

Hall Ticket Number

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Q.B. No.

100009

Booklet Code :

A

Marks : 100

DL-322-MCB

Time : 120 Minutes

Paper-II

Signature of the Candidate

Signature of the Invigilator

INSTRUCTIONS TO THE CANDIDATE

(Read the Instructions carefully before Answering)

1. Separate Optical Mark Reader (OMR) Answer Sheet is supplied to you along with Question Paper Booklet. Please read and follow the instructions on the OMR Answer Sheet for marking the responses and the required data.
2. The candidate should ensure that the **Booklet Code printed on OMR Answer Sheet and Booklet Code supplied are same.**
3. **Immediately on opening the Question Paper Booklet by tearing off the paper seal, please check for (i) The same booklet code (A/B/C/D) on each page. (ii) Serial Number of the questions (1-100), (iii) The number of pages and (iv) Correct Printing.** In case of any defect, please report to the invigilator and ask for replacement of booklet with same code within five minutes from the commencement of the test.
4. Electronic gadgets like Cell Phone, Calculator, Watches and Mathematical/Log Tables are not permitted into the examination hall.
5. **There will be 1/4 negative mark for every wrong answer.** However, if the response to the question is left blank without answering, there will be no penalty of negative mark for that question.
6. Record your answer on the OMR answer sheet by using Blue/Black ball point pen to darken the appropriate circles of (1), (2), (3) or (4) corresponding to the concerned question number in the OMR answer sheet. Darkening of more than one circle against any question automatically gets invalidated and will be treated as wrong answer.
7. Change of an answer is **NOT** allowed.
8. Rough work should be done only in the space provided in the Question Paper Booklet.
9. **Return the OMR Answer Sheet and Question Paper Booklet to the invigilator before leaving the examination hall.** Failure to return the OMR sheet and Question Paper Booklet is liable for criminal action.

This Booklet consists of 13 Pages for 100 Questions +2 page of Rough Work +1 Title Page i.e. Total 16 pages

1. Match the following :
- | | | |
|---|---|---|
| <p>I. Hansen
 II. Nicolaier
 III. Ogston
 IV. Fraenkel
 V. Loeffler</p> | <p>A.
 B.
 C.
 D.
 E.</p> | <p>B
 <i>Staphylococcus</i>
 <i>Pneumococcus</i>
 <i>Diphtheria bacillus</i>
 <i>Tetanus bacillus</i>
 <i>Leprosy bacillus</i></p> |
|---|---|---|
- (1) I-D; II-E; III-D; IV-C; V-A
 (2) I-E; II-D; III-A; IV-C; V-A
 (3) I-E; II-D; III-A; IV-B; V-C
 (4) I-E; II-B; III-C; IV-D; V-A
2. The mordant in capsule staining :
- (1) Iodine (2) Copper salts
 (3) Mercuric salts (4) Bile salts
3. The resolution obtainable with an electron microscope is in the range of :
- (1) 3 μ m (2) 0.3 μ m
 (3) 0.03 μ m (4) 0.003 μ m
4. A fermentation industry produces recombinant enzyme as its product using fast growing production strain having its generation time as 18 minutes. If the inoculum size is 1×10^4 per ml, what will be the population of production strain after four hours ?
- (1) 1×10^6 (2) 1×10^8
 (3) 1×10^{10} (4) 1×10^{12}
5. Spirochetes can be best viewed under :
- (1) Light microscope (2) Phase contrast microscope
 (3) Dark-field microscope (4) Interference microscope
6. Which of the following statements is NOT TRUE for bacterial endospores ?
- (1) Contains half of the genome from its mother cell
 (2) Contains calcium dipicolinate as its structural chemical
 (3) Highly dehydrated by loosing its water content
 (4) Produced after active growth due to starvation
7. Match each description on the right with the major category it best fits on the left :
- | | |
|-------------------------|--------------------|
| (I) _____ genetic | (A) Gram reaction |
| (II) _____ morphology | (B) Growth at 37°C |
| (III) _____ biochemical | (C) DNA probe |
| (IV) _____ nutritional | (D) Metabolism |
| (V) _____ cultural | (E) Simple medium |
- (1) I-B, II-D, III-C, IV-A, V-E (2) I-C, II-A, III-D, IV-E, V-B
 (3) I-C, II-D, III-E, IV-B, V-A (4) I-B, II-A, III-E, IV-C, V-D
8. To carryout studies on microbial population which growth phase is desirable ?
- (1) Lag Phase (2) Exponential Phase
 (3) Stationary Phase (4) Death Phase
9. The free energy ΔG° is positive then :
- (1) The reaction requires energy
 (2) The reaction releases energy
 (3) The reaction doesn't require energy
 (4) The reaction doesn't release energy
10. Self assembly in virus is assisted by :
- (1) Molecular chaperons (2) Proteases
 (3) DNA ligases (4) Restriction enzymes

