

M.Phil./Ph.D. ADMISSION TEST, 2017**Paper II****Subject 129 : MICROBIOLOGY**

Roll No. (In figures)(In words)

OMR Sheet Sr. No.

Signatures of Invigilators 1. 2.

Names of Invigilators 1. 2.

Time : 2½ Hours

Max. Marks : 300

GENERAL INSTRUCTIONS

- | | |
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| <p>1. Read the instructions given on the Question Booklet and OMR Sheet before starting the answers. All the entries should be filled by blue or black ball point pen.</p> <p>2. The Question Booklet contains 100 questions and all questions are compulsory.</p> <p>3. Each question is of 3 marks. For each wrong answer 1 mark will be deducted.</p> <p>4. Candidates must ensure that the Question Booklet issued to them has all the questions. Defective Question Booklet can be got changed within 10 minutes.</p> | <p>1. प्रश्नों के उत्तर लिखने से पूर्व प्रश्न-पुस्तिका और ओ.एम.आर. शीट पर दिये हुए निर्देश पढ़ें। सभी प्रविष्टियाँ नीले अथवा काले बॉल पॉइन्ट पेन से भरें।</p> <p>2. प्रश्न-पुस्तिका में 100 प्रश्न हैं और सभी प्रश्न अनिवार्य हैं।</p> <p>3. प्रत्येक प्रश्न 3 अंक का है। प्रत्येक गलत उत्तर के लिए 1 अंक काटा जायेगा।</p> <p>4. परीक्षार्थी सुनिश्चित कर लें कि उन्हें जो प्रश्न-पुस्तिका दी गई है उसमें सभी प्रश्न अंकित हैं। त्रुटिपूर्ण प्रश्न-पुस्तिका 10 मिनट की अवधि में बदलाई जा सकती है।</p> |
|---|---|

5. In case of any discrepancy between English and Hindi versions of a question, English version will be taken as correct, wherever there are both versions.
 6. Select and darken the circle corresponding to the answer (A) or (B) or (C) or (D) in OMR sheet.
 7. In case more than one circle is darkened in a question, it will not be evaluated.
 8. Do not make any stray marks on OMR sheet and do not fold it.
 9. Any candidate found removing pages from the Question Booklet will be disqualified and prosecuted.
 10. Use of unfair means will disqualify the candidate from the examination.
 11. Cell phone, calculator or any such devices are not allowed in the Examination Hall.
 12. No candidate is allowed to leave the seat before handing over the original OMR sheet to the invigilator. Candidate can take Question Booklet and Carbon copy of OMR sheet.
5. किसी प्रश्न के अंग्रेजी और हिन्दी रूपान्तरणों में भिन्नता होने की स्थिति में अंग्रेजी रूपान्तरण सही माना जायेगा जहाँ प्रश्न-पत्र दोनों भाषाओं में है।
 6. सही उत्तर का चयन करें तथा सम्बन्धित (A) अथवा (B) अथवा (C) अथवा (D) गोले को ओ.एम.आर. शीट में काला करें।
 7. किसी प्रश्न में एक से अधिक गोले को काला करने पर उसे जाँचा नहीं जायेगा।
 8. ओ.एम.आर. शीट पर किसी तरह का चिह्न न बनायें और न ही उसे मोड़ें।
 9. प्रश्न-पुस्तिका से पृष्ठ निकालते हुए पाये जाने पर परीक्षार्थी को अयोग्य घोषित किया जाएगा और उसके विरुद्ध विधिक कार्यवाही भी की जा सकती है।
 10. अनुचित साधनों का उपयोग करने पर परीक्षार्थी को परीक्षा के लिए अयोग्य घोषित कर दिया जायेगा।
 11. सेलफोन, संगणक और ऐसे किसी भी अन्य उपकरण को परीक्षा भवन में लाने की अनुमति नहीं होगी।
 12. ओ.एम.आर. शीट की मूल प्रति वीक्षक को सुपुर्द किये बिना किसी भी परीक्षार्थी को अपना स्थान छोड़ने की अनुमति नहीं है। परीक्षार्थी प्रश्न-पुस्तिका एवं ओ.एम.आर. शीट की कार्बन प्रति को अपने साथ ले जा सकेगा।

