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ICMR-BRET-JRF 2019 QUESTION PAPER

1. The current geological age in which human activity is a major driver of climate and environment change is called:
   (a) Anthropocene
   (b) Holocene
   (c) Pilocene
   (d) Paleogene

2. Gerontology is the study of:
   (a) Old age
   (b) Planets
   (c) Rainfall
   (d) Soil

3. The laws of planetary motion were proposed by:
   (a) Kepler
   (b) Newton
   (c) Galileo
   (d) Bessel

4. Which of the following remains a liquid at room temperature?
   (a) Chlorine
   (b) Bromine
   (c) Phosphorus
   (d) Nitrogen

5. Upon emission of a positron by radioisotope, the atomic number of the daughter atom:
   (a) Increases by 1
   (b) Increases by 2
   (c) Decreases by 1
   (d) Decreases by 2

6. The Nobel Prize was given for the first time in the year:
   (a) 1900
   (b) 1901
   (c) 1911
   (d) 1921

7. Who invented the periodic table?
   (a) Anton van Leuwenhoek
   (b) CS Chandrasekhar
   (c) Dmitri Mendeleev
   (d) Alfred Noble

8. Who is known as the father of nuclear physics?
   (a) Ernest Rutherford
   (b) Niels Bohr
   (c) John Dalton
   (d) Robert Boyle

9. Grass appears green because it:
   (a) Reflects green color
   (b) Absorbs green color
   (c) Reflects white color
   (d) Absorbs white color

10. A molecule absorbs light of a particular wavelength and continues to emit the light of higher wavelength for a substantial time after excitation. The phenomena is called:
    (a) Phosphorescence
    (b) Fluorescence
    (c) Chemiluminescence

(d) Cerenkov radiation

11. Air bags used for the safety of car drivers contain:
    (a) Sodium carbonate
    (b) Sodium azide
    (c) Magnesium Chloride
    (d) Sodium nitrite

12. The loudness of a sound wave is determined by its:
    (a) Frequency
    (b) Wavelength
    (c) Velocity
    (d) Amplitude

13. Red light is used for signals because it has:
    (a) High frequency
    (b) Long wavelength
    (c) High intensity
    (d) Low refraction

14. Venturi meter is used to measure:
    (a) Fluid pressure
    (b) Fluid speed
    (c) Fluid density
    (d) Fluid temperature

15. Regarding Dmitri Ivanovsky, pick the **INCORRECT** sentence:
    (a) A Russian botanist has been credited as one of the first discoverers of the structure of viruses on Electron microscopy.
    (b) He investigated a tobacco plant disease which was transmissible and caused an agent extremely small, such that it could pass through Chamber land filters.
    (c) He gave the concept of 'Contagium fixium'; i. e., the viruses are particulate.
    (d) Ivanovsky's work on the yellow pigment of plant leaves showed that these protected chlorophyll from the detrimental effect of blue and violet light.

16. What is the biological polymer in paper?
    (a) Starch
    (b) Cellulose
    (c) Graphite
    (d) Polystyrene

17. What is the chemical used to make toothpaste white?
    (a) Titanium dioxide
    (b) Charcoal
    (c) Calcium chloride
    (d) Calcium carbonate

18. Which metal is generally used in the making of microchips?
    (a) Vanadium
    (b) Boron
    (c) Platinum
    (d) Silicon

19. What is known as the God particle?
    (a) Deutron
    (b) Proton
    (c) Higgs Boson
    (d) Neutron

20. Which one of the following metals pollutes the air of a city having a large number of automobiles?

(a) Cadmium
(b) Chromium
(c) Lead
(d) Copper

21. Which of the following is **NOT** a mixture?
(a) Glass
(b) Graphite
(c) Steel
(d) Aluminium

22. The axis of earth's rotation relative to orbital plane is tilted by:
(a) 22.5 degrees
(b) 23.5 degrees
(c) 24.5 degrees
(d) 25.5 degrees

23. Tsunamis are usually caused by:
(a) Tides
(b) Overfishing
(c) Underwater earthquakes
(d) Nuclear explosions

24. The Kalka Shimla railway is an example of:
(a) Broad gauge railway
(b) Meter gauge railway
(c) Narrow gauge railway
(d) Monorail

25. Heavy floods in Kerala this year led to the outbreak of which of the following diseases?
(a) Leptospirosis
(b) Typhoid
(c) Yellow fever
(d) Influenza

26. Where was India's first specialized hospital for elephants unveiled on 17th November 2018?
(a) Coimbatore, Tamil Nadu.
(b) Wyanad, Kerala.
(c) Mathura, Uttar Pradesh.
(d) Coorg, Karnataka.

