

ICMR-JRF Previous Year Paper 2019

PART I- SECTION A: APTITUDE

Scientific phenomenon

1. The current geological age in which human activity is a major driver of climate and environment change is called

- 1) Anthropocene
- 2) Holocene
- 3) Pliocene
- 4) Paleogene

2. Gerontology is the study of

- 1) Old age
- 2) Planets
- 3) Rainfall
- 4) Soil

3. The laws of planetary motion were proposed by

- 1) Kepler
- 2) Newton
- 3) Galileo
- 4) Bessel

4. Which of the following remains a liquid at room temperature?

- 1) Chlorine
- 2) Bromine
- 3) Phosphorus
- 4) Nitrogen

5. Upon emission of a positron by radioisotope, the atomic number of the daughter atom

- 1) Increases by 1
- 2) Increases by 2
- 3) Decreases by 1
- 4) Decreases by 2

6. The Nobel Prize was given for the first time in the year

- 1) 1900
- 2) 1901
- 3) 1911
- 4) 1921

7. Who invented the periodic table?

- 1) Anton van Leuwenhoek
- 2) CS Chandrasekhar
- 3) Dmitri Mendeleev
- 4) Alfred Noble

8. Who is known as the father of nuclear physics?

- 1) Ernest Rutherford
- 2) Niels Bohr
- 3) John Dalton
- 4) Robert Boyle

9. Grass appears green because it

- 1) Reflects green color
- 2) Absorbs green color
- 3) Reflects white color
- 4) 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

- 1) Phosphorescence
- 2) Fluorescence
- 3) Chemiluminescence
- 4) Cerenkov radiation

11. Air bags used for the safety of car drivers contain

- 1) Sodium carbonate
- 2) Sodium azide
- 3) Magnesium Chloride
- 4) Sodium nitrite

12. The loudness of a sound wave is determined by its

- 1) Frequency
- 2) Wavelength
- 3) Velocity
- 4) Amplitude

13. Red light is used for signals because it has

- 1) High frequency
- 2) Long wavelength
- 3) High intensity
- 4) Low refraction

14. Venturi meter is used to measure

- 1) Fluid pressure
- 2) Fluid speed
- 3) Fluid density
- 4) Fluid temperature

15. Regarding Dmitri Ivanovsky, pick the incorrect sentence

- 1) A Russian botanist has been credited as one of the first discoverers of the structure of viruses on Electron microscopy.
- 2) He investigated a tobacco plant disease which was transmissible and caused an agent extremely small, such that it could pass through Chamber land filters
- 3) He gave the concept of 'Contagium fixium'; i. e., the viruses are particulate.
- 4) 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?

- 1) Starch
- 2) Cellulose
- 3) Graphite
- 4) polystyrene

17. What is the chemical used to make toothpaste white?

- 1) Titanium dioxide
- 2) Charcoal
- 3) Calcium chloride
- 4) Calcium carbonate

18. Which metal is generally used in the making of microchips?

- 1) Vanadium
- 2) Boron
- 3) Platinum
- 4) Silicon

19. What is known as the God particle?

- 1) Deutron
- 2) Proton
- 3) Higgs Boson
- 4) Neutron

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

- 1) Cadmium
- 2) Chromium
- 3) Lead
- 4) Copper

21. Which of the following is not a mixture?

- 1) Glass
- 2) Graphite
- 3) Steel
- 4) Aluminium

22. The axis of earth's rotation relative to orbital plane is tilted by

- 1) 22.5 degrees
- 2) 23.5 degrees
- 3) 24.5 degrees
- 4) 25.5 degrees

23. Tsunamis are usually caused by:

- 1) Tides
- 2) Overfishing
- 3) Underwater earthquakes
- 4) Nuclear explosions

General Knowledge**24. The Kalka Shimla railway is an example of**

- 1) Broad gauge railway
- 2) Meter gauge railway
- 3) Narrow gauge railway
- 4) Monorail

25. Heavy floods in Kerala this year led to the outbreak of which of the following diseases?

- 1) Leptospirosis
- 2) Typhoid
- 3) Yellow fever
- 4) Influenza

26. Where was India's first specialized hospital for elephants unveiled on 17th November 2018?

- 1) Coimbatore, Tamil Nadu
- 2) Wyanad, Kerala
- 3) Mathura, Uttar Pradesh
- 4) Coorg, Karnataka