1. pH of a solution is defined by the expression :

- (A) $\text{pH} = \log [\text{H}^+]$
(B) $\text{pH} = \log \frac{1}{[\text{H}^+]}$
(C) $\text{pH} = \frac{1}{\log [\text{H}^+]}$
(D) $\text{pH} = - \log \frac{1}{[\text{H}^+]}$

2. Disaccharide molecules that contain $\beta(1 \rightarrow 4)$ glycosidic linkage are :

- (A) Lactose and cellobiose
(B) Maltose and isomaltose
(C) Sucrose and maltose
(D) Trehalose and lactose

3. Which one of the following is **not** correctly matched ?

- (A) Leucine : Hydrophobic amino acid
(B) Arginine : Basic amino acid
(C) Lysine : Non-essential amino acid
(D) Stearic acid : 18 C, saturated fatty acid

4. Match the metabolic pathway listed in **Column I** with characteristic enzyme listed in **Column II**. Select the correct option from the given codes.

Column I

Column II

- (a) Gluconeogenesis (i) 6-phosphogluconate dehydrogenase
(b) Pentose phosphate pathway (ii) Glucose 6-phosphatase
(c) Glycolysis (iii) $\alpha(1 \rightarrow 4)$ transglycosylase
(d) Glycogenolysis (iv) Phosphofructokinase

- (a) (b) (c) (d)
(A) (iv) (i) (ii) (iii)
(B) (ii) (i) (iv) (iii)
(C) (i) (ii) (iv) (iii)
(D) (ii) (i) (iii) (iv)

5. Which one of the following statements is **not** true for Archaea ?

- (A) They lack peptidoglycan in their cell wall
(B) Their cell membrane lipids have branched chain hydrocarbons attached to glycerol by ether linkage
(C) The initial amino acid in the polypeptide chains coded by A U G start codon is N-formylmethionine
(D) The T ψ C arm of archaeal t-RNA lacks thymine and contains pseudouridine or l-methylpseudouridine

6. Which of the following statements is **not** correct ?

- (A) Class-I MHC molecules are expressed by nearly all nucleated cells
(B) Class-II MHC molecules are expressed only by antigen presenting cells (APC)
(C) Helper-T cells express CD_4^+ receptors which can recognize antigens bound to Class-I MHC molecules
(D) In Man daily production of IgA is greater than that of any other immunoglobulin class

7. What is **true** about t-RNA?

- (A) It looks like 'Clover Leaf' in the three dimensional structure
(B) It has five complementary base paired regions
(C) It has a codon at one end which recognizes the anticodon present on m-RNA
(D) It binds with an activated amino acid at its 3'-end

8. Match the type of immunity listed in **Column-I** with examples listed in **Column-II**. Choose the answer which gives the correct combination of two columns.

Column - I

Column - II

- | | |
|------------------------|--|
| (a) Natural passive | (i) Immunity developed by heredity |
| (b) Natural active | (ii) From mother to fetus through placenta |
| (c) Artificial active | (iii) Injection of antiserum |
| (d) Artificial passive | (iv) Fighting infections naturally |
| | (v) Induced by vaccination |

- | | (a) | (b) | (c) | (d) |
|-----|-------|-------|------|-------|
| (A) | (ii) | (iv) | (v) | (iii) |
| (B) | (v) | (iii) | (iv) | (ii) |
| (C) | (iii) | (iv) | (ii) | (i) |
| (D) | (i) | (iv) | (v) | (iii) |

9. All of the following statements are correct **except** :

- (A) In competitive inhibition, substrate and inhibitor compete for the same active site of an enzyme.
- (B) Addition of large amount of substrate in a reaction can not overcome uncompetitive enzyme inhibition
- (C) A transition state analogue in enzyme catalyzed reaction increases the rate of product formation
- (D) Enzymes do not change the equilibrium constant (K_{eq}) of a chemical reaction.