11. The symmetry of human papilloma virus is :
- (1) Icosahedral (2) Helical
 (3) Binal (4) Both icosahedral and helical
12. Enzymes found in within the virions of specific viruses :
- (1) Lysozyme (2) Reverse transcriptase
 (3) Neuraminidase (4) All these
13. The genome replication strategy in Hepatitis B virus :
- (1) Single stranded RNA genome that replicates with DNA intermediate
 (2) Double stranded DNA genome that replicates with RNA intermediate
 (3) Single stranded RNA genome of plus sense
 (4) Double stranded RNA genome of minus sense
14. Match the following :
- | Animal viruses | Genome |
|---------------------------------|----------------------------------|
| I. Herpes | A. Double stranded DNA |
| II. Reovirus | B. Double stranded RNA genome |
| III. Poliovirus | C. Single stranded RNA '+' sense |
| IV. Rabies | D. Single stranded RNA '-' sense |
| V. Chicken anemia virus | E. Single stranded DNA |
| (1) I-A; II-B; III-C; IV-D; V-E | (2) I-A; II-C; III-B; IV-D; V-E |
| (3) I-A; II-D; III-B; IV-C; V-E | (4) I-A; II-E; III-B; IV-C; V-D |
15. Match the following :
- | Human cancer | Invasive virus |
|--------------------------------|---|
| I. Adult T-cell leukemia | A. Papilloma virus |
| II. Burkitt's lymphoma | B. Hepatitis B |
| III. Hepato cellular carcinoma | C. Epstein-Barr virus |
| IV. Cervical cancer | D. Human T-cell leukemia virus (type-I) |
| (1) I-C; II-D; III-A; IV-B | (2) I-C; II-D; III-B; IV-A |
| (3) I-D; II-C; III-B; IV-A | (4) I-D; II-C; III-A; IV-B |
16. The mechanism involved in the transfer of multiple drug resistance from one bacterium to another is :
- (1) Specialized transduction of a chromosomal gene for drug resistance
 (2) Transformation of chromosomal genes
 (3) Conjugation with a cell containing free R' plasmid
 (4) Transposition

17. The interphase of eukaryotic cell cycle comprises :
- (1) G_1 , S and G_2 (2) G_1 , M and G_2
 (3) G_0 only (4) G_0 , G_1 and G_2
18. Transition refers to :
- (1) Formation of pyrimidine dimers
 (2) Change of a pyrimidine nucleotide to pyrimidine adducts
 (3) Change of a pyrimidine nucleotide to a purine nucleotide
 (4) Change of a purine nucleotide to another purine nucleotide
19. Which histone is *not* the part of the nucleosome ?
- (1) H_1 (2) H_2A
 (3) H_2B (4) H_3
20. Histones are rich in amino acid residue :
- (1) Arginine (2) Tryptophan
 (3) Aspartic acid (4) Phenylalanine
21. "Xenoderma pigmentosum" sufferers are defective in :
- (1) Base excision repair (2) Nucleotide excision repair
 (3) Alkyle transferase (4) Photoreactivation
22. Match the following :
- | Group-A | Group-B |
|----------------------------------|---|
| I. Polynucleotide kinase | A. Adds nucleotides to the 3' strand of DNA |
| II. Exonuclease | B. Adds phosphate to 5' OH end of DNA |
| III. Alkaline phosphatase | C. Joins DNA fragments by formation of Phosphodiester bonds |
| IV. Terminal transferase | D. Removes successive nucleosides from ends of the linear DNA |
| V. DNA Ligase | E. Removes Phosphates from 5' end |
| (1) I-B; II- D; III-E; IV-A; V-C | (2) I-B; II-D; III-E; IV-C; V-A |
| (3) I-B; II-D; III-C; IV-E; V-A | (4) I-B; II-D; III-A; IV-E; V-C |
23. Expression vectors are usually :
- (1) pBR (2) pUC
 (3) YAC (4) BAC

