Gujarat Biotechnology Research Centre
Industrial BT

Application No: _____

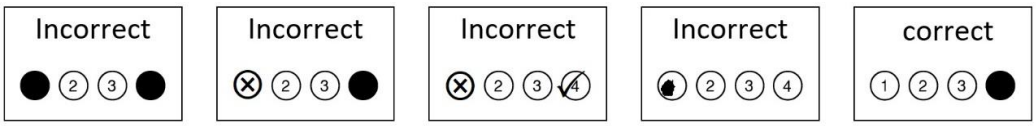
This question booklet contains 28 pages

Time: 2 Hours
Total Marks: 200
Total Questions: 200

Candidate Signature : ..... Invigilator Signature : .....

Instructions for Candidate

1. This question booklet contains 200 questions.
2. Each correct answer carries 1 mark.
3. Every attempted question with incorrect answer shall carry a negative mark of 0.25.
4. Use only Black Ball Point Pen to darken the appropriate circle in OMR.
5. Please darken the complete circle.
6. Darken ONLY ONE CIRCLE for each Question as shown below:



7. Answer once marked cannot be changed.
8. Please do not make any stray marks on the Question Booklet.
9. Rough works must be done on the blank page of Question Booklet.
10. Mark your answer in the appropriate space in the Answer Sheet against the Number corresponding to the question.
11. The Candidate has to submit Question booklet and OMR response sheet to the invigilator on conclusion of examination.

1 In biochemical reaction of a fermentation, organic compounds acts as ____.

(A) Electron donor
(B) Electron acceptor
(C) Electron donor and acceptor
(D) Proton donor

2 Which enzyme is generally not used in textile & laundry industry?

(A) Amylase
(B) Protease
(C) Lipase
(D) Streptokinase

3 What is the mode of action of moist heat to kill micro-organisms?

(A) Oxidation of nucleic acids
(B) Denaturation of polysaccharide
(C) Denaturation of protein
(D) Reduction of lipids

4 Which one is the best exmple of protected fermentation?

(A) Lysine fermentation
(B) Ethanol fermentation
(C) Citric acid fermentaion
(D) Amylase fermenation

5 Which bacterium of biofertilizer act as phosphate solublizer ?

(A) Pseudomonas putida
(B) Enterobacter aerogens
(C) Clostridium tetani
(D) Vibrio cholerae

6 Who produces cyclobutane type structure in DNA?

(A) UV rays
(B) X-rays
(C) Gamma rays
(D) 5- Bromouracil

7 What is the boiling point of ethanol?

(A) 70.37^0C
(B) 78.37^0C
(C) 90.73^0C
(D) 85.73^0C

8 What can be better preserved as dried culture?

(A) Fungal Hyphae
(B) Actinomycete spores
(C) Algal cells
(D) Bacterial cells

9 Which method involves the use of vaccum?

(A) Ultrasonication
(B) Autoradiography
(C) Lyophilization
(D) Ultracentrifugation

10 What is being repressed by feedback repression?

(A) Gene mutation
(B) Gene expression
(C) Gene duplication
(D) Gene modiification

11 Which two types of bonds are found in the structure of single stranded DNA?

(A) Ester bond and hydrogen bond
(B) Glycosidic bond and disulfide bond
(C) Glycosidic bond and hydrogen bond
(D) Glycosidic bond and ester bond

12 Which one is the Gram-negative endospore-forming bacterium?

(A) Sporomusa ovata
(B) Enterobacter aerogens
(C) Sporosarcina ureae
(D) Sporosarcina pasteurii

13 What is the aspect ratio of a fermenter vessel?

(A) Liquid height to fermenter depth ratio
(B) Raidus to diameter ratio
(C) Liquid height to tank diameter ratio
(D) Tank height to tank weight ratio

14 What is the best advatage of using Roux bottle for cell culture?

(A) Provide more surface area
(B) Easy to sterilize
(C) Easy to keep in an incubator
(D) Easy to open and close

15 What is measured by Del factor of sterilization process?

(A) Fractional reduction in viable organisms
(B) Fractional reduction in time & temperatue
(C) Logarithmic increase in heat
(D) Logarithmic decrease in heat

16 Which one is the ideal organism for testing autoclave that run on a time-temperature cycle?

(A) Bacillus megaterium
(B) Bacillus stearothermophilus
(C) Streptomyces coelicolor
(D) Bacillus thuringiensis

17 Which agent can be used for protoplast fusion?

(A) Polyethylene glycol
(B) Glycerol
(C) Gluteraldehyde
(D) Glucosamine

18 Which paramter is not concerned with solid substrate fermentation?

(A) Water activity
(B) Temperature
(C) Aeration
(D) Vortex

19 Tray fermenters are widely used for_____.

(A) Penicillin fermentation
(B) Ethanol fermentation
(C) Amylase fermentation
(D) Lysin fermentation

20 What is KLa in fermentation process?

(A) Oxygen transfer coefficient
(B) Heat transfer coefficient
(C) Hydrogen transfer coefficient
(D) Electron transfer coefficient