27. Who performed the world's first heart transplant?

- 1) Dr. Venugopal
- 2) William Harvey
- 3) Christian Bernard
- 4) Robert Koch

28. Our National science Day is celebrated on February 28 to honour which scientist's discovery?

- 1) Sir C V Raman
- 2) Homi J Bhaba
- 3) APJ Abdul Kalam
- 4) Jagdish Chander Bose

29. Recently in Kerala, which highly infectious virus caused an outbreak?

- 1) Japanese encephalitis virus
- 2) Nipah virus
- 3) Ebola virus
- 4) Zika virus

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

- 1) 1000
- 2) 2000
- 3) 220
- 4) 1024

31. RAM in computers usually stands for:

- 1) Remove All Memory
- 2) Read and memorize
- 3) Random access memory
- 4) Roast all mice

Statistics

32. the most appropriate yardstick for measuring comparative scatteredness in different sets of data is

- 1) Arithmetic mean
- 2) Mean deviation
- 3) Variance
- 4) 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?

- 1) 0.72
- 2) 0.60
- 3) 0.48
- 4) 0.30

34. In a single throw of two dice, what is the probability of getting a sum of 8 or 11?

- 1) $1/36$
- 2) $3/36$
- 3) $5/36$
- 4) $7/36$

35. For studying association between two attributes, the most appropriate test procedure is

- 1) X^2 test
- 2) F-test
- 3) t-test
- 4) Z-test

36. in testing significance of hypotheses,

- 1) Type-1 error has always more serious repercussions than Type-2 error
- 2) Type-2 error has always more serious repercussions than Type-1 error
- 3) Relative seriousness of the two errors depends upon the situation being handled
- 4) 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

- 1) Normal
- 2) Poisson
- 3) Binomial
- 4) Uniform

38. Random sampling' means

- 1) Haphazard sampling
- 2) Hoch-poch sampling
- 3) The sampling wherein the enumerator makes use of his/her personal judgement
- 4) 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

- 1) Straight line
- 2) Inverted u
- 3) Sigmoid
- 4) Sine-wave

40. the most appropriate measure of dispersion when the data are contaminated by outliers is

- 1) Range
- 2) Standard deviation
- 3) Mean deviation
- 4) 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?

- 1) 1.00
- 2) 0.75
- 3) 0.50
- 4) 0.25

Biochemistry

42. prussic acid is another name of

- 1) Sulphuric acid
- 2) Nitric oxide
- 3) Oxalic acid
- 4) Hydrogen cyanide

43. Which vitamin is only found in animal products?

- 1) Vitamin A
- 2) Vitamin B₃
- 3) Vitamin B₁₂
- 4) Vitamin C

Cell Biology

44. Which is the largest human cell?

- 1) Liver
- 2) Ovum
- 3) Spleen
- 4) Skin

Physiology

45. The term 'Allelopathy' refers to

- 1) A biological phenomenon where an organism Produces one or more biochemicals that influences germination, growth, survival, and reproduction of other organisms.
- 2) The modern system of Medicine
- 3) A level of vulnerability of a habitat to invasions From 'allelic' species.
- 4) The negative impact of non-living factors on living organisms in a specific environment.

GENTICS

46. Who coined the terms autosomal "dominant "and recessive" for genetic characters?

- 1) Marie Curie
- 2) Joseph Lister
- 3) Carl Correns
- 4) Gregor Mendel

Microbiology

47. Which one of the following pairs is not correctly matched?

- 1) Alexander Flemming: Penicillin
- 2) William Harvey: Blood circulation
- 3) Louis Pasteur: Tubercle bacilli
- 4) Edward Jenner: Vaccine