24. In blue-white screening of recombinant bacteria the beta-galactosidase utilizes _____ substrate to produce blue colour.
- (1) Lactose (2) X-gal
(3) IPTG (4) Glucose
25. All of the following are involved in translation of proteins EXCEPT :
- (1) *r*-RNA (2) Si-RNA
(3) *t*-RNA (4) *m*-RNA
26. In a DNA sample the molar amount of G is 20% then the molar amount of T is :
- (1) 20% (2) 30%
(3) 40% (4) 60%
27. Integration of viral genome into bacterial genome is called as :
- (1) Transformation (2) Conjugation
(3) Transduction (4) Lysogeny
28. Which of the following statements regarding microarray is *incorrect* ?
- (1) Microarrays are used for measuring global gene expression
(2) Microarrays are slides on which DNA is spotted at high density
(3) Microarrays can be used for studying expression levels of all genes of an organism
(4) Microarrays can measure the level of proteins
29. The *trp* operon RNA usually forms the attenuator hairpin by :
- (1) Base pairing of sequences 3:4 (2) Base pairing of sequences 1:2
(3) Base pairing of sequences 2:3 (4) Base pairing of sequences 1:4
30. Which of the following is an anomeric pair ?
- (1) D-glucose and L-glucose (2) D-glucose and L-fructose
(3) α -D-glucose and β -D-glucose (4) D-glucose and D-fructose
31. Identify the one, which has strong bond energies :
- (1) Non-covalent hydrogen bond (2) O-H bond
(3) H-H bond (4) C-H bond
32. The free energy ΔG° released during hydrolysis of ATP \rightarrow ADP is :
- (1) $-8.3 \text{ kcal mol}^{-1}$ (2) $-7.3 \text{ kcal mol}^{-1}$
(3) $-6.3 \text{ kcal mol}^{-1}$ (4) $-7.0 \text{ kcal mol}^{-1}$

33. Match Column I with Column II, in relation to protein structure and level of organization :

Column I

Column II

- | | |
|------------------------------------|--|
| (a) Primary Structure | (i) Hydrogen - bonded arrangement of the polypeptide backbone |
| (b) Secondary Structure | (ii) The order of amino acid residues in the polypeptide chain |
| (c) Tertiary Structure | (iii) Sub-unit interactions - oligomers |
| (d) Quaternary Structure | (iv) 3-D arrangement of all atoms |
| (1) a-(i); b-(ii); c-(iii); d-(iv) | (2) a-(ii); b-(i); c-(iv); d-(iii) |
| (3) a-(iv); b-(ii); c-(i); d-(iii) | (4) a-(iii); b-(iv); c-(ii); d-(i) |
34. Which one among the following atoms does *not* give NMR signal ?
- | | |
|---------------------|---------------------|
| (1) ^{13}C | (2) ^{17}O |
| (3) ^{14}N | (4) ^{19}F |
35. Amino acids *cannot* be separated by :
- | | |
|---------------------------------|--------------------|
| (1) Paper electrophoresis | (2) TLC |
| (3) Ion-exchange Chromatography | (4) Gel filtration |
36. The following statement is *correct* about Michaelis-Menten kinetics :
- (1) K_m the Michaelis constant, is defined as the dissociation constant of the enzyme-substrate complex
 - (2) K_m the Michaelis constant, is a measure of the affinity the enzyme has for its substrate
 - (3) K_m the Michaelis constant, is expressed in terms of reaction velocity
 - (4) K_m the Michaelis constant, is defined as the concentration of substrate required for the reaction to reach maximum velocity
37. Separation of immunoglobulin G under reducing SDS-PAGE analysis gives _____ protein bands.
- (1) One
 - (2) Four
 - (3) Two
 - (4) Cannot be separated under reducing conditions
38. The ionization of proteins in MALDI - MS is achieved by :
- (1) Short pulse of short-wave UV light / radiation
 - (2) Short pulse of IR light / radiation
 - (3) Short pulse of LASER light / radiation
 - (4) Short pulse of ultra-sonic wave