10. An alga having chlorophyll-a and d, floridean starch as storage product and lacking flagella in vegetative and reproductive structures belongs to class :

- (A) Chlorophyceae
- (B) Rhodophyceae
- (C) Phalophyceae
- (D) Xanthophyceae

11. The heat sensitive components of microbial culture media are sterilized by :

- (A) Moist heat
- (B) Dry heat
- (C) Radiations
- (D) Membrane filtration

12. Blood agar medium is :

- (A) Enrichment medium
- (B) Enriched and differential medium
- (C) Enriched and selective medium
- (D) Enriched medium

13. Which one of the following is **not** correct match ?

- (A) Lophotrichous : Bacterium with one or more flagella at one or both ends
- (B) *Sarcina* : Cocci arranged in cubical packets of eight cells
- (C) *Streptococci* : Spherical cells arranged in grape-like clumps
- (D) *Clostridium* : Gram (+ve) bacteria

14. Which of the following is **not** true statement for endotoxins ?

- (A) Endotoxins are lipopolysaccharide in nature
- (B) These are weakly antigenic
- (C) These are heat labile
- (D) With few exceptions most of the endotoxins are present on Gram (-ve) bacteria

15. Match the microbes (Column I) with their industrial products (Column II) and select the correct option from the given codes.

Column - I

Column - II

- | | |
|------------------------------------|---|
| (a) <i>Aspergillus niger</i> | (i) Cyclosporin-A |
| (b) <i>Trichoderma polysporum</i> | (ii) Cholesterol lowering drug (statin) |
| (c) <i>Monascus purpureus</i> | (iii) Citric acid |
| (d) <i>Streptomyces Venezuelae</i> | (iv) Chloramphenicol |
| | (v) Streptomycin |

(a) (b) (c) (d)

- (A) (iii) (i) (ii) (iv)
 (B) (i) (ii) (iii) (v)
 (C) (ii) (iv) (i) (v)
 (D) (iv) (iii) (ii) (i)

16. Which one of the following statements regarding the mycoplasmas is **not** correct ?

- (A) They are pleomorphic and lack cell wall
 (B) Most species in culture form colonies that gives 'fried egg' appearance
 (C) They are penicillin resistant but susceptible to lysis by osmotic shock and detergent treatment
 (D) They have high G + C ratio and capable of self reproduction

17. In which group of fungi sexual reproduction culminates in the formation of eight spores inside a sac-like structure ?

- (A) Ascomycotina
 (B) Mastigomycotina
 (C) Basidiomycotina
 (D) Zygomycotina

18. In Basidiomycotina, the cells of primary mycelium are :

- (A) Monokaryotic
 (B) Dikaryotic
 (C) Diploid
 (D) Heterokaryotic

19. Pyruvate dehydrogenase is a multienzyme complex which catalyze formation of acetyl - CoA from pyruvate. Which one of the following enzymes is **not** a part of pyruvate dehydrogenase complex ?

- (A) Pyruvate dehydrogenase
 (B) Dihydrolipoyl dehydrogenase
 (C) Dihydrolipoyl oxidase
 (D) Dihydrolipoyl transacetylase

20. Which one of the following is not secondary lymphoid organ ?

- (A) Spleen
 (B) Tonsils
 (C) Thymus
 (D) Mucosal-Associated Lymphoid Tissue (MALT)

21. Match the types of cells given in Column I with their functions to maintain immunity in the body and select the correct code.

