files with sex chromosome complement XX and three sets of autosomes (AAA) are intersexes

A. Statements I, II and III are correct
B. Statements I, III and IV are correct
C. Statements II, III and IV are correct
D. Statements I, II and IV are correct

67. From the animal taxonomic studies, some of the examples/characteristics are listed is Column-A (L, M, N, O). Match its best combination with its corresponding phylum present in Column-B (1, 2, 3, 4, 5) and select the correct answer.

Column-A	**Column-B**
L. Sycon	1. Cnidaria
M. Aurelia	2. Echinodermata
N. Bioluminescence	3. Ctenophora
O. Octopus	4. Porifera
	5. Mollusca

A. L-4, M-1, N-3, O-5
B. L-1, M-2, N-3, O-4
C. L-5, M-4, N-1, O-2
D. L-3, M-4, N-1, O-2

68. A decrease in 2,4-D will cause

A. a decrease in cotyledon size
B. an increase in cotyledon size
C. an elongation of roots
D. a decrease in stem curvature

69. The insecticide Gammexane is

A. DDT
B. Chloral
C. Benzene hexachloride
D. Westrosol

70. The association between the aphid (*Schizaphis graminum*) and the γ-proteobacterium *Buchnera aphidicola* is a best example of

A. Mutualism
B. Commensalism
C. Parasitism
D. Competition

71. One of the following statements is followed by the saturated fatty acids

A. High melting points
B. Low melting points
C. Nonlinear chains
D. Weak attraction

72. What is the primary function of gall bladder in human digestive system?

A. Recovery of water and electrolytes
B. Neutralize the stomach acids contained in gastric chime
C. Production of bile
D. Stores and concentrates bile

73. G. W. Beadle and E. L. Tatum were awarded Nobel Prize for Physiology or Medicine in the year 1958 for demonstrating that all biochemical reactions were controlled by genes and that each gene was responsible for the synthesis of a specific enzyme. This Nobel Prize winning research work was based on the experiments carried out with

A. eye-color mutants of *Drosophila*
B. body-color mutants of *Drosophila*
C. auxotrophic mutants of *Neurospora*
D. auxotrophic mutants of yeast

74. In proteins, N-linked oligosaccharides are attached to:

A. Glutamine B. Arginine C. Lysine D. Asparagine

75. The following bacterium is well known for production of the enzyme coagulase which coagulates the fibrinogen in plasma. The clot protects the pathogen from phagocytosis and isolates it from other host defenses.

A. *Staphylococcus aureus*
B. *Pseudomonas aeruginosa*
C. *Streptococcus pneumoniae*
D. *Streptococcus pyogenes*

76. The IUPAC name of methyl cyanide is

A. Methyl-n-butyl amine
B. Methane nitrile
C. Cyano methane
D. Ethane nitrile

77. The stages of parasitic protozoa that actively feed and multiply are called as:

A. Hydrozoites B. Cysts C. Trophozoites D. Schizonts

78. In an antibody Fab fragment:

A. Is produced by pepsin treatment.
B. Is produced by pepsin treatment.
C. Binds antigen.
D. Lacks light chains.

79. Each cycle of β-oxidation produces

A. 1 FADH2, 1 NAD+, and 1 acetyl-CoA
B. 1 FADH2, 1 NADH and 1 acetyl-CoA
C. 1FADH2, 1 NADH and 2 CO_2 molecules
D. 1 FAD, 1 NAD+ and 2 CO_2 molecules

80. A man with heterozygous blood group A has children with a woman who has type AB Blood. Their children cannot be

A. Blood group AB
B. Blood group O
C. Blood group B
D. Blood group A

81. Which among the following is a non-proteinogenic toxic amino acid?

A. Arginine
B. Homocysteine
C. Canavanine
D. Hydroxyproline

82. A cross is carried out between genotypes Aa BB Cc dd Ee and Aa Bb cc DD Ee. How many genotypes of progeny are possible?

A. 36 B. 32 C. 18 D. 11

83. When benzene reacts with ozone to give a triozonide as an intermediate which on treatment with Zn/H_2O yields

A. Maleic acid B. Glyoxal C. Toluic acid D. Benzoic acid

84. When a leaf is dropped into a bucket of water, it floats on the top of the water. Which of the following properties of water could help explain what you observed?