21 Which operation prevents contamination during fermentation process?

(A) Sterilization operation
(B) Heating operation
(C) Aseptic operation
(D) Microbiological operation

22 What is the use of kieselguhr in filtration process?

(A) Filter aid
(B) Filter cleaner
(C) Filter thinner
(D) Filter clogger

23 What is the frequency range of ultrasound waves?

(A) 20-200 Hz
(B) 20-20,000 Hz
(C) 200 -2000 Hz
(D) 2000 - 20,000 Hz

24 Which one of the following is the non-polar solvent?

(A) Ethylene glycol
(B) Acetone
(C) Ethyl acetate
(D) Hexane

25 In which law Molar extinction coefficient is used?

(A) Beer-Lambert law
(B) Boyle's Law
(C) Avogadro's Law
(D) Faraday's Law

26 Which bacterium is often credited as "natural genetic engineer"?

(A) Escherichia coli
(B) Pseudomonas aeruginosa
(C) Agrobacterium tumefaciens
(D) Bacillus subtilis

27 From which bacterium, restriction endonuclease PstI is derived?

(A) Pseudomonas stuartii
(B) Providencia stuartii
(C) Proteus stuartii
(D) Pseudomonas putida

28 Which technique can be efficiently performed by micro injection?

(A) IVF
(B) Plant tissue culture
(C) Animal cell culture
(D) Hydridoma technology

29 If a cloning vector can replicate in prokaryotes and eukaryotes both, it is correctly called as_____.

(A) Expression vector
(B) Recombinant vector
(C) Shuttle vector
(D) Hybrid vector

30 Which one is not the character of parasexual cycle of fungi imperfecti?

(A) Heterokaryon
(B) Mitotic crossing over
(C) Haploidization
(D) Polyploid cell

31 From which type of cells, spheroplasts can be prepared?

(A) Gram negative bacterial cells
(B) Red blood cells
(C) Animal cells
(D) Insect cells

32 Which technique is used to produce heterologus proteins?

(A) rDNA technology
(B) Hybridoma technology
(C) PCR
(D) DNA microarray

33 Which one is the typical character of a Photobioreactor?

(A) Made out of transparent material
(B) Having the device for photolysis
(C) Able to germinate plant seeds
(D) Having facility for rooting and shooting

34 Which one is the ideal place to fit mechanical foam breaker in a bioreactor?

(A) In the head space
(B) With cooling jacket
(C) Above the sparger
(D) Below the sparger

35 Which fermentation product can be easily recovered using azeotropic mixture of solvents?

(A) Penicillin
(B) Ethanol
(C) Citirc acid
(D) L-lysine

36 Which law of thermodynamics mention constant value of entropy?

(A) Zeroth law
(B) First law
(C) Second law
(D) Third law

37 Which subtype of UV radiation is considered as hard UV?

(A) UV-A
(B) UV-B
(C) UV-C
(D) UV-D

38 In waste water treatment process, which one is not the process of disinfection?

(A) Chlorination
(B) UV irradiation
(C) Ozonation
(D) Oxidation

39 Which oxidant is used to measure COD of waste water sample?

(A) Potassium dichromate
(B) Hydrogen peroxide
(C) Ozone
(D) Potassium permanganate

40 Who provides oxygen in oxidation ponds, used for treatment of organic waste?

(A) Protozoa
(B) Fungi
(C) Algae
(D) Hydrogen Peroxide

41 Which one is not the mechanism for removal of particles by depth filter?

(A) Electrostatic charge
(B) Inertial effect
(C) Direct interception
(D) Brownian motion

42 Which is the main contaminant of animal cell culture media?

(A) Algae
(B) Protozoa
(C) Mycoplasmas
(D) Mycobacteria

43 What are muteins?

(A) First generation insulin
(B) Second generation insulin
(C) Mutagens
(D) Mutants

44 Which type of issue can be mainly raised by experiments on human embryonic stem cells?

(A) Economical
(B) Ethical
(C) Legal
(D) Social

45 Genetically engineered E. coli are unable to grow out side a carefully defined culture medium. Such organism is known as_____.

(A) False-safe organism
(B) Far-safe organism
(C) Safe-organism
(D) Fail-safe organism

46 Total how many amino acids are there in an active insulin?

(A) 50
(B) 51
(C) 84
(D) 61

47 Which component of the fermentation medium is responsible for foam production?

(A) Polynucleotide
(B) Polyphosphate
(C) Polysaccharide
(D) Polypeptide

48 In restriction endonuclease EcoRI which strain of E. coli is represented by R?

(A) Ry1
(B) Ry
(C) Ry13
(D) Ry31

49 Which enzyme is required for homopolymer tailing of DNA?

(A) Alkaline phosphatase
(B) Terminal reductases
(C) Terminal trasferases
(D) DNA polymerase III of E. coli