27. Who performed the world's first heart transplant?
(a) Dr. Venugopal
(b) William Harvey
(c) Christian Bernard
(d) Robert Koch

28. Our National science Day is celebrated on February 28 to honour which scientist's discovery?
(a) Sir C V Raman
(b) Homi J Bhaba
(c) APJ Abdul Kalam
(d) Jagdish Chander Bos

29. Recently in Kerala, which highly infectious virus caused an outbreak?
(a) Japanese encephalitis virus
(b) Nipah virus
(c) Ebola virus
(d) Zika virus

30. How many megabytes (MB) are there in one gigabyte (GB):

(a) 1000
(b) 2000
(c) 220
(d) 1024

31. RAM in computers usually stands for:
(a) Remove All Memory
(b) Read and memorize
(c) Random access memory
(d) Roast all mice

32. The most appropriate yardstick for measuring comparative scatteredness in different sets of data is:
(a) Arithmetic mean
(b) Mean deviation
(c) Variance
(d) Coefficient of variation

33. In a group of 400 students, 120 are males. 30% of the males are vegetarians, whereas 76 females are non-vegetarians what is the probability that a randomly chosen student from the group is vegetarian?
(a) 0.72
(b) 0.60
(c) 0.48
(d) 0.30

34. In a single throw of two dice, what is the probability of getting a sum of 8 or 11?
(a) 1/36
(b) 3/36
(c) 5/36
(d) 7/36

35. For studying association between two attributes, the most appropriate test procedure is:
(a) X_2 test
(b) F-test
(c) t-test
(d) Z-test

36. In testing significance of hypotheses:
(a) Type-1 error has always more serious repercussions than Type-2 error.
(b) Type-2 error has always more serious repercussions than Type-1 error.
(c) Relative seriousness of the two errors depends upon the situation being handled.
(d) The two errors induce no effect, whatsoever, on the conclusions drawn.

37. In a binomial distribution, if chances of getting success are 50% and we perform an exceedingly large number of trials, then the distribution will look like:
(a) Normal
(b) Poisson
(c) Binomial
(d) Uniform

38. Random sampling' means:
(a) Haphazard sampling.
(b) Hoch-poch sampling.
(c) The sampling wherein the enumerator makes use of his/her personal judgement.
(d) The sampling which is governed by the rules and regulations of probability theory.

39. For a normally distributed population, Cumulative density function has the shape of:
(a) Straight line
(b) Inverted u
(c) Sigmoid
(d) Sine-wave

40. The most appropriate measure of dispersion when the data are contaminated by outliers is:
    (a) Range
    (b) Standard deviation
    (c) Mean deviation
    (d) Quartile deviation

41. If male and female children are equally likely to be borne, what is the probability that a randomly chosen family of 3 children has at least one but **NOT** more than two females?
    (a) 1.00
    (b) 0.75
    (c) 0.50
    (d) 0.25

42. Prussic acid is another name of:
    (a) Sulphuric acid
    (b) Nitric oxide
    (c) Oxalic acid
    (d) Hydrogen cyanide

43. Which vitamin is only found in animal products?
    (a) Vitamin A
    (b) Vitamin B_3
    (c) Vitamin B_{12}
    (d) Vitamin C

44. Which is the largest human cell?
    (a) Liver
    (b) Ovum
    (c) Spleen
    (d) Skin

45. The term 'Allelopathy' refers to:
    (a) A biological phenomenon where an organism Produces one or more biochemicals that influences germination, growth, survival, and reproduction of other organisms.
    (b) The modern system of Medicine.
    (c) A level of vulnerability of a habitat to invasions from 'allelic' species.
    (d) The negative impact of non-living factors on living organisms in a specific environment.

46. Who coined the terms autosomal "dominant "and recessive" for genetic characters?
    (a) Marie Curie
    (b) Joseph Lister
    (c) Carl Correns
    (d) Gregor Mendel

47. Which one of the following pairs is **NOT** CORRECTLY matched?
    (a) Alexander Flemming: Penicillin.
    (b) William Harvey: Blood circulation.
    (c) Louis Pasteur: Tubercle bacilli.
    (d) Edward Jenner: Vaccine.

48. Which disease has been eradicated from the world?
    (a) Poliomyelitis
    (b) Guinea worm disease
    (c) Chicken pox
    (d) Smallpox


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49. Who was the first to use antiseptics during surgery?
    (a) Alexander Fleming
    (b) Joseph Lister
    (c) Ronald Ross
    (d) Louis Pasteur

50. Which country has successfully eliminated malaria?
    (a) India
    (b) Pakistan
    (c) Bangladesh
    (d) Sri Lanka

51. The highly repetitive DNA in the eukaryotes occupies the which fraction of the Cot Curve:
    (a) Slow
    (b) Intermediate
    (c) Fast
    (d) All of the above

52. Which of the following type of enzyme inhibition is also called as end-product inhibition?
    (a) Substrate regulation.
    (b) Feedback inhibition.
    (c) Competitive inhibition.
    (d) Non-competitive inhibition.