48. Which disease has been eradicated from the world?

- 1) Poliomyelitis
- 2) Guinea worm disease
- 3) Chicken pox
- 4) Smallpox

49. Who was the first to use antiseptics during surgery?

- 1) Alexander Fleming
- 2) Joseph Lister
- 3) Ronald Ross
- 4) Louis Pasteur

50. Which country has successfully eliminated malaria?

- 1) India
- 2) Pakistan
- 3) Bangladesh
- 4) Sri Lanka

PART II- SECTION-B: LIFE SCIENCE

Biochemistry

51. The highly repetitive DNA in the eukaryotes occupies the which fraction of the Cot Curve

- 1) Slow
- 2) Intermediate
- 3) Fast
- 4) All of the above

52. Which of the following type of enzyme inhibition is also called as end-product inhibition?

- 1) Substrate regulation
- 2) Feedback inhibition
- 3) Competitive inhibition
- 4) Non-competitive inhibition

53. Cholesterol does not act as the precursor for

- 1) Cardiolipin
- 2) Progesterone
- 3) Cortisol
- 4) Estradiol

54. Allopurinol is used for the treatment of gout. It is an inhibitor of

- 1) Thymidylate synthase
- 2) Xanthine oxidase
- 3) Hypoxanthine-guanine phosphoribosyl transferase
- 4) Adenosine phosphoribosyl transferase

55. α -oxidation of fatty acids takes place in

- 1) Endoplasmic reticulum
- 2) Cytosol
- 3) Mitochondria
- 4) Peroxisomes

56. Which of the following enzyme participates in both the citric acid cycle and the electron transport chain?

- 1) NADH dehydrogenase
- 2) Malate dehydrogenase
- 3) Succinate dehydrogenase
- 4) Isocitrate dehydrogenase

57. Which of the following molecule yields maximum number of ATPs upon oxidation?

- 1) Glutamate
- 2) Pyruvate
- 3) Palmitate
- 4) Glucose

58. Which is true about enzymes?

- 1) All enzymes are proteins
- 2) All enzymes are vitamins
- 3) All enzymes are not proteins
- 4) All proteins are enzymes

59. Wavelength range of absorption peptide bond is

- 1) 190-230 nm
- 2) 240-270 nm
- 3) 160-180 nm
- 4) 250-280 nm

60. Pick up the amino acid, which is present in the body but not found in proteins

- 1) Arginine
- 2) 4-Hydroxyproline
- 3) Ornithine
- 4) Selenocysteine

Cell biology

61. Alu elements in human genome represent:

- 1) Exons
- 2) Introns
- 3) Nucleotide repeats
- 4) Transposable elements

62. Which of the following structures is known to maintain the shape of a cell?

- 1) Ribosomes
- 2) Microtubules
- 3) Nucleus
- 4) Mitochondria

63. Calmodulin contributes to signal transduction by binding to

- 1) CAMP
- 2) Calcium
- 3) Magnesium
- 4) Sodium

64. Crossing over occurs in which phase

- 1) Prophase I
- 2) Telophase I
- 3) Anaphase I
- 4) Metaphase I

65. The non-sister chromatids twist around and exchange segments with each other during

- 1) Leptotene
- 2) Diakinesis
- 3) Diplotene
- 4) Pachytene

66. Human genome contains about

- 1) 2 billion base pairs
- 2) 3 billion base pairs
- 3) 4 billion base pairs
- 4) 5 billion base pairs

67. Which of the following amino acid is present abundantly in histones?

- 1) Aspartic acid
- 2) Tryptophan
- 3) Arginine
- 4) Glycine

Molecular Biology

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?

- 1) High glucose, high lactose
- 2) Low glucose, low lactose
- 3) High glucose, low lactose
- 4) No glucose, high lactose

69. What is the mode of action of exonuclease III?

- 1) Exonuclease III acts on single stranded DNA in 3'-5'direction
- 2) Exonuclease III acts on double stranded DNA in 5'-3'direction
- 3) Exonuclease III acts on single stranded DNA in 5'-3'direction
- 4) 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

- 1) Replication elements
- 2) Blocking factors
- 3) Transcription factors
- 4) Regulatory elements

71. Which of the following statement is incorrect regarding DNA methylation?

- 1) S-Adenosyl Methionine (SAM) is one of the most important methyl donors.
- 2) It is catalysed by enzymes
- 3) Occurs at CpG islands
- 4) Mainly G is methylated