50 For the preparation of cosmid, cos sites are generally derived from_____.

(A) T4 Phage
(B) λ Phage
(C) M13 Phage
(D) T2 Phage

51 What is the energy source of E. coli DNA ligase?

(A) NAD+
(B) ATP
(C) NADH2
(D) GTP

52 Which virus requires cDNA for its replication?

(A) SARS CoV2
(B) HIV
(C) TMV
(D) T4 Phage

53 Which one is the correct order of DNA transfer from Ti plasmid to plant cell?

(A) Ti-Plasmid-T-Strand-T-Complex-T-DNA
(B) Ti-Plasmid-T-Complex -T-DNA-T-Strand
(C) Ti-Plasmid-T-DNA-T-Complex-T-Strand
(D) Ti-Plasmid-T-DNA-T-Strand-T-Complex

54 Which cloning vector is suitable to use, if the size of insert (foreign DNA) is 40 kb?

(A) Plasmid
(B) Lambda phage DNA
(C) Cosmid
(D) Bacterial Artificial Chromosome (BAC)

55 Which one is the correct Monod equation?

(A) $\mu = \mu max + S / Ks + S$
(B) $\mu = \mu max\ S / Ks - S$
(C) $\mu max = \mu\ S / Ks+S$
(D) $\mu = \mu max \cdot S / Ks+S$

56 What is being kept constant in a chemostat bioreactor?

(A) Humidity
(B) pH
(C) Concentration of growth substrate
(D) Concentration of limiting substrate

57 Which factor is not a part of scale-up window?

(A) Bulk mixing
(B) Shear
(C) pH
(D) Foam

58 Ion exchange chromatography separates proteins differing in_____.

(A) Surface charge
(B) Cationic amino acids
(C) Anionic amino acids
(D) Solubility

59 In which process, Sephadex is generally used?

(A) Ion exchange chromatography
(B) Gel electrophoresis
(C) Column chromatography
(D) HPLC

60 Which microbiological medium is not used in sterility testing of a pharmaceutical compound?

(A) Tryptic soy broth
(B) Soybean casein digest broth
(C) Thioglycollate broth
(D) Tetrathionate broth

61 Which one is the typical character of Zymomonas mobilis?

(A) Anaerobic respiration
(B) Ethanol tolerance
(C) Endospore formation
(D) Gram positive cell wall

62 Which bacteriusm is used to produce Lysine at industrial level ?

(A) Bacillus cereus
(B) Brevibacterium flavum
(C) Corynebacterium diphtheriae
(D) Citrobacter freundii

63 What is the chemical nature of 4-atom ring of Beta lactum structure?

(A) Cyclic amide
(B) Cyclobutane
(C) Cycloalkane
(D) Cyclopropane

64 Which compound can act as an inducer of lactose operon?

(A) X-gal
(B) IPTG
(C) Lactose
(D) Lactic acid

65 What is used to precipitate out DNA from cell extract?

(A) Chillled ethyl alcohol
(B) Hot Ethanol
(C) Acetic acid
(D) Chillled ether

66 Which library can be produced by shot gun cloning?

(A) Genomic library
(B) cDNA library
(C) Plasmid library
(D) RNA library

67 Chemical synthesis of DNA is a _____phase synthesis process.

(A) Liquid
(B) Solid
(C) Gas
(D) Colloid

68 Which one is the true character of an exothermic reaction?

(A) High entropy
(B) High enthalpy
(C) High activation energy
(D) Low temperature

69 Which one of the following energy rich compounds, is widely used during bacterial protein synthesis?

(A) ATP
(B) GTP
(C) CTP
(D) TTP

70 Which one of the following enzymes, is unique to the Glyoxylate cycle?

(A) Malate dehydrogenase
(B) Malate synthase
(C) Aconitase
(D) Hexokinase

71 Which type of phosphorylation produces more ATP in heterotrophic microorganisms?

(A) Substrate level phosphorylation
(B) Oxidative phosphorylation
(C) Photo phosphorylation
(D) Pyro phosphorylation

72 Which one of the following, is not an intermediate of HMP shunt?

(A) Dihydroxyacetone phosphate
(B) Fructose 6-phosphate
(C) Erythrose 4-phosphate
(D) Ribulose 5-phosphate

73 Which one of the following, is an example of an oxygenic photosynthetic microorganism?

(A) Anabaena
(B) Chlorobium
(C) Rhodospirillum
(D) Heliobacteria

74 Which one of the following biomolecule, give maximum amount of energy upon its catabolism?

(A) Carbohydrate
(B) Protein
(C) Lipid
(D) Vitamins

75 During which biochemical pathway FAD is reduced to FADH2?

(A) Ethanol fermentation
(B) Lactic acid fermentation
(C) TCA cycle
(D) Glycolysis

76 Which chemical is used in buoyant density gradient centrifugation?

(A) $HgCl_2$
(B) CsCl
(C) $CaCl_2$
(D) $MgCl_2$

77 RCF of cenrifuge depends on_____.

(A) Radius of rotor
(B) Weight of the rotor
(C) Design of the rotor
(D) Material of the rotor

78 Resolving power of microscope is a function of _____.

(A) Magnification
(B) Refractive index
(C) Numerical aperture
(D) Contrast

79 Which type of electrophoresis is used to find the molecular weight of ptyalin?

(A) Agarose gel eletrophoresis
(B) Polyacryl amide gel electrophoresis
(C) SDS -PAGE
(D) Capillary electrophoresis

80 Who is considered as the guardian of the genome?

(A) Retinoblastoma protein
(B) p53
(C) BCL2
(D) p16

81 Which type of antibodies of mother, provides passive immunity to her baby before the birth and after the birth respectively?

