

**COMBINED TECHNICAL SERVICES EXAMINATION
(INTERVIEW POST)**

COMPUTER BASED TEST

DATE OF EXAM: 21.07.2025 FN

PAPER – II – BIO-TECHNOLOGY

(PG DEGREE STANDARD) (CODE: 471)

1. The primary characteristic of a bionanomaterial is
 - (A) Biofunctionality
 - (B) Bioavailability
 - ☒ (C) Biocompatibility
 - (D) Bioequivalence
 - (E) Answer not known

2. The scientist pioneered chemical modifications in nanosystem that lead to the major contribution to Nanobiotechnology.
 - (A) Eric Drexler
 - (B) Richard Smalley
 - (C) Robert Curl
 - ☒ (D) Chad Mirkin
 - (E) Answer not known

3. The controlled release of drug delivery system is maximum mediated by
 - (A) Rate - preprogrammed drug delivery system
 - (B) Activation - modulated drug delivery system
 - (C) Feedback - Regulated drug delivery system
 - ☒ (D) Site - targeting drug delivery system
 - (E) Answer not known

4. Extended three dimensional lattices of DNA nanostructures are analyzed by
 - ☒ (A) X-ray crystallography
 - (B) Cryo-electron microscopy
 - (C) Transmission electron microscopy
 - (D) Atomic force microscopy
 - (E) Answer not known

5. To enable targeted imaging in Optical Projection Tomography (OPT) the nanoparticle used as contrast enhancer.
- ☒ (A) Gold nanoparticle (B) Silver nanoparticle
(C) Zinc nanoparticle (D) Titania nanoparticle
(E) Answer not known
6. A surface analysis technique that measures the energy lost, when low-energy electrons collide with a surface is
- (A) Raman spectroscopy ☒ (B) Electron spectroscopy
(C) Mass spectroscopy (D) Particle spectroscopy
(E) Answer not known
7. Name the protein layer that has the ability to self assemble into a monomolecular protein lattice on various types of nano solid supports.
- (A) Capsule layer ☒ (B) S-layer
(C) Slime layer (D) Glycoprotein layer
(E) Answer not known
8. Find among the following which is NOT involved in the process of assisted protein folding.
- ☒ (A) Peptide bond hydrolysis (B) Heat shock protein
(C) Disulfide interchange (D) Chaperonin
(E) Answer not known

9. Choose the correct dimension of the Nanometers (nm)
- (i) Protein – 5-50 nm
 - (ii) Atom – 2 nm
 - (iii) DNA (width) – 0.1 nm
- (A) (i) and (iii) are correct (B) (ii) is correct
☒ (C) (i) is correct (D) (ii) and (iii) are correct
(E) Answer not known
10. Choose the following was correct range of 'nm' in DNA based Nano structure.
- (A) 100 – 1000 nm (B) 10 – 200 nm
☒ (C) 10 – 100 nm (D) 1000 – 2000 nm
(E) Answer not known
11. Who was first measured the size of the Nanoparticles?
- (A) Richard Feynman – 1959
☒ (B) Richard Zsig-Mondy – 1925
(C) Norio Taniguchi – 1974
(D) Binnig and Heinrich Rohrer – 1981
(E) Answer not known

12. Which among the following was the important perform of Magnetic Nanomaterials?

- ☒ (A) Low Temperature and High Magnetic field conditions
- (B) Low Temperature and Low Magnetic field conditions
- (C) High Magnetic field conditions and High Temperature
- (D) Low Magnetic field and High Temperature
- (E) Answer not known

13. Correctly paired the nanomaterial preparation and their corresponding host

- (1) Silver – Escherichia Coli
 - (2) Cadmium Sulphide – Escherichia Coli
 - (3) Magnetite – Actinobacteria
 - (4) Gold – Lactobacillus
- (A) (1) and (3) are correct (B) (2) and (4) are correct
- (C) (4) and (1) are correct ☒ (D) (2) and (3) are correct
- (E) Answer not known

14. Choose the right answer

Bio MEMS are being researched for possible application sectors in Nanobiotechnology filial

- (i) Biological imaging
- (ii) Tissue and stem cell engineering
- (iii) Neurosurgical treatments
- (iv) Lab on a chip experiments