53. Cholesterol **DOES NOT** act as the precursor for:

    (a) Cardiolipin
    (b) Progesterone
    (c) Cortisol
    (d) Estradiol

54. Allopurinol is used for the treatment of gout. It is an inhibitor of:
    (a) Thymidylate synthase.
    (b) Xanthine oxidase.
    (c) Hypoxanthine-guanine phosphoribosyl transferase.
    (d) Adenosine phosphoribosyl transferase.

55. α-oxidation of fatty acids takes place in:
    (a) Endoplasmic reticulum
    (b) Cytosol
    (c) Mitochondria
    (d) Peroxisomes

56. Which of the following enzyme participates in both the citric acid cycle and the electron transport chain?
    (a) NADH dehydrogenase.
    (b) Malate dehydrogenase.
    (c) Succinate dehydrogenase.
    (d) Isocitrate dehydrogenase.

57. Which of the following molecule yields maximum number of ATPs upon oxidation?
    (a) Glutamate
    (b) Pyruvate
    (c) Palmitate
    (d) Glucose

58. Which is TRUE about enzymes?
    (a) All enzymes are proteins.
    (b) All enzymes are vitamins.
    (c) All enzymes are not proteins.
    (d) All proteins are enzymes.

59. Wavelength range of absorption peptide bond is:
    (a) 190-230 nm
    (b) 240-270 nm
    (c) 160-180 nm
    (d) 250-280 nm

60. Pick up the amino acid, which is present in the body but **NOT** found in proteins:
    (a) Arginine
    (b) 4-Hydroxyproline
    (c) Ornithine
    (d) Selenocysteine

61. Alu elements in human genome represent:
    (a) Exons
    (b) Introns
    (c) Nucleotide repeats
    (d) Transposable elements

62. Which of the following structures is known to maintain the shape of a cell?
    (a) Ribosomes
    (b) Microtubules
    (c) Nucleus
    (d) Mitochondria

63. Calmodulin contributes to signal transduction by binding to:
    (a) CAMP
    (b) Calcium
    (c) Magnesium
    (d) Sodium

64. Crossing over occurs in which phase:
    (a) Prophase I
    (b) Telophase I
    (c) Anaphase I
    (d) Metaphase I

65. The non-sister chromatids twist around and exchange segments with each other during:
    (a) Leptotene
    (b) Diakinesis
    (c) Diplotene
    (d) Pachytene

66. Human genome contains about:
    (a) 2 billion base pairs.
    (b) 3 billion base pairs.
    (c) 4 billion base pairs.
    (d) 5 billion base pairs.

67. Which of the following amino acid is present abundantly in histones?
    (a) Aspartic acid
    (b) Tryptophan
    (c) Arginine
    (d) Glycine

68. Which of the following growth media would you expect to result in synthesis of high levels of mRNA for the enzymes of the E. coli lac operon?
    (a) High glucose, high lactose.
    (b) Low glucose, low lactose.
    (c) High glucose, low lactose.

(d) No glucose, high lactose.

69. What is the mode of action of exonuclease III?
(a) Exonuclease III acts on single stranded DNA in 3'- 5' direction.
(b) Exonuclease III acts on double stranded DNA in 5'- 3' direction.
(c) Exonuclease III acts on single stranded DNA in 5'- 3' direction.
(d) Exonuclease III acts on double stranded DNA in 3'- 5' direction.

70. The specific DNA sequences to which the transcription factors bind are referred to as:
(a) Replication elements
(b) Blocking factors
(c) Transcription factors
(d) Regulatory elements

71. Which of the following statement is **INCORRECT** regarding DNA methylation?
(a) S-Adenosyl Methionine (SAM) is one of the most important methyl donors.
(b) It is catalysed by enzymes.
(c) Occurs at CpG islands.
(d) Mainly G is methylated.

72. Which of the following is **NOT** an example of post translational modification?
(a) Addition of prosthetic groups.
(b) Proteolytic Processing.
(c) mRNA splicing.
(d) Loss of signal sequences.

73. Which of the following statement is **INCORRECT** about the genetic code is?
(a) A codon is a triplet of nucleotides that codes for a specific amino acid.
(b) A specific first codon in the sequence establishes the reading frame.
(c) A codon specifies more than one amino acid.
(d) Nucleotide triplets are read in a successive, non- overlapping fashion.