(A) IgG and IgA
(B) IgG and IgM
(C) IgA and IgD
(D) IgA and IgM

82 Which of the following is not a desired characteristic of an organism for industrial application?

(A) Should produce less amount of product
(B) Should be readily available
(C) Should grow rapidly
(D) Should be nonpathogenic

83 Solvents and enzymes fall under which of the categories of microbial sources?

(A) Pharmaceutical chemicals
(B) Commercially valuable chemicals
(C) Food supplements
(D) Alcoholic beverages

84 Which of the following is a secondary microbe used for blue cheese production?

(A) Streptococcus thermophilus
(B) Lactobacillus bulgaricus
(C) Penicillium roqueforti
(D) Rhizopus stolonifer

85 Which among the following is commonly observed induced mutation?

(A) A-A dimer
(B) C-C dimer
(C) T-T dimer
(D) G-G dimer

86 Which of the following cannot induce mutations?

(A) X-rays
(B) Gamma rays
(C) Bromine
(D) Chlorine

87 Which of these best describes Hazard group 3 organisms?

(A) Can cause severe human disease and may be a serious hazard to employees; it may spread to the community, but there is usually effective prophylaxis or treatment available
(B) Unlikely to cause human disease
(C) Can cause human disease and may be a hazard to employees; it is unlikely to spread to the community and there is usually effective prophylaxis or treatment available
(D) Causes severe human disease and is a serious hazard to employees; it is likely to spread to the community and there is usually no effective prophylaxis or treatment available

88 What is utmost important pre-requisite for commercial enzyme production?

(A) Cheap source
(B) Extraction
(C) Purification
(D) Isolation

89 Which of the following is not a limiting factor for starting material selection during enzyme production?

(A) Source selection
(B) Availability of enzyme in the source
(C) Isolation procedures
(D) Location of enzyme

90 Which of these lead to destabilization and fragmentation of membrane mediated by a nucleophilic attack on compounds of cell wall membrane?

(A) EDTA
(B) Osmotic shock
(C) Alkali
(D) Detergent

91 Inhibition of lactase by galactose is an example of?

(A) Uncompetitive inhibition
(B) Mixed inhibition
(C) Competitive inhibition
(D) Substrate inhibition

92 In which of the following, the loss of activity can be restored by the removal of inhibitor?

(A) Reversible inhibition
(B) Irreversible inhibition
(C) Competitive inhibition
(D) Mixed inhibition

93 Which of these bacteria acts as a redox mediator in microbial fuel cells?

(A) Pseudomonas aeruginosa
(B) Geothrix ferementans
(C) Desulfuromonas acetoxidans
(D) Shewanella oneidensis

94 In pharmacodynamics, which method is appropriate to study bioavailability?

(A) Acute pharmacologic response
(B) Plasma-level time studies
(C) Urinary excretion studies
(D) Stool excretion studies

95 Which of the following microbes are used in photobioreactors?

(A) Fungi
(B) Bacteria
(C) Microalgae
(D) Cyanobateria

96 Drug that is coated to conceal the damage in it, falls under which category?

(A) Misbranded drugs
(B) Spurious drugs
(C) Adulterated drugs
(D) Impure Drugs

97 Which bacteriological medium is genearlly used to isolate Azotobacter from soil?

(A) Yeast extract mannitol agar
(B) Nutrient agar
(C) Ashby's mannitol agar
(D) Glucose asparagine agar

98 Raising crops for ethanol production is called _____

(A) Energy plantation
(B) Energy cropping
(C) Agro-technology
(D) Biomass production

99 DNA Microarray involves which fluorescent dye

(A) Propidium iodide
(B) Cyn 3 + Cyn 5
(C) Sybr green
(D) Ethidium bromide

100 Which is the first Restriction endonuclease to be isolated and characterized?

(A) EcoRI
(B) BamHI
(C) Sma I
(D) Hind II

101 What is compared in the Analysis of variance?

(A) Standard deviation
(B) Variances
(C) Means
(D) Proportions

102 Which of the following has higher acidity and lacks aroma?

(A) Cultured buttermilk
(B) Cultured sour cream
(C) Bulgarian milk
(D) Acidophilus milk

103 p53 is capable of binding to which family of proteins?