39. Which one of the following is an antigen and NOT an immunogen ?
 (1) BSA (2) Ergosterol
 (3) Growth hormon (4) Egg albumin
40. Acute inflammation typically involves :
 (1) Influx of macrophages (2) Influx of mast cells
 (3) Influx of neutrophiles (4) Influx of basophiles
41. The most abundant immunoglobulin in saliva is :
 (1) Ig A (2) Ig E
 (3) Ig B (4) Ig D
42. The F_{ab} region of an Ig is responsible for :
 (1) Binding to antigens (2) Binding to Fc-receptors
 (3) Binding to Macrophases (4) Binding to Neutrophiles
43. Class II MHC proteins are found on the surface of :
 (1) B lymphocytes (2) Macrophages
 (3) Dendritic cells (4) T lymphocytes
44. The primary lymphoid organ responsible for B cell development in humans :
 (1) Bone marrow (2) Thymus
 (3) Thyroid (4) Skin
45. _____ is a pro-inflammatory cytokine.
 (1) 1L-4 (2) 1L-3
 (3) 1L-6 (4) 1L-10
46. Identify the selective medium for hybridoma cells :
 (1) TMAT medium (2) HAT medium
 (3) Nutrient Agar medium (4) DMEM medium
47. Tuberculin reaction is an example of :
 (1) Type I HS (2) Type III HS
 (3) Type IV HS (4) Type II HS
48. Match the following :
- | Autoimmune diseases
(A) | Affected Organs/areas
(B) |
|---------------------------------|---------------------------------|
| I. Myastenia grevis | A. Cartilage |
| II. Good Pasteur's Syndrome | B. Adrenal |
| III. Rhumatoid arthritis | C. Skeletal |
| IV. Hashimato disease | D. Kidney |
| V. Addisons disease | E. Thyroid |
| (1) I-A; II-B; III-D ;IV-E; V-C | (2) I-C; II-D; III-A; IV-E; V-B |
| (3) I-B; II-D; III-E; IV-A; V-C | (4) I-D; II-C; III-A; IV-E; V-B |

49. A fermentation industry produces Lactic acid as its main product using glucose syrup as substrate with 100% efficient production strain *Lactobacillus* sp. If it ferments 10 gram glucose into Lactic acid, what is the quantity of product produced and percentage of 'C' recovery ?
- (1) 20 g and 50% (2) 10 g and 100%
 (3) 10 g and 50% (4) 5 g and 50%
50. The following one is *not* the fermentation product :
- (1) CO₂ (2) O₂
 (3) Lactate (4) Ethanol
51. The following statement is NOT TRUE in the definition of fermentation process :
- (1) Alcohol is produced as end product
 (2) It uses organic compound as electron acceptor
 (3) It results in incomplete oxidation of organic substrates
 (4) Never requires an electron transport system
52. Antibiotics are usually produced in fed batch reactions. The reasons are :
- (A) The presence of precursors which are not useful to the cells
 (B) Gives higher yields when cells enter the stationary phase
 (C) Higher yields when cells enter the log phase
 (D) Higher yields when cells enter the lag phase
- (1) (A) and (B) (2) (A) and (C)
 (3) (A) and (D) (4) (B) and (D)
53. In practical industrial microbiological processes, there must be an efficient and economical mass-scale method available for _____ and _____ of the end product.
- (1) recovery, purification (2) isolation, preservation
 (3) preservation, disposal (4) development, labeling
54. Yield Coefficient means :
- (1) Conversion rate of a substrate into biomass or product
 (2) Production time of biomass or product
 (3) Produced total biomass or product
 (4) Conversion efficiency of a substrate into product
55. The *Penicillium camemberti* is used in the production of :
- (1) Soft ripened cheese (2) Soft unripened cheese
 (3) Semi-Soft ripened cheese (4) Hard ripened cheese