A. It has a strong surface tension.
B. It can dissolve large quantities of solute.
C. It has a high specific heat.
D. It is hydrophobic.

85. Consider the following statements regarding structural genes.

I. They encode proteins that play a structural role in the cell
II. They encode proteins that interact with other DNA sequences
III. They contain sequences of DNA corresponding to the amino acids of a protein
IV. They encode rRNAs

Which of the statements given above are **correct**?

A. Statements I, II and III are correct
B. Statements I, III and IV are correct
C. Statements I, II and IV are correct
D. Statements II, III and IV are correct

86. Which of the following group of hormones are produced by pituitary gland posterior lobe?

A. TSH and Prolactin
B. Cortisone and Corticosterone
C. Progesteron and Estradiol
D. Vasopressin and Oxytocin

87. Which of the following will typically have a higher 260/280 ratio in a micro-volume UV-VIS spectrophotometer, if the length of fragment in each case is same?

A. AT-rich single stranded DNA
B. GC-rich single stranded DNA
C. Complimentary RNA obtained from AT-rich single stranded DNA given in option A
D. Complimentary RNA obtained from GC-rich single stranded DNA given in option B

88. Which of the following forms of DNA will migrate faster in agarose gel electrophoresis? The condition is the molecular weight of these forms of DNA is equal.

A. Nicked circular DNA
B. Single stranded DNA
C. Double stranded DNA
D. Supercoiled circular DNA

89. Kinase reactions

A. Inhibit disaccharide breakdown
B. Involve in the transfer of a phosphate group
C. Involve in the addition or removal of an amino acid to a polypeptide chain
D. Involve in the transfer of hydrogen atoms

90. In a biochemical reaction, an oxidizing agent gets reduced by undergoing one of the following changes of state:

A. Losing electrons
B. Gaining electrons
C. Neither losing nor gaining electrons
D. Undergoes no change

91. The human immunodeficiency virus (HIV) that causes acquired immune deficiency syndrome (AIDS) is a

A. Single-stranded DNA virus
B. Double-stranded DNA virus
C. Double-stranded RNA virus
D. Retrovirus

92. Which among the following is a polymer of hydroxy fatty acids?

A. Chitin
B. Cutin
C. Lignin
D. Pectin

93. The fovea of the eye

A. provides the highest and clearest vision
B. has the lowest sight threshold
C. is the condition of fungus infection in eye
D. contains only rod

94. Choose the correct answer for the given statements

Statement 1: *Azolla* is a small aquatic moss that harbours *Anabaena* in pockets within its leaves.
Statement 2: *Azolla* has proven useful as green manure in the rice paddy field.

A. Statement 1 is correct whereas statement 2 is false
B. Statement 2 is correct whereas statement 1 is false
C. Both statements are true
D. Both statements are false

95. Which of the following helps in getting a three-dimensional picture of the specimen?

A. Transmission Electron Microscope
B. Compound Microscope
C. Scanning Electron Microscope
D. Simple Microscope

96. Recently WHO has declared the COVID-19 as global pandemic. Which of the following information is **correct** regarding COVID-19?

A. Its genetic material is positive-sense single-strand RNA
B. Its genome size is appx. 30Mb
C. Its outermost covering is made up of phospholipid
D. It is popularly known as carnivorous

97. The Protein-Energy Malnutrition (PEM) observed in infants occurs due to simultaneous deficiencies of proteins as well as low energy-levels/calories and is known as:

A. Appendicitis
B. Gaucher's disease
C. Marasmus
D. Jaundice

98. If a DNA fragment is digested by restriction endonucleases in four sites giving rise to fragments of which three are of equal length, how many bands would be seen after electrophoresis?

A. 2 B. 3 C. 4 D. 5

99. Identify the **wrong** statement corresponding to Robert Hewrmann Koch findings

A. He has established a causative relationship between a microorganism and disease.
B. Microorganisms can be isolated and grown in pure culture from the diseased organism.
C. When reintroduced into a healthy organism should cause the disease and the same microorganism must be reisolated from the experimental host which must be identical to the original specific causative organism.
D. His discoveries helped in identifying the bacteria that cause anthrax, cholera, tuberculosis and salmonellosis.

100. With respect to their surrounding membrane systems, which is the **odd** one out?

A. Vacuole B. Chloroplast
C. Endoplasmic reticulum D. Peroxisome

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