(A) Bcl-1
(B) Bcl-2
(C) Bcl-3
(D) Bcl-4

104 Monocytes differentiate into which kind of phagocytic cells?

(A) Neutrophil
(B) B cell
(C) T cells
(D) Macrophage

105 In PAM scoring matrics, PAM stands for

(A) Percentage Accepted Mutation
(B) Point Accepted Mutation
(C) Pairwise Accepted Mutation
(D) Parental Accepted Mutation

106 Low Complexcity Regions are

(A) Conserved region
(B) Repeats of single amino acids or short amino acid motifs with low diversity
(C) Motif with high diversity
(D) Conserved region with high diversity

107 The commonly used Polymerase in PCR is a type of

(A) RNA Polymerase
(B) DNA Polymerase
(C) DNA-directed RNA polymerase
(D) Nucleic Acid Polymerase

108 In PCR, the binding of primer to denatured DNA strand is called _____

(A) Extension/ Elongation
(B) Annealing
(C) Denaturation
(D) Initial Denaturation

109 The difference between dNTPs and ddNTPs are

(A) Absence of OH at 3 ' end of sugar molecule of ddNTP
(B) Absence of H at 3 ' end of sugar molecule of ddNTP
(C) Absence of nitogen base at 5 ' end of sugar molecule of ddNTP
(D) Absence of phosphate at 5' end of sugar molecule of ddNTP

110 The phenomena of two genes on same chromosome staying together during inheritance over several generation is

(A) Crossing Over
(B) Linkage
(C) Recombination
(D) Replication

111 Plasmodium species which causes cerebral malaria in Humans is _____

(A) Plasmodium vivax
(B) Plasmodium falciparum
(C) Plasmodium knowlesi
(D) Plasmodium ovale

112 Plasma Membrane consists of

(A) Lipid layer between 2 protein layers
(B) Bimolecular lipid layer surrounded by protein layers
(C) Protein layer surrounded by 2 lipid layers
(D) Bimolecular protein layer surronded by lipid layers

113 The composition of lysis buffer used in alkaline lysis method of plasmid DNA isolation is

(A) Tris/HCl
(B) Potassium Acetate
(C) Isopropanol
(D) NaOH, SDS

114 Which of the following is not a preservative?

(A) Methyl Paraben
(B) Methyl Trichloride
(C) Phenol
(D) Chlorobutanol

115 Northen blots are used to

(A) Duplicate a specific stretch of RNA for cloning purposes
(B) Determine the relative abundance of two mRNA
(C) Study both ribosomal and messenger RNA in single experiment
(D) Identify full length of a specific RNA

116 The two sample T test compares the

(A) Standard deviation of the two groups
(B) Means of the two groups
(C) Variance of the two groups
(D) Ranking of the two groups

117 Not an example of evolution via natural selection

(A) Galapagos finches with different types of beaks
(B) Moray eels evolved to grow a second set of jaws
(C) Amish people community with Ellis -van creveld Syndrom
(D) People with sickle cell anaemia are resistant to Malaria

118 Hardy-Weinberg theorem describes

(A) No change in frequency of alleles
(B) Mutations as evolutionary force for allele frequency change
(C) Genetic Drift as evolutionary force for allele frequency change
(D) Natural Selection as evolutionary force for allele frequency change

119 Upon plotting velocity of enzyme activity against substrate

(A) A hyperbolic curve is obtained
(B) A parabolic curve is obtained
(C) A stright line with positive slope is obtained
(D) A straight line with negative slope is obtained

120 In response to antigen, polyclonal antibodies are produced by _____

(A) T Lymphocytes
(B) B Lymphocytes
(C) Plasma cells
(D) Immunoglobulins

121 A carboxylic acid with a long unbranched aliphatic hydrocarbon chain is known as _____

(A) Glycolipids
(B) Fat
(C) Lipid
(D) Fatty Acid

122 Non polar compound are transported via membrane through _____

(A) Simple diffusion
(B) Ionophore mediated ion transport
(C) Ion channel
(D) Against electrochemical gradient

123 The enzyme Thymosine produced by thymus does not modulate _____

(A) Cell Migration
(B) Transcription
(C) Angeogenesis
(D) Immune response

124 In Mendal's dihybrid cross of Round, green and wrinkeled, yellow plants the expected phenotype of F1 progeny is _____

(A) Round and Green
(B) Round and Yellow
(C) Wrinkled and Green
(D) Wrinkled and Yellow

125 Online resource for comprehensive knowledge of human genes and genetic phenotypes is _____

(A) GenBank
(B) DDBJ
(C) OMIM
(D) PubMed

126 Smith-waterman algorithm of DNA Sequence Alignment is used in _____

(A) Global Alignment
(B) Pairwise Alignment
(C) Local Alignment
(D) BLAST

127 Which is not a component of phylogenetic tree?

(A) Taxon
(B) Node
(C) Root
(D) Motif

128 The result of impaired DNA mismatch repair is creation of _____

(A) Microsatellites
(B) SNPs
(C) Mutations
(D) Microsatellite instability

129 Which is not a type of homologous sequence?

(A) Orthologous
(B) Paralogous
(C) Xenologous
(D) Analogous

130 CRISPER system comprises of two components _____

(A) dgRNA and endonuclease
(B) sgRNA and endonuclease
(C) dgDNA and endonuclease
(D) sgDNA and endonuclease

131 The average ϕ and ψ angles of the amino acids in the right-handed helix are approximately _____

(A) 60° and 40°
(B) 70° and 40°
(C) 80° and 40°
(D) 70° and 30°

132 Which of the following fall under Gram-positive eubacteria?

(A) Clostridium
(B) Actinomyces
(C) Rhizobium
(D) Both A and B

133 According to Bergey's Manual of Systematic Bacteriology, prokaryotes that lack a cell wall or are thin walled belong to the group?