72. Which of the following is not an example of post translational modification?

- 1) Addition of prosthetic groups
- 2) Proteolytic Processing
- 3) mRNA splicing
- 4) Loss of signal sequences

73. Which of the following statement is incorrect about the genetic code is?

- 1) A codon is a triplet of nucleotides that codes for a specific amino acid
- 2) A specific first codon in the sequence establishes the reading frame
- 3) A codon specifies more than one amino acid
- 4) Nucleotide triplets are read in a successive, non-overlapping fashion

74. Human telomeres consist of Tandem repeats of sequence

- 1) (TTAGGG)_n
- 2) (TTAAGGG)_n
- 3) (TTAAGG)_n
- 4) (1TAAAGG)_n

75. The original codon changes to stop codon in which type of mutation

- 1) Sense mutation
- 2) Mis-sense mutation
- 3) Non-sense mutation
- 4) Reverse mutation

76. If the amount of 'G' in a DNA sample is 20%. What will be the amount of 'T'?

- 1) 40%
- 2) 50%
- 3) 30%
- 4) 20%

77. Which of the following takes place in both bacterial as well as eukaryotic mRNA synthesis?

- 1) Poly A tailing
- 2) 5' Capping
- 3) Splicing
- 4) DNA dependent RNA synthesis

78. The TATA box:

- 1) Present on the template strand
- 2) Present about 70 base pairs away from transcription start site
- 3) Serves as the signal for attachment of RNAP-II
- 4) Acts as silencer of the gene

Immunology

79. Which of the following substances will not stimulate an immune response unless they are bound to a larger molecule?

- 1) Hapten
- 2) Antigen
- 3) Antibody
- 4) Virus

80. Which of the following is the major immunoglobulin in human serum, accounting for 80% of the immunoglobulin pool?

- 1) IgM
- 2) IgE
- 3) IgD
- 4) IgG

81. Type I hypersensitivity is mediated by which of the following immunoglobulin's?

- 1) IgA
- 2) IgG
- 3) IgE
- 4) IgM

82. Acute inflammation characteristically involves?

- 1) Influx of mast cells.
- 2) Capillary endothelial cell enlargement
- 3) Influx of neutrophils
- 4) Influx of macrophages

83. A tissue graft between two people who are not genetically identical is termed a

- 1) Isograft
- 2) Heterograft
- 3) Xenograft
- 4) Allograft

84. Cell-mediated immunity

- 1) Can be transferred passively using sera
- 2) is mediated by B and T cells
- 3) Is mediated by T cells, macrophages and interleukins
- 4) Forms the major part of innate immunity

85. B cells differentiate to form

- 1) Plasma cells
- 2) Effector cells
- 3) Plasma cells and memory cells
- 4) Germinal cells

86. Opsonin is the

- 1) Cell wall component
- 2) Plasma component
- 3) Serum component
- 4) Cytoplasm component

87. The class of an immunoglobulin

- 1) is determined by Class I and Class II major histocompatibility complex proteins
- 2) is determined by the carbohydrate attached to the light chain is
- 3) Determined by the antigen
- 4) is determined by the heavy chain type

88. J Chain is present in which antibodies

- 1) IgG
- 2) IgM
- 3) IgE
- 4) IgD

Physiology

89. Which of the following structures is an example of lymphatic vessel?

- 1) Thoracic duct
- 2) Parotid duct
- 3) Bile duct
- 4) Cystic duct

90. Which connective tissue cells are responsible for synthesising collagen fibres?

- 1) Macrophages
- 2) Fibroblast
- 3) Mast cell
- 4) Adipocytes

91. Structure in descending order related to Bile duct

- 1) Head of pancreas, first part of duodenum, lesser omentum
- 2) First part of duodenum, lesser omentum, head of pancreas
- 3) Lesser omentum, first part of duodenum, head of pancreas.
- 4) Head of pancreas, lesser omentum, first part of duodenum

92. Coronary arteries arise from

- 1) Ascending aorta
- 2) Arch of aorta
- 3) Subclavian artery
- 4) Descending aorta

93. Thyroid hormones act through

- 1) Nuclear receptors
- 2) Plasma membrane receptors
- 3) Cytosolic receptors
- 4) ER receptors