56. Single Cell Protein from *Pichia angusta* produced from :

- | | |
|--------------|--------------|
| (1) Molasses | (2) Methanol |
| (3) Whey | (4) Methane |

57. Match the following :

SCP production process	Substrate
I. BEL process	A. Potato processing waste
II. Symba process	B. Sulphite liquor
III. Pekilo process	C. Methanol
IV. Pruteen process	D. Whey
(1) I-D; II-A; III-C; IV-B	(2) I-D; II-B; III-C; IV-A
(3) I-D; II-A; III-B; IV-C	(4) I-D-II-C; III-B; IV-A

58. Match the following methods of sterilization for their application :

Methods of sterilization	Application
I. Hot air oven	A. Packed foods
II. Filtration	B. Glass ware
III. UV	C. Culture media
IV. Steam sterilizer	D. Bio-safety cabinet
V. Gamma radiation	E. Serum
(1) I-E; II-D; III-C; IV-A; V-B	(2) I-A; II-B; III-C; IV-D; V-E
(3) I-C; II-A; III-B; IV-E; V-D	(4) I-B; II-E; III-D; IV-C; V-A

59. Match each organism on the left with the phenomenon on the right with which it best corresponds in the context of canned food spoilage :

I. <i>Bacillus thermoacidurans</i>	A. Flat sour spoilage of corn
II. <i>Clostridium sporogenes</i>	B. Sulfide spoilage
III. <i>Bacillus stearothermophilus</i>	C. Flat sour spoilage of tomato juice
IV. <i>Penicillium spp</i>	D. Putrifactive anaerobe spoilage
V. <i>Clostridium nigrificans</i>	E. Surface growth and must odor
(1) I-C; II-E; III-B; IV-A; V-D	(2) I-B; II-D; III-E; IV-A; V-C
(3) I-C; II-D; III-A; IV-E; V-B	(4) I-B; II-D; III-E; IV-A; V-C

60. Pasteurization is a treatment of milk at :

- (1) High temperature treatment
- (2) Steaming treatment
- (3) Low temperature treatment
- (4) High and low temperature treatment

61. Common food poison microbes are :
- (1) *Salmonella* and *E.coli*
 - (2) *Streptococcus* and *Clostridium*
 - (3) *Salmonella* and *Clostridium*
 - (4) *E.coli* and *Clostridium*
62. TA spoilage of canned foods occurs at :
- (1) pH between 5.3 and 4.5
 - (2) pH between 4.5 and 3.7
 - (3) pH below 3.7
 - (4) pH above 5.3
63. The calcium binding protein present in *Rhizobium* and *Bradyrhizobium* :
- (1) Lectins
 - (2) Leg Haemoglobin
 - (3) Nitrogenase
 - (4) Rhicadhesin
64. In anoxic ammonia oxidation known as 'Anammox' phenomenon by microorganisms in anoxic waste water treatment plants supplemented with NO_3^- oxidizes ammonia to N_2 . Which of the following reactions correctly represents the phenomenon ?
- (1) $2\text{NH}_3 + \text{O}_2 + 2\text{H}^+ + 2\text{e}^- \rightarrow \text{NH}_3\text{OH} + \text{N}_2 + \text{H}_2\text{O}$
 - (2) $3\text{NH}_4^+ + 3\text{NO}_3^- \rightarrow 2\text{N}_2 + 4\text{NH}_3\text{OH} + 9\text{H}_2\text{O} + 2\text{H}^+$
 - (3) $5\text{NH}_4^+ + 3\text{NO}_3^- \rightarrow 4\text{N}_2 + 9\text{H}_2\text{O} + 2\text{H}^+$
 - (4) $5\text{NH}_4^+ + 3\text{NO}_3^- \rightarrow 8\text{N}_2 + 8\text{H}_2\text{O} + 2\text{H}^+$
65. In a Chemolithotrophic oxidation of ammonia to nitrate by nitrifying autotrophic bacteria, the oxidation state of nitrogen changes from _____ to _____
- (1) $0 \rightarrow +3$
 - (2) $+3 \rightarrow +5$
 - (3) $-3 \rightarrow +3$
 - (4) $-3 \rightarrow +5$
66. The autotrophic bacteria that reduces nitrates to free nitrogen :
- (1) *Nitrobacter*
 - (2) *Nitrosomonas*
 - (3) *Nitrosococcus*
 - (4) *Thiobacillus denitrificans*
67. The most effective pesticide is :
- (1) Organophosphates
 - (2) Carbonates
 - (3) Organochlorines
 - (4) Organonitrates
68. The upper region of trickling filters is favourable for the growth of :
- (1) Bacteria
 - (2) Fungi
 - (3) Protozoa
 - (4) Algae