Column I

Column II

- | | |
|------------------------|---|
| (a) Helper - T cells | (i) Cells that are active in production of antibodies |
| (b) Plasma cells | (ii) Enhance the activity of cytotoxic-T cells |
| (c) Killer-T cells | (iii) Inhibit function of cytotoxic-T cells |
| (d) Suppressor-T cells | (iv) Secrete perforins |

(a) (b) (c) (d)

- (A) (iii) (i) (ii) (iv)
 (B) (ii) (i) (iv) (iii)
 (C) (iv) (ii) (i) (iii)
 (D) (i) (iv) (iii) (ii)

22. How many ATP molecules are produced by oxidation of polmitoyl-CoA via β -oxidation? (One NADH molecule yields 3 ATP and one $FADH_2$ yields 2 ATP)

- (A) 131 molecules
- (B) 129 molecules
- (C) 91 molecules
- (D) 155 molecules

23. Which one of the following is **not** correct statement for respective immunoglobulin types?

- (A) IgG is the most abundant class of immunoglobulin in blood and lymph
- (B) IgA is predominant immunoglobulin class in external secretions
- (C) IgG is the first immunoglobulin class to be synthesized by the fetus
- (D) IgM is a pentameric immunoglobulin, the subunits are joined by J-chain

24. Which of the following statements with respect to the orientation of nitrogenous bases to the pentose sugars is correct?

- (A) *Anti* for pyrimidines and *syn* for purines in A-DNA
- (B) *Syn* for both pyrimidines and purines in B-DNA
- (C) *Syn* for pyrimidines and *anti* for purines in Z-DNA
- (D) *Anti* for both pyrimidines and purines in B-DNA

25. Which one of the following statements is **not** correct?

- (A) The rotation angle around the $N-C_\alpha$ bond of a peptide group is designated ψ (psi) and that around $C_\alpha-C$ bond is called ϕ (phi)
- (B) The hydrogen bonds that stabilize the α -helix are nearly parallel to the polypeptide axis
- (C) Fibrous proteins usually have repeating secondary structures
- (D) Proline is the least common residue in an α -helix

26. Non-specific immunity is provided by:

- (A) Interferons
- (B) Natural killer cells
- (C) Compliment proteins
- (D) All of the above

27. Match the name of scientists (**Column I**) with their discoveries (**Column II**) and select correct option:

Column I	Column II
(a) T.O. Diener	(i) Prions
(b) G. Kohler and C. Milstein	(ii) Ribozymes
(c) Stanley B. Prusiner	(iii) Viroids
(d) T. Cech and S. Altman	(iv) Large scale production of monoclonal antibodies
	(v) Z-DNA
	(a) (b) (c) (d)
(A)	(i) (iv) (iii) (v)
(B)	(iii) (iv) (i) (ii)
(C)	(ii) (iv) (v) (i)
(D)	(v) (ii) (iii) (iv)

28. Entry of the enveloped viruses into its host cells is mediated by:

- (A) Only endocytosis
- (B) Endocytosis and fusion of viral envelope with the host cell membrane
- (C) Only phagocytosis
- (D) Endocytosis and phagocytosis