94. Which of the following causes Byssinosis?

- 1) Cotton dust
- 2) Benzopyrene
- 3) Peroxyacetyl nitrate
- 4) Lead

95. Which part of the body best represents the core body temperature?

- 1) Oral cavity
- 2) Axilla
- 3) Rectum
- 4) Nasal cavity

96. The velocity of blood flow is highest in

- 1) Ascending aorta
- 2) Capillaries
- 3) Large veins
- 4) Pulmonary trunk

97. Insulin increases entry of glucose in the liver cells by increasing the

- 1) Number of glucose transporters (GLUT- 4) on the hepatocytes
- 2) Activity of glucokinase which decreases intracellular free glucose thus promoting diffusion
- 3) Activity of $\text{Na}^+ \text{K}^+$ ATPase which utilizes glucose for its energy requirements, thus decreasing free glucose within the cell
- 4) Activity of transcription factors for the production of glucose transporters in the hepatocytes

98. Physiological dead space is calculated by

- 1) Dalton's laws
- 2) Bohr equation
- 3) Boyle's laws
- 4) Charle's laws

Genetics**99. In a female with sex chromosomes XXX, how many Barr bodies will be there:**

- 1) 1
- 2) 2
- 3) 3
- 4) 4

100. The common example of point mutation is:

- 1) Color blindness
- 2) Down's Syndrome
- 3) Sickle cell anaemia
- 4) Thalassemia

101. Ames test used to screen mutagenicity is based on

- 1) Reversion of arginine auxotrophic mutants to prototrophic
- 2) Reversion of histidine auxotrophic mutants to prototrophic
- 3) Reversion of tyrosine auxotrophic mutants to prototrophic
- 4) No reversion of auxotrophic mutants

102. Pyrimidine dimer formation is a sign of DNA damage. They are induced by

- 1) Spontaneous deamination of nucleotide bases
- 2) UV light
- 3) Alkylating agents
- 4) Depurination of nucleotide bases

103. In Drosophila, the sex is determined by

- 1) the ratio of pairs of X chromosomes to the pairs to autosomes
- 2) X and Y chromosomes
- 3) The ratio of number of X chromosomes to the sets of autosomes
- 4) 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

- 1) Genotypes 16, phenotypes 4
- 2) Genotypes 9, phenotypes 4
- 3) Genotypes 4, phenotypes 9
- 4) Genotypes 8, phenotypes 4

105. Tuberculosis lesions are prominent in digestive tract rather than in respiratory tract in

- 1) Poultry
- 2) Cattle
- 3) Horse
- 4) Rodents

106. Person having sex chromosomes XXY suffers from which of the following

- 1) Down's syndrome
- 2) Edward's syndrome
- 3) Klinefelter's syndrome
- 4) Patau's syndrome

107. Multiple genes are involved in the inheritance of which of the following disease

- 1) Skin color
- 2) Color blindness
- 3) Sickle-cell anemia
- 4) Phenylketonuria

108. Which of these genomes have maximum ploidy?

- 1) Humans
- 2) Bacteria
- 3) Fungi
- 4) Plants

Zoology

109. The study of nests of birds is known as

- 1) Craniology
- 2) Nidology
- 3) Ichnology
- 4) Myremecology

110. Jurassic period of the Mesozoic era is characterized by

- 1) Dinosaurs become extinct and angiosperms appear
- 2) Radiation of reptiles and origin of mammal like reptiles
- 3) Gymnosperms are dominant and first birds appear
- 4) Flowering plants and first dinosaurs appear

111. Name the phylum that has highest number of species

- 1) Arthropoda
- 2) Brachiopoda
- 3) Echinodermata
- 4) Mollusca

112. Which of the following is not an Insect?

- 1) Beetle
- 2) Spider
- 3) House fly
- 4) Mosquito

113. Who wrote the book "Origin of species"?

- 1) Jean-Baptiste Lamarck
- 2) Charles Darwin
- 3) Hugo de Vries
- 4) Gregor Mendel

114. Silk is produced by

- 1) *Apis indica*
- 2) *Bombyx mori*
- 3) *Laccifer lacca*
- 4) *Dactylopius coccus*