69. The female urethra usually contains :
- | | |
|-------------------------|------------------------|
| (1) Gram positive cocci | (2) Gram positive rods |
| (3) Gram negative cocci | (4) Gram negative rods |
70. Match the following :
- | Diseases | Common causative agent |
|---------------------------------|---------------------------------|
| I. Tinea corporis | (a) <i>Microsporum</i> |
| II. Tinea capitis | (b) <i>T. rubrum</i> |
| III. Endothrix hair infection | (c) <i>T. violaceum</i> |
| IV. Favus | (d) <i>M. gypsum</i> |
| V. Tinea imbricate | (e) <i>T. concentricum</i> |
| (1) I-b; II-a; III-c; IV-d; V-e | (2) I-b; II-a; III-d; IV-c; V-e |
| (3) I-b; II-a; III-d; IV-c; V-e | (4) I-a; II-b; III-c; IV-e; V-d |
71. Anerobic Spirochetes are present in the following region of human body :
- | | |
|---------------------|-----------------|
| (1) Mouth and teeth | (2) Conjunctive |
| (3) Upper intestine | (4) Skin |
72. The following stain is an example for Romowsky stain :
- | | |
|------------------|---------------------------|
| (1) Giemsa stain | (2) Ziehl-Neelsen stain |
| (3) Gram stain | (4) Malachite-green stain |
73. Rheumatic fever is a follow-up disease caused by :
- | | |
|-----------------------------------|-------------------------------------|
| (1) <i>Streptococcus pyogenes</i> | (2) <i>Streptococcus pneumoniae</i> |
| (3) <i>Streptococcus aureus</i> | (4) <i>Streptococcus faecalis</i> |
74. The causative agent of Meningitis was discovered by :
- | | |
|---------------|------------------|
| (1) Ogston | (2) Weichselbaum |
| (3) Nicolaier | (4) Shiga |
75. The disease 'Typhus' is caused by :
- | | |
|----------------------------------|-----------------------------------|
| (1) <i>Rickettsia rickettsii</i> | (2) <i>Rickettsia prowazekii</i> |
| (3) <i>Ehrlichia</i> | (4) <i>Orientiatsutsugamuschi</i> |
76. A patient's throat swabbed sample is inoculated on to an agar medium, incubated and observed. Which of the following statements is NOT CORRECT ?
- | |
|--|
| (1) Colonies represent a mixed culture |
| (2) Colonies most likely represent several species |
| (3) Isolated colonies represent pure culture |
| (4) Entire growth is likely to be a pure culture |

77. The enzymes which destroys toxic oxygen are :
- (1) Catalase (2) Peroxidase
 (3) Superoxide dismutase (4) All the above
78. Chemooraganotrophs conserve energy from oxidation of organic compounds by :
- (1) Substrate level phosphorylation (2) Oxidative phosphorylation
 (3) (1) only (4) Both (1) & (2)
79. Match the following pairs based on their relatedness :
- (I) Reversetranscriptase (A) Breaking Peptidoglycan
 (II) Nuraminadase (B) Glycoproteins
 (III) Lysozyme (C) Transcribing RNA into DNA intermediate
 (IV) Viral envelope (D) Breakdown of connective tissue
- (1) I-B, II-A, III-D, IV-C (2) I-C, II D, III-A, IV-B
 (3) I-A, II-B, III-D, IV-C (4) I-B, II-D, III-C, IV-A
80. Segmented genomes are present in :
- A. Orthromyxovirus
 B. Influenza virus
 C. SV₄₀
 D. Reo virus
- (1) A and B (2) A and C
 (3) C and D (4) A and D
81. A variety of adducts that can block transcription and replication are formed by :
- (1) Arylating agents (2) X-rays
 (3) UV-rays (4) Nitrous oxide
82. The four branched 'holliday' structures are formed during :
- (1) Transposition (2) Homologous recombination
 (3) Site-specific recombination (4) Heterologous recombination
83. The inhibitor of prokaryotic transcription :
- (1) Erythromycin (2) Ciprofloxin
 (3) Rifampicin (4) Kanamycin
84. The most important discovery that led to the development of *r*-DNA technology was :
- (1) Double helix model of Watson and Crick
 (2) Discovery of restriction endonucleases
 (3) Discovery of ligase enzyme
 (4) Discovery of plasmids