- (A) (i) and (ii) only
- (B) (ii) and (iii) only
- (C) (i) and (iv) only
- ~~(D)~~ (i), (ii), (iii) and (iv)
- (E) Answer not known

15. Name the causative agent for anaerobic wound infection.

- (A) E. coli
- (B) Proteus
- ~~(C)~~ B. melaninogenicus
- (D) Staph. aureus
- (E) Answer not known

16. Choose the wrong matches type

- | | | |
|-------------------------|---|---------------------------|
| 1. Palisade arrangement | – | Corynebacterium diptheria |
| 2. Streptobacilli | – | Bacillus subtilis |
| 3. Diplobacilli | – | Streptococcus |
| 4. Trichomes | – | Staphylococcus |

- ~~(A)~~ (3) and (4)
- (B) (1) and (2)
- (C) (2) and (3)
- (D) (3) and (1)
- (E) Answer not known

17. Who identified the causative agent of tuberculosis?
(A) Columbus ~~(B) Robert Koch~~
(C) Christopher (D) Girolamo
(E) Answer not known
18. Yellow fever was discovered by
~~(A) Walter Read~~ (B) Oscar Median
(C) Jacob Von Heine (D) William Popper
(E) Answer not known
19. The process of converting substances containing protein and organic N into amino gp is called as
(A) Animation ~~(B) Aminization~~
(C) Ammoniphication (D) Acidification
(E) Answer not known
20. The leaf surface is called as
~~(A) Phyllophane~~ (B) Phyllosphere
(C) Rhizosphere (D) Habitat
(E) Answer not known
21. The mixture of wood and bark waste burnt collectively called as
(A) Solid waste ~~(B) Hog fuel~~
(C) Ash (D) Compressed wood
(E) Answer not known

22. Immobilized white rot fungus is used to remove _____ from paper mill.
- (A) Metals (B) Dyes
~~(C)~~ Brown lignin compound (D) Sewage
(E) Answer not known
23. The average size of bacterial cell is _____ diameter.
- ~~(A)~~ 0.001 mm in diameter
(B) 0.0001 mm in diameter
(C) 0.00001 mm in diameter
(D) 0.01 mm in diameter
(E) Answer not known
24. What bacteria is used for the production of sorbase?
- ~~(A)~~ Gluconobacter (B) Saccharomyces
(C) Acetobacter (D) Pediococcus
(E) Answer not known
25. Which among the following is Not a source of organic nitrogen?
- (A) Beef extract (B) Yeast extract
(C) Peptone ~~(D)~~ Agar
(E) Answer not known
26. In eukaryotes the oxidative phosphorylation occur in inner membrane of
- (A) Cell wall ~~(B)~~ Mitochondria
(C) Nucleus (D) Vacuoles
(E) Answer not known

27. In the following identify the chemotroph which utilize ammonia as energy source
- ~~(A)~~ Nitrosomonas (B) Nitrobacter
 (C) Beggiatoa (D) Thiobacillus
 (E) Answer not known
28. In glycolytic pathway the disaccharide lactose is converted to glucose and galactose in the presence of the enzyme
- (A) Fructokinase ~~✓(B)~~ Galactosidase
 (C) Glucosidase (D) Aldolase
 (E) Answer not known
29. _____ source of enzymes are commercially better.
- (A) Plant (B) Animal
~~(C)~~ Microbial (D) Metal
 (E) Answer not known
30. The enzyme which has potential application in Lymphocytic leukemia is
- ~~(A)~~ Asparaginase (B) Oxidases
 (C) Catalases (D) Proteases
 (E) Answer not known
31. Michaelis – Menten equation is
- ~~(A)~~ $v = \frac{V_{\max}[S]}{[S] + K_m}$ (B) $E = MC^2$
 (C) $M_1 + M_2 = M_3 + M_4$ (D) $X = Y + c^2$
 (E) Answer not known

32. The dissolution of blood clots is done by the enzyme
- (A) Amylase (B) Esterase
(C) Pepsin ~~(D) Urokinase~~
(E) Answer not known
33. The enzyme used for leather softening
- ~~(A) Proteases~~ (B) Ligase
(C) Lipases (D) Pectinase
(E) Answer not known
34. Which among the following is true about enzyme?
- (1) Pass through dialysis membrane
(2) Denature by heat
(3) It is not precipitated by ethanol
(4) Precipitated by Ammonium sulfate
- (A) (1) and (2) (B) (3) and (4)
~~(C) (2) and (4)~~ (D) (1) and (3)
(E) Answer not known
35. Name the class of enzymes that carryout addition of removal of group of atoms without water.
- ~~(A) Lyase~~ (B) Ligase
(C) Transferase (D) Isomerase
(E) Answer not known