74. Human telomeres consist of Tandem repeats of sequence:
(a) (TTAGGG)n
(b) (TTAAGGG) n
(c) (TTAAGG) n
(d) (1TAAAGG) n

75. The original codon changes to stop codon in which type of mutation:
(a) Sense mutation
(b) Mis-sense mutation
(c) Non-sense mutation
(d) Reverse mutation

76. If the amount of 'G' in a DNA sample is 20%. What will be the amount of 'T'?
(a) 40%
(b) 50%
(c) 30%
(d) 20%

77. Which of the following takes place in both bacterial as well as eukaryotic mRNA synthesis?
(a) Poly A tailing
(b) 5' Capping
(c) Splicing
(d) DNA dependent RNA synthesis

78. The TATA box:
(a) Present on the template strand.
(b) Present about 70 base pairs away from transcription start site.
(c) Serves as the signal for attachment of RNAP-II.

(d) Acts as silencer of the gene.

79. Which of the following substances will **NOT** stimulate an immune response unless they are bound to a larger molecule?
(a) Hapten
(b) Antigen
(c) Antibody
(d) Virus

80. 8Which of the following is the major immunoglobulin in human serum, accounting for 80% of the immunoglobulin pool?
(a) IgM
(b) IgE
(c) IgD
(d) IgG

81. Type I hypersensitivity is mediated by which of the following immunoglobulin's?
(a) IgA
(b) IgG
(c) IgE
(d) IgM

82. Acute inflammation characteristically involves?
(a) Influx of mast cells.
(b) Capillary endothelial cell enlargement.
(c) Influx of neutrophils.
(d) Influx of macrophages.

83. A tissue graft between two people who are **NOT** genetically identical is termed a:
(a) Isograft
(b) Heterograft
(c) Xenograft
(d) Allograft

84. Cell-mediated immunity:
(a) Can be transferred passively using sera.
(b) Is mediated by B and T cells.
(c) Is mediated by T cells, macrophages and interleukins.
(d) Forms the major part of innate immunity.

85. B cells differentiate to form:
(a) Plasma cells.
(b) Effector cells.
(c) Plasma cells and memory cells.
(d) Germinal cells.

86. 0psonin is the:
(a) Cell wall component
(b) Plasma component
(c) Serum component
(d) Cytoplasm component

87. The class of an immunoglobulin:
(a) Is determined by Class I and Class II major histocompatibility complex proteins.
(b) Is determined by the carbohydrate attached to the light chain is.
(c) Determined by the antigen.
(d) Is determined by the heavy chain type.

88. J Chain is present in which antibodies:
(a) IgG

(b) IgM
(c) IgE
(d) IgD

89. Which of the following structures is an example of lymphatic vessel?
(a) Thoracic duct
(b) Parotid duct
(c) Bile duct
(d) Cystic duct

90. Which connective tissue cells are responsible for synthesising collagen fibres?
(a) Macrophages
(b) Fibroblast
(c) Mast cell
(d) Adipocytes

91. Structure in descending order related to Bile duct:
(a) Head of pancreas, first part of duodenum, lesser omentum.
(b) First part of duodenum, lesser omentum, head of pancreas.
(c) Lesser omentum, first part of duodenum, head of pancreas.
(d) Head of pancreas, lesser omentum, first part of duodenum.

92. Coronary arteries arise from:
(a) Ascending aorta
(b) Arch of aorta
(c) Subclavian artery
(d) Descending aorta

93. Thyroid hormones act through:
(a) Nuclear receptors
(b) Plasma membrane receptors
(c) Cytosolic receptors
(d) ER receptors

94. Which of the following causes Byssinosis?
(a) Cotton dust
(b) Benzopyrene
(c) Peroxyacetyle nitrate
(d) Lead

95. Which part of the body best represents the core body temperature?
(a) Oral cavity
(b) Axilla
(c) Rectum
(d) Nasal cavity

96. The velocity of blood flow is highest in:
(a) Ascending aorta
(b) Capillaries
(c) Large veins
(d) Pulmonary trunk

97. Insulin increases entry of glucose in the liver cells by increasing the:
(a) Number of glucose transporters (GLUT- 4) on the hepatocytes.
(b) Activity of glucokinase which decreases intracellular free glucose thus promoting diffusion.
(c) Activity of Na +_K+ ATPase which utilizes glucose for its energy requirements, thus decreasing free glucose within the cell.
(d) Activity of transcription factors for the production of glucose transporters in the hepatocytes.

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98. Physiological dead space is calculated by:
    (a) Dalton's laws
    (b) Bohr equation
    (c) Boyle's laws
    (d) Charle's laws

99. In a female with sex chromosomes XXX, how many Barr bodies will be there?
    (a) 1
    (b) 2
    (c) 3
    (d) 4

100. The common example of point mutation is:
    (a) Color blindness
    (b) Down's Syndrome
    (c) Sickle cell anaemia
    (d) Thalassemia

101. Ames test used to screen mutagenicity is based on:
    (a) Reversion of arginine auxotrophic mutants to prototrophic.
    (b) Reversion of histidine auxotrophic mutants to prototrophic.
    (c) Reversion of tyrosine auxotrophic mutants to prototrophic.
    (d) No reversion of auxotrophic mutants.