85. An amino acid with side chain containing basic groups is :
- (1) 2-Amino Propanoic acid
 - (2) 2-Pyrrolidine Carboxylic acid
 - (3) 2-Amino 3-mercapto propanoic acid
 - (4) 2-Amino 5-guanidovaleric acid
86. In the electron transport chain, the prosthetic groups present in complex I: NADH dehydrogenase is :
- (1) Heme, Cu_A , FAD
 - (2) Fe-S, FMN
 - (3) Fe-S, FAD
 - (4) Fe-S, Heme, Cu_B
87. One of the following radio-isotopes is a γ -emitter :
- (1) ^{125}I
 - (2) ^{14}C
 - (3) 3H
 - (4) ^{32}P
88. A plasma cell secretes :
- (1) Antibody of single specificity related to that on the surface of parent B cell
 - (2) Different types of antibodies
 - (3) Lysozyme
 - (4) Antibody of two antigens specific
89. One of the following enzymes is not used as an enzyme probe in ELISA technique :
- (1) Alkaline Phosphatase
 - (2) Horse radish peroxides
 - (3) Trypsin
 - (4) Urease
90. The syphilis pathogen can be identified by using :
- (1) Flocculation
 - (2) Agglutination
 - (3) Neutralization
 - (4) Bactericidal test
91. The immune mechanism involved in delayed type hypersensitivity (Type IV) is :
- (1) IgE sensitization of mast cells
 - (2) IgG interaction with cell surface antigen
 - (3) IgG interaction with soluble antigens
 - (4) TH_1 Inflammatory cells

92. In continuous bioreactors :
- (1) Biomass, substrate and product concentrations do not change with time
 - (2) Biomass, substrate and product concentrations change with time
 - (3) Biomass, substrate and product concentrations change with pH
 - (4) Biomass, substrate and product concentrations do not change with pH
93. The enzyme used in the removal of O_2 from beer :
- (1) Acetolactase decarboxylase
 - (2) Amyloglucosidase
 - (3) Glucose oxidase/Catalase
 - (4) β Amylase
94. World Intellectual Property Day is :
- (1) January 26th
 - (2) May 26th
 - (3) June 26th
 - (4) April 26th
95. *Clostridium perfringens* poison is an :
- (1) Enterotoxin produced during vegetative stage
 - (2) Enterotoxin produced during sporulation
 - (3) Endotoxin produced during vegetative stage
 - (4) Endotoxin produced during sporulation
96. The concept of using microbes in cleaning up of environment is called :
- (1) Fermentation
 - (2) Bioremediation
 - (3) Biomining
 - (4) Bioaugmentation
97. *Azolla* is used as biofertilizer because it posses :
- (1) *Rhizobiumn*
 - (2) Cyanobacteria
 - (3) Myccorrhizae
 - (4) Large quantities of humus
98. AZT inhibits synthesis of single stranded viral _____ by the enzyme _____.
- (1) RNA, reversetranscriptase
 - (2) Invertase, DNA
 - (3) DNA, reversetranscriptase
 - (4) RNA, topoisomerase
99. The main distinguish of Legionellosis from other water-borne diseases :
- (1) It transmitted through drinking water
 - (2) It transmitted through sewage water
 - (3) It transmitted through aerosols
 - (4) It transmitted through contaminated food
100. The fatal neurodegenerative disorders are caused by the following agents :
- (1) Virions
 - (2) Prions
 - (3) Viriods
 - (4) D1 particles

Space for Rough Work

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