(A) Gracilicutes
(B) Firmicutes
(C) Tenericutes
(D) Mendosicutes

134 What is the correct order of taxonomic groups from higher to lower rank?

(A) Kingdom—Order—Class—Family—Genus—Species
(B) Order—Class—Division—Family—Genus—Species
(C) Kingdom—Divison—Order—Family—Class—Genus—Species
(D) Kingdom—Division—Class—Order—Family—Genus—Species

135 Which of the following types of processing is not used to prepare mature rRNA?

(A) Splicing
(B) Methylation
(C) Glycosylation
(D) Conversion of uridine

136 What is the function of polynucleotide kinase?

(A) Addition of γ – phosphate at 3’ – OH
(B) Addition of γ – phosphate at 5’ – OH
(C) Removal of γ – phosphate at 3’ – OH
(D) Removal of γ – phosphate at 5’ – OH

137 Which of the following is not a commonly used adjuvant in vaccines?

(A) Aluminum sulfate
(B) Aluminum hydroxide
(C) Potassium aluminum sulfate
(D) Formaldehyde

138 All of the following inhibit nucleic acid synthesis except _____

(A) Chloramphenicol
(B) Trimethoprim
(C) Rifampicin
(D) Norfloxacin

139 Which of the following cannot be used as an adsorbent in Column adsorption chromatography?

(A) Potassium permanganate
(B) Magnesium oxide
(C) Silica gel
(D) Activated alumina

140 Cdk2/cyclinE functions during _____

(A) G2 phase
(B) M phase
(C) G1/S transition
(D) G2/M transition

141 Which of the following is related to the intrinsic pathway of apoptosis?

(A) Cytochrome d
(B) Cytochrome c
(C) Cytochrome b
(D) Cytochrome a

142 Which is a microfilament inhibitor?

(A) Colchicine
(B) Cinchonine
(C) Aspirin
(D) Cytochalasin-B

143 An excised piece of leaf or stem tissue used in micropropagation is called _____

(A) Microshoot
(B) Medium
(C) Scion
(D) Explant

144 Interferons act as _____

(A) Physical barriers
(B) Physiological barriers
(C) Cellular barriers
(D) Cytokine barriers

145 Who described the disposal of antibodies and steroid wastes?

(A) Colovos and Tinklenberg
(B) Zajic and Melcher
(C) Smith
(D) Mbagwu and Ekwealor

146 Which of the following is not a hazard group 2 organism?

(A) Staphylococcus aureus
(B) Streptococcus pneumoniae
(C) Treponema pallidum
(D) Yersinia pestis

147 Antibody class found at highest concentrations in serum is _____

(A) IgD
(B) IgE
(C) IgG
(D) IgM

148 During which process is the green beer converted into mature beer?

(A) Primary fermentation
(B) Secondary fermentation
(C) Tertiary fermentation
(D) Conditioning

149 Which is not an operational technique for chemical or biochemical plant?

(A) Continuous
(B) Batch-wise
(C) Semi-continuous
(D) Discontinuous

150 Which separation technique is not used in the process of manufacturing citric acid ?

(A) Ultrafiltration
(B) Ion-exchange
(C) Crystallization
(D) Distillation

151 Which of the following should be implemented in extracting conjugated enzymes?

(A) Apt chemical compounds
(B) Suitable density gradient
(C) Centrifugation technique
(D) Proper filtration

152 Which of following is not a focus in conversing microbial communities to biofuel?

(A) Substrate flexibility
(B) High productivity
(C) Higher number of products in one process
(D) Tolerance to stress

153 If all the nucleotides are present with equal frequencies and at random, what is the probability of having a particular four nucleotide long motif?

(A) 1 by 8
(B) 1 by 16
(C) 1 by 64
(D) 1 by 256

154 Which type of restriction endonucleases is used most in genetic engineering?

(A) Type I
(B) Type II
(C) Type III
(D) Type IV

155 Cryptic plasmids

(A) do not exhibit any phenotypic trait
(B) exhibit many phenotypic traits
(C) exhibit one phenotypic trait
(D) exhibit antibiotic resistance

156 Recombinant engineered vaccines are being extensively explored to eradicate all of the below, except?

(A) Infectious diseases
(B) Cancers
(C) Allergies and cancers
(D) Mental illness

157 Lipinski's rule of five is used for

(A) Docking
(B) Similarity search
(C) Drug likeness
(D) Dynamics simulation

158 Plasmids which are maintained as multiple copy numbers per cell are called?

(A) Stringent plasmids
(B) Cryptic plasmids
(C) Relaxed plasmids
(D) None of the above

159 Which of the following best describes a lead compound?

(A) A molecule that shows some activity or property of interest and serves as the starting point for the development of a drug
(B) A compound from the research laboratory that is chosen to go forward for preclinical and clinical trials
(C) The first compound of a structural class of compounds to reach the market
(D) A compound that contains the element lead

160 Which of the following is a growth regulator involved in abscission, dormancy, and inhibition of seed germination?

(A) IAA
(B) Gibberellic acid
(C) Abscisic acid
(D) IPTG

161 In HTST or Flash pasteurization milk is heated to _____

(A) 71.6^{o}C for at least 15 secs.
(B) 62.9^{o}C for at least 30 mins.
(C) 87.8^{o}C for at least 3 secs..
(D) 75.2^{o}C for at least 15 secs.