102. Pyrimidine dimer formation is a sign of DNA damage. They are induced by:
    (a) Spontaneous deamination of nucleotide bases.
    (b) UV light.
    (c) Alkylating agents.
    (d) Depurination of nucleotide bases.

103. In Drosophila, the sex is determined by:
    (a) The ratio of pairs of X chromosomes to the pairs to autosomes.
    (b) X and Y chromosomes.
    (c) The ratio of number of X chromosomes to the sets of autosomes.
    (d) Whether the egg is fertilized or develops parthenogenetically.

104. In the F2 generation of a Mendelian dihybrid cross, the number of genotypes and phenotypes are:
    (a) Genotypes 16, phenotypes 4.
    (b) Genotypes 9, phenotypes 4.
    (c) Genotypes 4, phenotypes 9.
    (d) Genotypes 8, phenotypes 4.

105. Tuberculosis lesions are prominent in digestive tract rather than in respiratory tract in:
    (a) Poultry
    (b) Cattle
    (c) Horse
    (d) Rodents

106. Person having sex chromosomes XXY suffers from which of the following:
    (a) Down's syndrome
    (b) Edward's syndrome
    (c) Klinefelter's syndrome
    (d) Patau's syndrome

107. Multiple genes are involved in the inheritance of which of the following disease:
    (a) Skin color
    (b) Color blindness
    (c) Sickle-cell anemia
    (d) Phenylketonuria

108. Which of these genomes have maximum ploidy?
   (a) Humans
   (b) Bacteria
   (c) Fungi
   (d) Plants

109. The study of nests of birds is known as:
   (a) Craniology
   (b) Nidology
   (c) Ichnology
   (d) Myremecology

110. Jurassic period of the Mesozoic era is characterized by:
   (a) Dinosaurs become extinct and angiosperms appear.
   (b) Radiation of reptiles and origin of mammal like reptiles.
   (c) Gymnosperms are dominant and first birds appear.
   (d) Flowering plants and first dinosaurs appear.

111. Name the phylum that has highest number of species:
   (a) Arthropoda
   (b) Brachiopoda
   (c) Echinodermata
   (d) Mollusca

112. Which of the following is **NOT** an Insect?
   (a) Beetle
   (b) Spider
   (c) House fly
   (d) Mosquito

113. Who wrote the book "Origin of species"?
   (a) Jean-Baptiste Lamarck
   (b) Charles Darwin
   (c) Hugo de Vries
   (d) Gregor Mendel

114. Silk is produced by:
   (a) Apis indica
   (b) Bombyx mori
   (c) Laccifer lacca
   (d) Dactylopius coccus

115. Kennel cough in dogs is caused by:
   (a) Brucella nielitensis
   (b) Corynebacteriunl renole
   (c) Bordeteila bronchiseptica
   (d) Bacillus anthracis

116. Yolk sac route inoculation should be done on:
   (a) 6-8 day's old fertile eggs.
   (b) 10-12 day's old fertile eggs.
   (c) 12-14 day's old fertile eggs.
   (d) 14-16 day's old fertile eggs.

117. Which of the following is **NOT** an occupational zoonotic disease?
   (a) Brucellosis
   (b) Plague
   (c) Anthrax
   (d) Salmonellosis

118. Fusion of male gamete with the polar nuclei of embryo sac is known as:
   (a) Double fertilization
   (b) Pollination
   (c) Embryogeny
   (d) Triple fusion

119. Which one of the plants introduced from new world to the old world?
   (a) Potato
   (b) Wheat
   (c) Rice
   (d) Sugarcane

120. Which one of the following is caused by fungus?
   (a) Sandal spike
   (b) Crown gall disease
   (c) Powdery mildew
   (d) Citrus canker

121. Elicitors are molecules that:
   (a) Induce cell division in plants.
   (b) Stimulates defence response in plants.
   (c) Simulates hairy root formation.
   (d) Stimulates plant growth.

122. Which of the following is dimorphic fungus?
   (a) Aspergillus flovus.
   (b) Histoplasma capsulatum.
   (c) Trichophyton mentagrophytes.
   (d) Cryptococcus neoformans.

123. Which of the following organism is an obligate aerobe?
   (a) E. coli
   (b) Pseudomonas aeruginosa
   (c) Staphylococcus
   (d) Acinetobocter

124. Which of the following organism is **NOT** transmitted by soil?
   (a) Brucella
   (b) Coccidioidomycosis
   (c) Tetanus
   (d) Anthrax

125. Phenol co-efficient indicates:
   (a) Purity of a disinfectant.
   (b) Dilution of a disinfectant.
   (c) Efficacy of a disinfectant.
   (d) Quantity of a disinfectant.