29. Circular, single stranded DNA genome is present in :
- (A) λ -phage
 (B) T Coliphages
 (C) T₄ phage
 (D) M₁₃ phage
30. Find out the *mismatched* pair :
- (A) Calvin cycle pathway of C₄ plants occur in → Mesophyll cells
 (B) Primary CO₂ fixation product of C₄ plants → Oxaloacetic acid
 (C) Primary CO₂ acceptor of C₃ plants → Ribulose 1,5-biphosphate
 (D) Phycobilins, accessory pigments are present in → Red algae and cyanobacteria
31. Which one of the following is not correct match between the nature of genetic material and type of viruses ?
- (A) Linear, single stranded DNA : Parvoviruses
 (B) Linear, double stranded RNA : Adenoviruses
 (C) Linear, single (+) stranded RNA : Retroviruses
 (D) Linear, double stranded DNA : Herpesviruses
32. Photosynthetic bacteria using inorganic electron donor for reduction of CO₂ are called :
- (A) Chemolithoautotrophs
 (B) Photolithoautotrophs
 (C) Mixotrophs
 (D) Photoorganoheterotrophs
33. All of the following are live attenuated vaccines except :
- (A) Diphtheria vaccine
 (B) BCG vaccine
 (C) Rubella vaccine
 (D) Mumps vaccine
34. In E. Coli the main replicating enzyme is :
- (A) DNA Pol I
 (B) DNA Pol II
 (C) DNA Pol III
 (D) DNA Pol IV
35. The two amino acids coded by a single codon are :
- (A) Methionine and Lysine
 (B) Methionine and Glycine
 (C) Methionine and Threonine
 (D) Methionine and Tryptophan
36. In Prokaryotes, the lagging strand primers are removed by :
- (A) 3' to 5' exonuclease
 (B) DNA ligase
 (C) DNA Polymerase I
 (D) DNA Polymerase III
37. The DNA-binding protein that initiates the transcription of bacterial genes is called :
- (A) Operator
 (B) Promoter
 (C) Repressor
 (D) Sigma factor

38. Which of the following is not a secondary messenger ?
- (A) CAMP
(B) Inositol triphosphate
(C) Diacyl glycerol
(D) None of the above
39. The cheese produced by the growth of *Penicillium* Species in milk is called :
- (A) Red Cheese
(B) Cottage Cheese
(C) Blue Cheese
(D) Processed Cheese
40. *Clostridium perfringens* poison is an :
- (A) Exotoxin
(B) Endotoxin
(C) Enterotoxin produced during sporulation
(D) Enterotoxin produced during vegetative phase
41. Aflatoxin is produced by :
- (A) *Aspergillus* species
(B) *Salmonella* species
(C) *Fusarium* species
(D) Streptococcal species
42. The by-product during Streptomycin production is :
- (A) Vitamin A
(B) Proline
(C) Vitamin B₁₂
(D) Vitamin K
43. The major carrier of Salmonellosis are :
- (A) Meat and eggs
(B) Meat and fish
(C) Eggs and fish
(D) Eggs and fruits
44. Which of the following is called 'Brewer's yeast' ?
- (A) *Saccharomyces ludwigi*
(B) *Saccharomyces cerevisiae*
(C) *Saccharomyces boulardii*
(D) *Saccharomyces pastorianus*
45. Fumaric acid is obtained from :
- (A) *Saccharomyces cerevisiae*
(B) *Aspergillus niger*
(C) *Rhizopus* species
(D) *Penicillium* species
46. Batch fermentation is also called :
- (A) Closed system
(B) Open system
(C) Fed-batch system
(D) Sub-merger system
47. Which of the following is an Antifoam agent ?
- (A) Silicon compounds
(B) Glycols
(C) Insoluble oils
(D) All of the above

48. The purification and recovery of biosynthetic product after fermentation is called :
- (A) Upstream process
 - (B) Downstream process
 - (C) Surface fermentation
 - (D) None of the above
49. The part of a fermenter used for agitation is :
- (A) Shaft
 - (B) Impeller
 - (C) Headspace
 - (D) Sparger
50. Citric acid in food is used as :
- (A) As flavouring agent
 - (B) As an antioxidant
 - (C) As preservative
 - (D) All the above
51. The microorganism used for Amylase Production is :
- (A) Bacillus
 - (B) Saccharomyces
 - (C) Aspergillus
 - (D) Penicillium
52. The medium used to differentiate bacteria on the basis of lactose fermentation is :
- (A) Mac Conkey's medium
 - (B) Sugar medium
 - (C) Citrate medium
 - (D) Stuart's medium
53. Virion means :
- (A) Infectious Virus Particle
 - (B) Non-Infectious Virus Particle
 - (C) Incomplete Virus Particle
 - (D) Defective Virus Particle
54. In prokaryotes, _____ inhibits transcription by binding to the beta sub-unit of RNA polymerase.
- (A) α - amanitin
 - (B) Actinomycin D
 - (C) Rifamycin SV
 - (D) Puromycin
55. Wobble hypothesis refers to the less stringent base pairing specificity of the :
- (A) 5' end base of the codon
 - (B) 3' end base of the anticodon
 - (C) Middle base of the anticodon
 - (D) 5' end base of the anticodon
56. Salt and Sugar preserve food because they :
- (A) Make them acidic
 - (B) Produce a hypotonic environment
 - (C) Deplete nutrients
 - (D) Produce a hypertonic environment
57. Reduction of virulence is known as :
- (A) Exaltation
 - (B) Attenuation
 - (C) Both (A) and (B)
 - (D) None of these