115. Kennel cough in dogs is caused by

- 1) *Brucella nelitensis*
- 2) *Corynebacterium renale*
- 3) *Bordetella bronchiseptica*
- 4) *Bacillus anthracis*

116. Yolk sac route inoculation should be done on

- 1) 6-8 day's old fertile eggs
- 2) 10-12 day's old fertile eggs
- 3) 12-14 day's old fertile eggs
- 4) 14-16 day's old fertile eggs

117. Which of the following is not an occupational zoonotic disease?

- 1) Brucellosis
- 2) Plague
- 3) Anthrax
- 4) Salmonellosis

Botany

118. Fusion of male gamete with the polar nuclei of embryo sac is known as

- 1) Double fertilization
- 2) Pollination
- 3) Embryogeny
- 4) Triple fusion

119. Which one of the plants introduced from new world to the old world?

- 1) Potato
- 2) Wheat
- 3) Rice
- 4) Sugarcane

120. Which one of the following is caused by fungus?

- 1) Sandal spike
- 2) Crown gall disease
- 3) Powdery mildew
- 4) Citrus canker

121. Elicitors are molecules that

- 1) Induce cell division in plants
- 2) Stimulates defence response in plants
- 3) Simulates hairy root formation
- 4) Stimulates plant growth

122. Which of the following is dimorphic fungus?

- 1) *Aspergillus flovus*
- 2) *Histoplasma capsulatum*
- 3) *Trichophyton mentagrophytes*
- 4) *Cryptococcus neoformans*

Microbiology

123. Which of the following organism is an obligate aerobe?

- 1) *E. coli*
- 2) *Pseudomonas aeruginosa*
- 3) *Staphylococcus*
- 4) *Acinetobacter*

124. Which of the following organism is not transmitted by soil?

- 1) Brucella
- 2) Coccidioidomycosis
- 3) Tetanus
- 4) Anthrax

125. Phenol co-efficient indicates

- 1) Purity of a disinfectant
- 2) Dilution of a disinfectant
- 3) Efficacy of a disinfectant
- 4) Quantity of a disinfectant

126. Definitive host of guinea worm is

- 1) Man
- 2) Cyclops
- 3) Snail
- 4) Tick

127. Which one of the following is true?

- 1) Agar has nutrient properties
- 2) Chocolate medium is selective medium
- 3) Addition of selective substances in a solid medium is tailed enrichment media
- 4) Nutrient broth is basal medium

128. Plasmids which do not possess information for self-transfer to another cell are known as

- 1) Conjugative plasmids
- 2) Cryptic plasmids
- 3) Non-conjugative plasmids
- 4) Incompatible plasmids

129. An example of single stranded linear DNA virus is

- 1) Parvovirus B19
- 2) Papilloma virus
- 3) Hepatitis B virus
- 4) Epstein Barr virus

130. Limulus amoebocyte lysate assay is used for the detection of bacterial

- 1) Pilli
- 2) Endotoxins
- 3) Peptidoglycan
- 4) Capsule

131. Creutzfeldt-Jakob disease (CID) is caused by

- 1) DNA viruses
- 2) Bacteria
- 3) Prions
- 4) RNA Viruses

Biotechnology

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

- 1) Colony hybridization
- 2) In situ hybridization
- 3) Dot blot technique
- 4) Western blotting

133. Chromosome painting used to detect chromosome translocation is also called:

- 1) Probing
- 2) FISH
- 3) M-FISH
- 4) Karyotyping

134. Which protein moves the least from point of application of sample while electrophoresis

- 1) alphaglobulin
- 2) beta globulin
- 3) gammaglobulin
- 4) albumin

135. Micro biosensors are based on

- 1) ions effect
- 2) ion sensitive field effect transistor
- 3) Piezoelectric effect
- 4) magnetic effect

136. P1 cloning vector allow cloning of DNA of the length of

- 1) 100 kbp
- 2) 50 kbp
- 3) 20 kbp
- 4) 10 kbp

137. The name Alec Jeffery is associated with

- 1) DNA Sequencing
- 2) RNA Sequencing
- 3) DNA Fingerprinting
- 4) Site-directed Mutagenesis