126. Definitive host of guinea worm is:
   (a) Man
   (b) Cyclops
   (c) Snail
   (d) Tick

127. Which one of the following is TRUE?
   (a) Agar has nutrient properties.
   (b) Chocolate medium is selective medium.
   (c) Addition of selective substances in a solid medium is tailed enrichment media.
   (d) Nutrient broth is basal medium.

128. Plasmids which **DO NOT** possess information for self-transfer to another cell are known as:
   (a) Conjugative plasmids
   (b) Cryptic plasmids
   (c) Non-conjugative plasmids
   (d) Incompatible plasmids

129. An example of single stranded linear DNA virus is:
   (a) Parvovirus B19
   (b) Papilloma virus
   (c) Hepatitis B virus
   (d) Epstein Barr virus

130. Limulus amoebocyte lysate assay is used for the detection of bacterial:
   (a) Pilli
   (b) Endotoxins
   (c) Peptidoglycan
   (d) Capsule

131. Creutzfeldt-Jakob disease (CID) is caused by:
   (a) DNA viruses
   (b) Bacteria
   (c) Prions
   (d) RNA Viruses

132. 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

133. Chromosome painting used to detect chromosome translocation is also called:
   (a) Probing
   (b) FISH
   (c) M-FISH
   (d) Karyotyping

134. Which protein moves the least from point of application of sample while electrophoresis:
   (a) Alpha globulin
   (b) Beta globulin
   (c) Gamma globulin
   (d) Albumin

135. Micro biosensors are based on:
   (a) Ions effect.
   (b) Ion sensitive field effect transistor.
   (c) Piezoelectric effect.
   (d) Magnetic effect.

136. P1 cloning vector allow cloning of DNA of the length of:
   (a) 100 kbp
   (b) 50 kbp
   (c) 20 kbp
   (d) 10 kbp

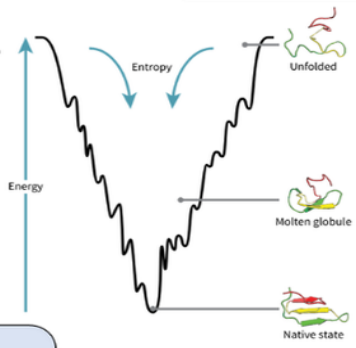
137. The name Alec Jeffery is associated with:
   (a) DNA Sequencing.
   (b) RNA Sequencing.
   (c) DNA Fingerprinting.
   (d) Site-directed Mutagenesis.

VEDEMY'S CAPSULE (VEDEMY'S SPECIAL NOTES)

Amino acid Classes

Essential	**M**y **V**ery **T**alented **F**riend **I**s **W**aiting **F**or **K**ajo**L**
Semi-essential	**R**ahu**L**
Non-Polar	**GAV** के लोग **PILW** लेकर **FM** सुन रहे थे
Polar Uncharged	**CN**(कार्टून नेटवर्क) pe **STY**(सत्य) **Q**ues पूछते है
Negative charged	Ye **DE**kh
Positive charged	**RaHuL** bola
Gluco-ketogenic	**I**tni **T**alented **WYF** (wife)
Ketogenic	**K**ajo**L**

Protein Folding Curve



Energy profile-
High
- **U**- Unstructured
- **M**- molten globule
- **D**- discrete structure
- **N**- native
- **A**- amorphous
- **A**- amyloid

Low

Urmila Matoldkar ka DNA Achha hai

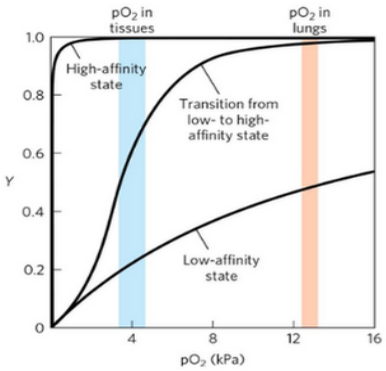
Hemoglobin

State of Hb – MOLD

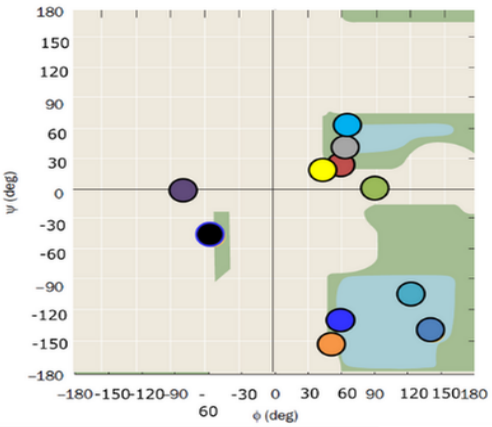
- **O**xy Hb
- **L**ess acidic (Tensed state)
- **D**eoxy Hb
- **M**ore acidic (Relaxed state)