58. Dengue fever is caused by :
- Bacteria
 - Fungi
 - Virus
 - Rickettsia
59. Confirmatory test for AIDS is :
- ELISA test
 - Western blotting test
 - Karpas test
 - Widal test
60. In E.Coli _____ is recognized by Release Factor-I (RF-I)
- UAA only
 - UGA only
 - UGA and UAA
 - UAG and UAA
61. Chocolate agar, a pure enriched medium is used for culturing ?
- Aerobic bacteria
 - Anaerobic bacteria
 - Pathogenic bacteria
 - Fungi
62. Both *Mycobacterium tuberculosis* and *Streptococcus pneumoniae* :
- Are acquired by inhalation
 - Have high content of mycolic acids in cell walls
 - Have polysaccharide capsules
 - Stay in lungs and rarely enter the blood stream
63. _____ would not contribute to genetic variation within a bacterial population.
- Mutation
 - Meiosis
 - Transduction
 - Transformation
64. In lac operon, catabolite activator protein acts as :
- Inducer
 - Apo-repressor
 - Co-repressor
 - Apo-inducer
65. _____ results in no change in protein produced :
- Mis-sense mutation
 - Non-sense mutation
 - Silent mutation
 - Frameshift mutation
66. Ames test is a mass screening approach used for detection of :
- Toxins
 - Mutagenic Carcinogens
 - Lactose intolerance
 - Phenylketonuria
67. Airborne viral infection spreads through :
- Soils
 - Rain
 - Water
 - Aerosols

68. Micro flora of soils contain :
- Macroorganisms
 - Earthworms
 - Bacteria and Fungi
 - None of above
69. Symbiotic nitrogen fixing bacteria is :
- Rhizobium
 - Azotobacter
 - Cyanobacteria
 - Clostridium
70. The primary enzyme encoded by the 'nif' genes is :
- nitrogenase
 - protease
 - transaminase
 - lipase
71. If waste materials contaminated the source of drinking water, which of the following disease will spread ?
- Malaria
 - Typhoid
 - Scurvey
 - Anaemia
72. Used as bio-fertilizer :
- Urea
 - Ammonium nitrate
 - Diammonium phosphate
 - Azotobacter
73. Which one of the following is not biodegradable ?
- Vegetables
 - Aluminium foil
 - fruits
 - Scorpion
74. Eutrophication is :
- Over abundance of nutrients in lakes and streams.
 - Over abundance of nutrients in soils
 - Micronutrients found in water
 - Macronutrients observed in river
75. SCP is :
- Edible fruits
 - Edible macroorganisms
 - Edible unicellular microorganisms
 - None of above
76. What is Bioremediation ?
- The use of microbes to detoxify or degrade pollutants in environment
 - The use of organisms for eliminating mutagens
 - The use of microbes for upgrading toxic elements in atmosphere
 - None of above
77. Hydrogen Sulphide can be used as energy source by :
- Staphylococcus
 - Thiobacillus
 - Nitrobacter
 - Nitrosomonas