162 Substilisin Carlsberg produced by B. licheniformis is commercially produced for

(A) Detergents
(B) Dairy products
(C) Kefir
(D) Starch hydrolysis

163 Industrial strains of which organisms is used for production of Vitamin B12 ?

(A) Asbhya gossypii
(B) Propionibacterium shermanii
(C) Candida albicans
(D) Streptococcus cremoris

164 Which of the following vectors is derived from pBR322 by deletion of nucleotides between 1427 and 2516?

(A) pBR325
(B) pAT153
(C) pBR324
(D) pBR327

165 Microbial production of glutamic acid production involves _____

(A) Use of Corynebacterium glutamicum mutant producing high level of alcohol dehydrogenase
(B) Anaerobic fermentation using Corynebacterium glutamicum mutant
(C) Use of Corynebacterium glutamicum mutant requiring excess of biotin in the medium
(D) Use of Corynebacterium glutamicum mutant grown in medium deficient in biotin

166 Aroclor 1260 is _____

(A) A toxic polychlorinated biphenyl (PCB)
(B) Used in chlorination of water
(C) A cyanide
(D) A chemotherapeutic agent

167 Cyclohexidine and nystatin are commonly incorporated in media to enhance isolation of _____

(A) Nocardia spp
(B) Penicillium spp
(C) Fusarium spp
(D) Mycoplasma

168 Which of the following antibiotic is used in media for the isolation of fungi from soil?

(A) Cycloheximide
(B) Streptomycin
(C) Nystatin
(D) Pimaricin

169 Identify the medium used to differentiate typical and atypical coliforms _____

(A) MacConkey's agar
(B) GYE agar
(C) EMB agar
(D) SS agar

170 Biochemical Induction Assay (BIA) is used for screening for anticancer agents based on _____

(A) λ phage, E. coli & β-galactosidase
(B) T4 phage & β-galactosidase
(C) T4 phage & E. coli
(D) pUC119 & β-galactosidase

171 The statistical method used for medium optimization for more than five independent variables _____

(A) Response surface design
(B) SAS analysis
(C) Plackett-Burman design
(D) Single-dimensional search

172 Sodium thioglycolate is added to the medium for _____

(A) lowering the redox potential
(B) Inhibit anaerobic bacteria
(C) Increase the redox potential
(D) Adjust the pH

173 Biotransformation of Testosterone to Androstenedione (AD) is carried out by _____

(A) Lactate dehydrogenase
(B) Pig liver esterase
(C) Hydroxysteroid dehydrogenase
(D) Hydroxysteroid carboxylase

174 Which of the following is useful for Continous fermentation?

(A) Turbidostat
(B) Koji process
(C) Roll-tube method
(D) Shake flask culture

175 A homoserine auxotroph of Brevibacterium lactofermentum is used for overproduction of _____

(A) Ornithine
(B) Tryptophan
(C) Lysine
(D) Glutamic acid

176 Genetic mapping or linkage analysis in streptomyces coelicolor is commonly based on _____

(A) Transduction
(B) Transformation
(C) Conjugation
(D) Induction

177 Rhamnolipids are biosurfactant produced by _____

(A) Acinetobacter sp.
(B) Pseudomonas aeruginosa
(C) Candida bombicola
(D) Candida lipolytica

178 Which of the following is a shuttle vector that can autonomously replicate in E. coli and Saccharomyces cerevisiae?

(A) YEp24
(B) YIp26
(C) pYAC3
(D) pJB8

179 Enzyme immobilization by Chitosan requires _____

(A) Acetic acid and glutaraldehyde
(B) UV radiation and benzoic acid
(C) Acetate buffer and n-butyl acetate
(D) Potassium persulfate and riboflavin

180 Which of the following is a national DNA information repository maintained by FBI for DNA profiling?

(A) PDQ
(B) NDIS
(C) CODIS
(D) GelJ

181 Cyanogen Bromide (CNBr) method is used for enzyme immobilization by covalent bond formation via:

(A) Carboxyl group (COOH)
(B) Hydroxyl group (OH)
(C) Aldehyde (CHO)
(D) Aromatic amine

182 Difco PPLO broth is used for detection of contamination of cell cultures by:

(A) Mycoplasma
(B) E. coli
(C) Viruses
(D) Neisseria

183 The dimension / unit used to represent OTR, OSR and OUR are:

(A) mol m-3 h-1
(B) Pa
(C) m3 h-1
(D) Kg m-3 h-1

184 The presence of multiple contaminants in medium during a fermentation process indicates _____

(A) Contamination through technician's hands
(B) Failure of Air filters
(C) Contamination through water supply
(D) Improper inoculum