138. Hot-start PCR is a modification of PCR. Which of the following is not corresponding to it?

- 1) The basis is that extension is not started until the first cycle reaches its maximum temperature
- 2) The polymerase is added after the first cycle has reached its maximum temperature or melting temperature
- 3) It is satisfactory for small number of Samples
- 4) It leads to generation of non-specific products

139. Which of the following cannot be used to analyse unstained biological samples?

- 1) Dark-field microscopy
- 2) Electron microscopy
- 3) Fluorescence microscopy
- 4) Phase-contrast microscopy

140. Which of the following vector contains telomeric sequences?

- 1) Plasmid vector
- 2) Lambda vector
- 3) M13 vector
- 4) Yeast vector

141. The uptake of external DNA into bacterial cell is facilitated in the presence of

- 1) Calcium chloride
- 2) Polymerase
- 3) Endonuclease
- 4) Plasmid

142. In gel electrophoresis, which of the following molecule will move faster if the amount of DNA present is same in all?

- 1) Linear
- 2) Supercoiled
- 3) Nicked
- 4) Circular

Bioinformatics

143. Biochips are made up of

- 1) Semi-conducting molecules inserted into the protein frame work
- 2) Conducting molecules inserted into the protein frame work
- 3) Non-conducting molecules inserted into the protein frame work
- 4) Conducting molecules

144. Which of the following is a nucleotide sequence data base?

- 1) EMBL
- 2) SWISS PROT
- 3) PROSITE
- 4) TREMBL

145. The collection of proteins that can be produced by a given species is:

- 1) Considered as species' genetic complement
- 2) Correlates with the size of the organism
- 3) Called the Proteome.
- 4) Called as Transcriptome

Biophysics

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

- 1) Vavilov rule
- 2) Stokes shift
- 3) Kasha's rule
- 4) Stokes line

147. Which of the following does not absorb UV radiation?

- 1) Benzoic acid
- 2) Chloro-hexane
- 3) Nitrobenzene
- 4) Butadiene

Environmental Sciences

148. Which of the following is categorized as third generation pesticide?

- 1) Organophosphates
- 2) Chlorinated hydrocarbon s
- 3) Juvenile hormone
- 4) Rotenone

Veterinary Science

149. Rumen Gas largely consist of Carbon Dioxide and methane in the proportion of

- 1) 50: 50
- 2) 65 : 35
- 3) 40: 30
- 4) 80 : 20

150. An example of ruminant animal is

- 1) Horse
- 2) Cow
- 3) Rabbit
- 4) Rhinocer

ANSWER

SECTION-A

1	2	3	4	5	6	7	8	9	10
2	1	1	2	3	2	3	1	1	1
11	12	13	14	15	16	17	18	19	20
2	4	2	1	3	2	1	4	3	3
21	22	23	24	25	26	27	28	29	30
2	2	3	3	1	3	3	1	2	4
31	32	33	34	35	36	37	38	39	40
3	4	2	4	1	1	2	4	3	2
41	42	43	44	45	46	47	48	49	50
2	4	3	2	1	4	3	4	2	4

SECTION-B

51	52	53	54	55	56	57	58	59	60
3	2	1	2	4	3	3	3	1	3
61	62	63	64	65	66	67	68	69	70
4	2	2	1	4	2	3	4	1	4
71	72	73	74	75	76	77	78	79	80
4	3	3	1	3	3	4	2	1	4
81	82	83	84	85	86	87	88	89	90
3	3	4	3	3	3	4	2	1	2
91	92	93	94	95	96	97	98	99	100
3	1	1	1	3	1	1	2	2	3
101	102	103	104	105	106	107	108	109	110
2	2	1	2	1	3	1	4	2	3
111	112	113	114	115	116	117	118	119	120
1	2	2	2	3	2	2	4	1	3
121	122	123	124	125	126	127	128	129	130
2	2	2	4	3	1	4	3	1	2
131	132	133	134	135	136	137	138	139	140
3	3	2	3	2	1	3	3	2	4
141	142	143	144	145	146	147	148	149	150
1	2	1	1	3	2	2	3	2	2

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