36. The substance that enhance the immune response to an immunogen is
- ~~(A)~~ Adjuvant (B) Hapten
(C) Epitope (D) Paratope
(E) Answer not known
37. In the below, which enzyme is utilized in enzyme linked immunosorbent assay
- ~~(A)~~ Horse radish peroxidase (B) Catalase
(C) Phosphatase (D) Ligases
(E) Answer not known
38. Phagosome is a
- (A) Nucleus ~~(B)~~ Vacuole
(C) Cell (D) Cyst
(E) Answer not known
39. The coat proteins are called as
- ~~(A)~~ Opsonins (B) Prions
(C) Virions (D) Toxin
(E) Answer not known
40. The hair desiccation and brittleness can be prevented by
- ~~(A)~~ Sebum (B) Serum
(C) Saliva (D) Tears
(E) Answer not known

41. The hypothesis of phagocytosis was proposed by
(A) Emil Von Behring (B) Karl Landsteiner
~~(C)~~ Elie Metchnikoff (D) Jules Bordet
(E) Answer not known
42. Blood clotting is the main function of the
(A) Granulocytes (B) Agranulocytes
~~(C)~~ Thrombocytes (D) Phagocytes
(E) Answer not known
43. Which of the following genome annotation pipeline uses annotation edit distance as a quality metric?
(A) PASA (B) ENSEMBL
(C) BRAKER 1 ~~(D)~~ MAKER 2
(E) Answer not known
44. Which of the following statement is true?
Assertion [A] : CG is the least frequent dinucleotide in many genomes.
Reason [R] : C in GG dinucleotide is often methylated and can mutate to 'T' reducing its frequency
(A) Both [A] and [R] are false
(B) Both [A] and [R] are true
(C) [A] is true but [R] is false
~~(D)~~ [A] is true and [R] is the correct explanation of [A]
(E) Answer not known

45. The distance between two genes in a chromosome is measured in crossover units which represent
- (A) Ratio of crossing over between them
 - ☒ (B) Percentage of crossing over between them
 - (C) Number of crossing over between them
 - (D) Similarity of crossing over between them
 - (E) Answer not known
46. Overlapping fragments from different restriction enzymes help to
- (A) Visualize chromosome shape
 - ☒ (B) Align and reconstruct the complete DNA sequence
 - (C) Transcribe RNA molecules
 - (D) Measure DNA replication speed
 - (E) Answer not known
47. An assembled sequence from overlapping fragment is called
- (A) Coverage
 - ☒ (C) Contig
 - (B) Clones
 - (D) Scaffold
 - (E) Answer not known
48. Why is codon bias significant in genetic analysis?
- (A) It aids in identification of coding regions
 - ☒ (B) It accelerates genome application in eukaryotes
 - (C) It regulates ribosome binding
 - (D) It helps in understanding codon mutation
 - (E) Answer not known

49. The first bacterial sequence obtained by the shotgun sequencing approach and published was the sequence of
- (A) *Escherichia coli* (B) *Bacillus subtilis*
~~(C) *Haemophilus influenzae*~~ (D) *Mycobacterium* sp.
(E) Answer not known
50. Arrange the following next generation sequencing platform, by increasing order of read-lengths of the platform
- (1) Roche 45h
(2) Illumina solexa
(3) Abi solid
(4) PacBio
- (A) (1), (3), (4), (2) ~~(B) (3), (2), (1), (4)~~
(C) (2), (4), (3), (1) (D) (2), (3), (1), (4)
(E) Answer not known
51. In solexa sequencing, the approximate DNA fragment size range selected for sequencing is
- (A) 50-100 bp (B) 100-200 bp
~~(C) 250-350 bp~~ (D) 350-600 bp
(E) Answer not known