185 Cohen - Boyer Stanford patent which includes over 60 licenses have been taken as:

(A) Non-exclusive licenses
(B) Exclusive licenses
(C) Trade secret protection
(D) Copyright

186 Transforming Principle / factor in DNA was proved by _____

(A) Luria and Delbruck
(B) Avery, Macleod and McCarty
(C) Levine and Jones
(D) Joshua Lederberg

187 Which of the following is used as a vector for animal cells?

(A) pRK290
(B) Retrovirus
(C) Gemini virus
(D) CaMV

188 The first multicellular eukaryotic genome to be sequenced

(A) Saccharomyces cerevisiae
(B) Caenarhabditis elegans
(C) Trypanosoma sp.
(D) Euglena sp.

189 The year in which 99.0% of the Human Genome was sequenced successfully is _____

(A) 1998
(B) 2001
(C) 2003
(D) 2005

190 One-gene-One-enzyme hypothesis was based on experimental work using _____

(A) Aspergillus niger
(B) Neurosora crassa
(C) Fusarium oxysporum
(D) Alterneria solani

191 Which of the following can be used as an expression vector?

(A) pBR327
(B) λgt11
(C) λEMBL3
(D) Charon40

192 The S-D sequence for ribosomal binding is of _____ nucleotides

(A) 10 to 15
(B) 6 to 8`
(C) 20 to 25
(D) 2 to 3

193 cDNA is synthesized using

(A) Alkaline phosphatase
(B) Reverse transcriptase
(C) Terminal transferase
(D) DNA ligase

194 Which of the following is not a hexanucleotide recognizing restriction endonuclease?

(A) AluI
(B) EcoRI
(C) Mst II
(D) HindIII

195 Which of the following is not used in DNA sample loading buffer in agarose gel electrophoresis?

(A) Ficoll
(B) IPA
(C) Glycerol
(D) Bromophenol blue

196 Calculate the quantity (vol.) of EtBr (10mg/ml) to be added to 150 ml agarose gel solution to get a final concentration of 10µg/ml

(A) 15µl
(B) 0.15ml
(C) 5µl
(D) 50µl

197 Which of the following is not a type of PFGE?

(A) CHEF
(B) TAFE
(C) PAGE
(D) PACE

198 Which of the following is not related with BAC vector?

(A) Contains λ phage Cos site
(B) Plasmid vector
(C) Low copy number
(D) Ori from E. coli F factor

199 Gel retardation assay is useful in:

(A) study DNA-protein interaction
(B) DNA-RNA hybridization
(C) Colony hybridization
(D) Northern Blotting

200 The size of a genomic library does not depend upon _____

(A) Size of insert
(B) Probability
(C) Size of genome
(D) Size of vector

Industrial Biotechnology

Provisional Answer Key

Q.No	Option	Q.No	Option	Q.No	Option	Q.No	Option
1	C	51	A	101	C	151	B
2	D	52	B	102	C	152	C
3	C	53	D	103	B	153	D
4	B	54	C	104	D	154	C
5	A	55	D	105	B	155	A
6	A	56	D	106	B	156	D
7	B	57	C	107	B	157	C
8	B	58	A	108	B	158	C
9	C	59	C	109	A	159	A
10	B	60	D	110	B	160	C
11	D	61	B	111	B	161	A
12	A	62	B	112	B	162	A
13	C	63	A	113	D	163	B
14	A	64	B	114	B	164	D
15	A	65	A	115	D	165	D
16	B	66	A	116	B	166	A
17	A	67	B	117	C	167	A
18	D	68	A	118	A	168	B
19	C	69	B	119	A	169	C
20	A	70	B	120	B	170	A
21	C	71	B	121	D	171	C
22	A	72	A	122	A	172	A
23	B	73	A	123	B	173	C
24	D	74	C	124	B	174	A
25	A	75	C	125	C	175	C
26	C	76	B	126	C	176	C
27	B	77	A	127	D	177	B
28	A	78	C	128	D	178	A
29	C	79	C	129	D	179	A
30	D	80	B	130	B	180	C
31	A	81	A	131	A	181	B
32	A	82	A	132	D	182	A
33	A	83	B	133	C	183	A
34	A	84	C	134	D	184	B
35	B	85	C	135	A	185	A
36	D	86	D	136	B	186	B
37	C	87	A	137	D	187	B
38	D	88	A	138	A	188	B
39	A	89	C	139	A	189	C
40	C	90	C	140	C	190	B
41	D	91	C	141	B	191	B
42	C	92	A	142	D	192	B
43	B	93	B	143	D	193	B
44	B	94	A	144	D	194	A
45	D	95	C	145	A	195	B
46	B	96	A	146	D	196	A
47	D	97	C	147	C	197	C
48	C	98	B	148	D	198	A
49	C	99	B	149	D	199	A
50	B	100	D	150	D	200	D