Affinity of Curve – DRIL

- H+, Temp. BPG, CO_2
- **I**ncrease
- **L**eft shift
- **D**ecrease
- **R**ight shift

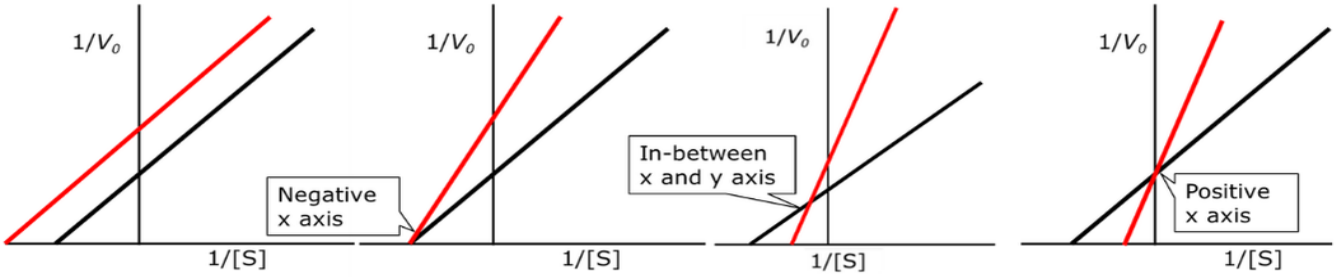


Ramachandran plot



Secondary Structure	Phi	Psi
AP β Sheet	+140⁰	-135⁰
P β Sheet	+120⁰	-115⁰
CTH	+50⁰	-150⁰
L-α-H	-60⁰	-50⁰
R-α-H	+60⁰	+50⁰
Type-I i+1	+60⁰	+30⁰
Type-I i+2	+90⁰	0⁰
Type-II i+1	+60⁰	-120⁰
Type-II i+2	-80⁰	0⁰

Enzyme Inhibition Curve



Uncompetitive Inhibition
Decrease K_m = increased $1/K_m$
Decreased V_{max}= increased $1/V_{max}$

Noncompetitive Inhibition
Decreased V_{max}= increased $1/V_{max}$

Mixed Inhibition
K_m increase
V_{max} decrease

Competitive Inhibition
Increase K_m = decreased $1/K_m$

UP ke **NaNa** patekar **MI** ka **PC** lekar aaye

- **U**ncompetitive
- **P**arallel
- **N**on-competitive
- **N**egative x axis
- **M**ixed
- **I**n-between x and y axis
- **P**ositive x axis
- **C**ompetitive

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138. Hot-start PCR is a modification of PCR. Which of the following is **NOT** corresponding to it?
(a) The basis is that extension is not started until the first cycle reaches its maximum temperature.
(b) The polymerase is added after the first cycle has reached its maximum temperature or melting temperature.
(c) It is satisfactory for small number of Samples.
(d) It leads to generation of non-specific products.

139. Which of the following **CANNOT** be used to analyse unstained biological samples?
(a) Dark-field microscopy
(b) Electron microscopy
(c) Fluorescence microscopy
(d) Phase-contrast microscopy

140. Which of the following vector contains telomeric sequences?
(a) Plasmid vector
(b) Lambda vector
(c) M13 vector
(d) Yeast vector

141. The uptake of external DNA into bacterial cell is facilitated in the presence of:
(a) Calcium chloride
(b) Polymerase
(c) Endonuclease
(d) Plasmid

142. In gel electrophoresis, which of the following molecule will move faster if the amount of DNA present is same in all?
(a) Linear
(b) Supercoiled
(c) Nicked
(d) Circular

143. Biochips are made up of:
(a) Semi-conducting molecules inserted into the protein frame work.
(b) Conducting molecules inserted into the protein frame work.
(c) Non-conducting molecules inserted into the protein frame work.
(d) Conducting molecules.

144. Which of the following is a nucleotide sequence data base?
(a) EMBL
(b) SWISS PROT
(c) PROSITE
(d) TREMBL

145. The collection of proteins that can be produced by a given species is:
(a) Considered as species' genetic complement.
(b) Correlates with the size of the organism.
(c) Called the Proteome.
(d) Called as Transcriptome.