52. How is the light emitted during pyro sequencing is detected
- (A) Mass spectrometer
 - ~~(B) Charge-coupled device camera~~
 - (C) Electron microscope
 - (D) Light microscope
 - (E) Answer not known
53. Collection of clones representing the complete genome of an organism is known as
- (A) DNA clones
 - ~~(B) Genomic library~~
 - (C) Molecular map
 - (D) Genetic map
 - (E) Answer not known
54. Which one of the following is NOT commonly used genetic markers in genetic map?
- (A) VNTR
 - (B) Micro satellite polymorphism
 - ~~(C) Novel mutations~~
 - (D) Single Nucleotide Polymorphisms (SNPs)
 - (E) Answer not known
55. Which one of the following databases is used for prediction of entire proteomes?
- (A) CMR
 - ~~(B) PEP~~
 - (C) MBGD
 - (D) KEGG
 - (E) Answer not known

56. When is the bit score generally considered to represent a good alignment?

If the bit score is

- ☒ (A) Greater than 50
- (B) Less than 25
- (C) When it is near to 0
- (D) When it is exactly 100
- (E) Answer not known

57. The flybase database serves as a database of genetic and genomic information related to

- (A) Homo sapiens
- ☒ (B) Drosophila melanogaster
- (C) Saccharomyces cerevisiae
- (D) Escherichia coli
- (E) Answer not known

58. The primary function of PHI-BLAST is to

- (A) Compare protein structure coordinates
- ☒ (B) Search for proteins with sequence motif similar to query
- (C) Identify similarities in nucleotide sequences
- (D) Analyze expressed sequence tags
- (E) Answer not known

59. The sequence alignment algorithm used for global alignment is

- (A) Fast A algorithm
- (B) Smith and Waterman algorithm
- (C) Blast algorithm
- ☒ (D) Needleman and Wunsch algorithm
- (E) Answer not known

60. The type of gap penalty that penalizes insertion and deletion using a linear function in which one term is length dependent and other is length independent is
- (A) indel gap penalty ~~(B) affine gap penalty~~
(C) match gap penalty (D) pam gap penalty
(E) Answer not known
61. The blast variant used to analyze protein query against translated nucleotide in database is
- (A) BLASTx ~~(B) TBLASTn~~
(C) TBLASTx (D) BLASTp
(E) Answer not known
62. A tool used for submission of protein structure to PDB is
- ~~(A) ADIT~~ (B) BlankIT
(C) Seqin (D) PDBSUM
(E) Answer not known
63. The database that provides information about biological/Metabolic pathway is
- ~~(A) KEGG~~ (B) Prosite
(C) Prints (D) Blocks
(E) Answer not known

67. Which one of the following methods helps sequencing amino acids from a peptide?

- (A) Dideoxy method
- ~~(B) Edman degradation method~~
- (C) Maxam-Gilbert method
- (D) Chain termination method
- (E) Answer not known

68. What is multiple sequence alignment?

- (A) Alignment of a variable number of tandem repeats
- (B) Alignment of a query sequence with a reference sequence
- (C) Alignment of a query sequence for multiple times
- ~~(D) Alignment of a query sequence with more than two homologues sequences~~
- (E) Answer not known

69. Match the following BLAST programs with the type of query sequence :

Blast program	Query sequence
(a) Blast N	1. Translated nucleotide sequences
(b) T blast N	2. Nucleotide sequence
(c) Blast X	3. Aminoacid sequence

- | | | | |
|----------------|-----|-----|-----|
| | (a) | (b) | (c) |
| (A) | 1 | 2 | 3 |
| (B) | 2 | 3 | 1 |
| (C) | 1 | 3 | 2 |
| (D) | 2 | 1 | 3 |

(E) Answer not known

70. Which one of the following method uses geometric criteria to assess similarity between three dimensional domains is a protein structure
- (i) VAST
 - (ii) BLAST
 - (iii) FASTA
 - ~~(A)~~ (i) only
 - (B) (ii) and (iii)
 - (C) All the above
 - (D) None of the above
 - (E) Answer not known
71. The E-value in the BLAST result represents
- (A) Sequence coverage
 - (B) Sequence identity percentage
 - (C) Presence of ancestor sequences
 - ~~(D)~~ Significance of the alignment
 - (E) Answer not known
72. The molecular modeling method that uses the 3-dimensional structure of proteins to simulate the conformational changes in the protein is
- (A) Molecular docking
 - ~~(B)~~ Molecular dynamics
 - (C) Homology modeling
 - (D) Threading
 - (E) Answer not known
73. Recombinant factor VII is isolated from
- (A) Transgenic chicken
 - ~~(B)~~ Transgenic tilapia
 - (C) Transgenic pig
 - (D) Transgenic mice
 - (E) Answer not known