78. Which of the following is not a measure of central tendency ?
- (A) Mean
 - (B) Median
 - (C) Range
 - (D) Average
79. A circle divided into sectors proportional to the frequency of items shown is called :
- (A) Bar chart
 - (B) Pie chart
 - (C) Histogram
 - (D) Frequency polygon
80. If a series of values consists of 21 numbers, then for finding the median, we ordered the series ascending and we use :
- (A) The mean between the 10th and 11th values.
 - (B) The mean between 11th and 12th values.
 - (C) The 10th value in the ordered series.
 - (D) The 11th value in the ordered series.
81. Null hypothesis expressed as :
- (A) there is no relationship between two quantities
 - (B) there is relationship between two values
 - (C) there is relationship between two observed phenomenon
 - (D) none of the above
82. ANOVA is a :
- (A) method used for statistical analysis.
 - (B) statistical method used to test differences between two or more means.
 - (C) biostatistical method used for evaluation of data.
 - (D) none of the above
83. Chi square (χ^2) test :
- (A) measures the degree of deviation of the experimental result from the expected result.
 - (B) measures the observed frequency.
 - (C) measures the degree of deviation of data.
 - (D) measures the deviation of numerical data.
84. The median of a series of numerical value is :
- (A) the value located exactly midway between the minimum and maximum of the series.
 - (B) the most commonly encountered values among the series.
 - (C) a value for which half of the values are higher and half of the values are lower.
 - (D) none of the above
85. Applications of software include such things as :
- (A) database programs, word processors, web browsers and spread sheets.
 - (B) database programs, web browsers and spread sheets.
 - (C) File managing system.
 - (D) None of above

86. Analysing entire genome of species is :

- (A) bioinformatics
- (B) genomics
- (C) proteomics
- (D) pharmacogenomics

87. Characterizing molecular component is :

- (A) genomics
- (B) cheminformatics
- (C) gene library
- (D) bioinformatics

88. A single piece of information in a database is called :

- (A) file
- (B) field
- (C) record
- (D) data set

89. Operating system is :

- (A) a collection of hardware components
- (B) a collection of input-output device
- (C) a collection of software routines
- (D) none of the above

90. BLAST programme is used in :

- (A) DNA sequencing
- (B) amino acid sequencing
- (C) DNA bar coding
- (D) Bioinformatics

91. The identification of drugs through genomic study :

- (A) genomics
- (B) cheminformatics
- (C) pharmagenomics
- (D) pharmacogenetics

92. A data base of current sequence map of the human genome is called :

- (A) HGP
- (B) Gene Cards
- (C) Goldenpath
- (D) none of the above

93. Kind of electron microscope which is used to study internal structure of cells is :

- (A) scanning electron microscope
- (B) transmission electron microscope
- (C) light microscope
- (D) compound microscope

94. A DNA library is :

- (A) a general collection of all genes sequenced so far.
- (B) a collection of DNA fragments that make up the entire genome of a particular organism.
- (C) a DNA fragment inserted into vector.
- (D) all DNA fragments identified with a probe.

95. Radioactivity is measured by :

- (A) Gieger-Muller counter
- (B) Polarimeter
- (C) Calorimeter
- (D) Spectrophotometer

96. The enzyme used in the polymerase chain reaction is :

- (A) restriction endonuclease
- (B) reverse transcriptase
- (C) DNA polymerase
- (D) RNA polymerase

97. A method used to distinguish DNA of one individual from another is :

- (A) polymerase chain reaction
- (B) c-DNA
- (C) reverse transcriptase
- (D) restriction fragment length polymorphisms

98. ELISA :

- (A) Enzyme-linked Immunosorbent Assay
- (B) Enzyme-linked Immune Assay
- (C) Enzyme-linked serum Assay
- (D) none of the above

99. Lambert-Beer's Law is the :

- (A) relationship between absorbance and quantity of substance.
- (B) relationship between light and volume of substance to be tested.
- (C) Linear relationship between absorbance and concentration of an absorbing species.
- (D) none of the above

100. Gram's Method of staining is used to distinguish and classify :

- (A) Fungal species
- (B) Protozoan species
- (C) Virus
- (D) Bacterial species

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