146. Difference in wavelength or frequency units) between positions of band maxima of absorption and emission spectra of the same electronic transition is known as:
(a) Vavilov rule
(b) Stokes shift
(c) Kasha's rule
(d) StokesLine

147. Which of the following **DOES NOT** absorb UV radiation?
(a) Benzoic acid
(b) Chloro-hexane

(c) Nitrobenzene
(d) Butadiene

148. Which of the following is categorized as third generation pesticide?
(a) Organophosphates
(b) Chlorinated hydrocarbon s
(c) Juvenile hormone
(d) Rotenone

149. Rumen Gas largely consist of Carbon Dioxide and methane in the proportion of:
(a) 50: 50
(b) 65: 35
(c) 40: 30
(d) 80: 20

150. An example of ruminant animal is:
(a) Horse
(b) Cow
(c) Rabbit
(d) Rhinocer

ICMR-BRET-JRF 2019 ANSWER KEY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
b	a	a	b	c	b	c	a	a	a	b	d	b	a	c	b	a	d	c	c
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
b	b	c	c	a	c	c	a	b	d	c	d	b	d	a	a	b	d	c	b
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
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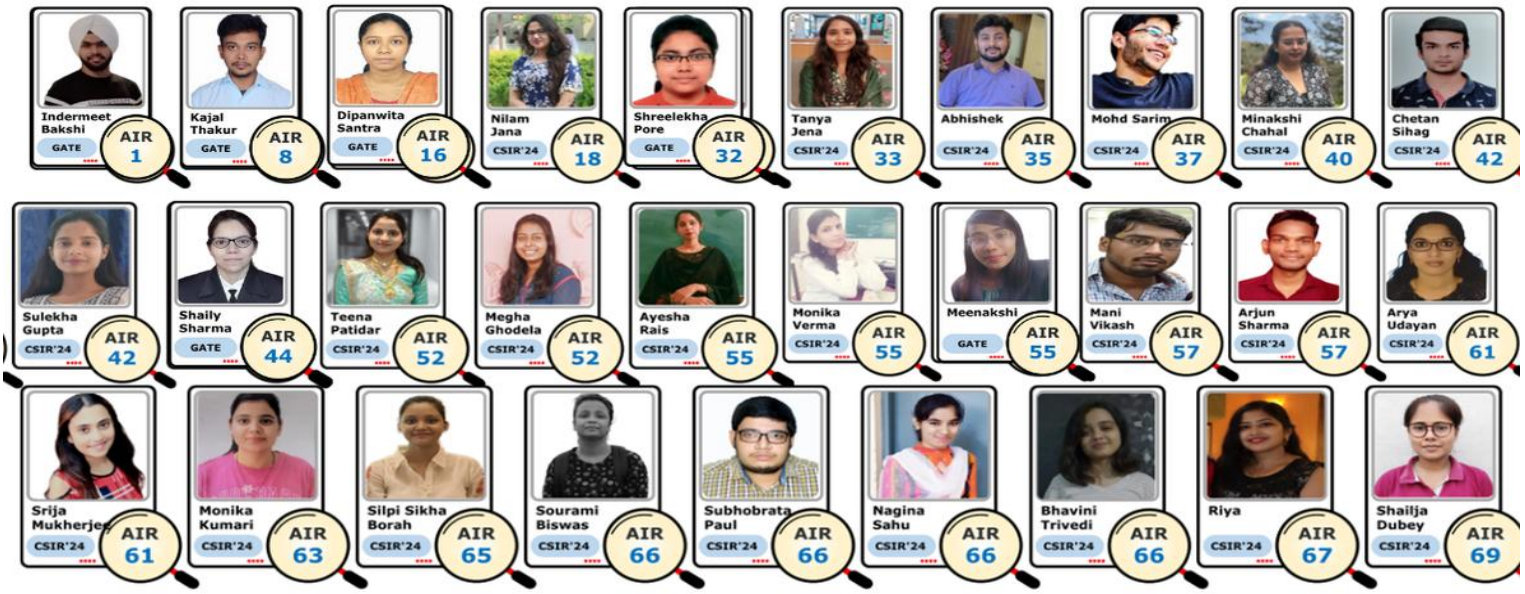
d	b	b	a	d	b	c	d	a	d	d	c	c	a	c	c	d	b	a	d
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
c	c	d	c	c	c	d	b	a	b	c	a	a	a	c	a	a	b	b	c
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
b	b	a	b	a	c	a	d	b	c	a	b	b	b	c	b	b	d	a	c
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
b	b	b	d	c	a	d	c	a	b	c	c	b	c	b	a	c	c	b	d
141	142	143	144	145	146	147	148	149	150										
a	b	a	a	c	b	b	c	b	b										

RESULTS हो तो कैसे? VEDEMY जैसे
India's BEST Result



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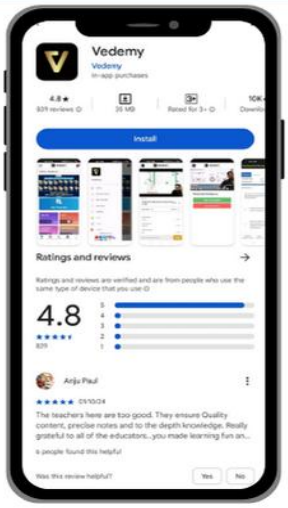
- IIT JAM
- GAT-B

UG ENTRANCE EXAM
- IIT -JEE
- NEET
- CUET (UG)
- Foundation



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