74. Ti plasmid vir E₁ gene's main function
- | | |
|--------------------------|----------------|
| (A) Production | (B) Regulation |
| (C) Transport | (D) Synthesis |
| (E) Answer not known | |
75. _____ embryogenesis is a bipolar in nature
- | | |
|------------------------------|----------------------|
| (A) Somatogenetic | (B) Organogenetic |
| (C) Diplo genetic | (D) Inorgano genetic |
| (E) Answer not known | |
76. In plantibodies ScFvs comprise the variable regions of heavy and light chain joined together by a
- | | |
|----------------------|--|
| (A) Hydrogen bond | (B) Flexible linker peptide |
| (C) Disulphide bond | (D) Flexible adaptor peptide |
| (E) Answer not known | |
77. Super mouse was created by inserting a rat gene for growth hormone into the _____ genome
- | | |
|----------------------|----------------------|
| (A) Human | (B) Mouse |
| (C) Pig | (D) Sheep |
| (E) Answer not known | |
78. _____ antibody used for the detection of breast epithelium
- | | |
|---------------------------|--|
| (A) α -albumin | (B) α-lactalbumin |
| (C) α -fetoprotein | (D) α -vimentin |
| (E) Answer not known | |

79. CaMv is accumulated in proteinaceous inclusions called
- (A) Ino plasm (B) Cauli plasm
(C) Rhizo plasm ~~(D) Viro plasm~~
(E) Answer not known
80. Single plant cells or explants develop into embryoids without callus it called
- ~~(A)~~ Direct somatic embryogenesis
(B) Indirect somatic embryogenesis
(C) Organogenesis
(D) Embryogenesis
(E) Answer not known
81. Each callus undergoes differentiation into shoots and roots and forms a
- (A) Calli ~~(B) Plantlet~~
(C) Clone (D) Blower
(E) Answer not known
82. Choose the right answer
- Which are following household hazardous waste?
- (A) Domestic waste (B) MSW
~~(C)~~ Crankcase oil (D) Agriculture waste
(E) Answer not known

83. Choose the right answer

Which is high concentration of contaminants domestic solid waste?

- (A) 1000 mg/L
- (B) 2000 mg/L
- (C) 1200 mg/L
- (D) 2200 mg/L
- (E) Answer not known

84. The micro organism are present as a layer called _____ on the surface of the filter particular

- (A) Bio mining
- (B) Biofilm
- (C) Bio piracy
- (D) Bio fuel
- (E) Answer not known

85. Hydrocarbons in the presence of nitrogen oxides are mainly responsible for the formation of

- (A) Phyto chemical smog
- (B) Physio chemical smog
- (C) Poly chemical smog
- (D) Photo chemical smog
- (E) Answer not known

86. Which of the following includes a sign that can distinguish goods and services of one trader from those of another

- (A) Design
- (B) Trademark
- (C) Patent
- (D) Copyright
- (E) Answer not known

87. [A] : The Indian patent act did not allow product protection in pharmaceuticals, foods and agrochemicals.

[R] : After making a TRIPS agreement, now the Indian patent act allows for product patent except for some specified medicines

- ☒ (A) [A] and [R] is correct
- (B) [A] is false [R] is correct
- (C) [A] is correct and [R] is false
- (D) [A] and [R] is false
- (E) Answer not known

88. Oncogenes are inactivated by _____ gene therapy.

- (A) In vivo
- ☒ (B) Antisense
- (C) In vitro
- (D) Ex vivo
- (E) Answer not known

89. Extremozymes are derived from

- (i) Mesophiles
 - (ii) Psychrophiles
 - (iii) Thermophiles
 - (iv) Extremophiles
- (A) (i) and (iv)
 - (B) (ii) and (iv)
 - (C) (ii) only
 - ☒ (D) (iv) only
 - (E) Answer not known

90. Agrobacterium tumefaciens, a soil bacterium is responsible for which one of the following diseases?
- (A) Green disease ~~(B) Crown gall disease~~
- (C) Leptospirosis (D) Tuberculosis
- (E) Answer not known
91. [A] : Enriching seawater with 0.05% asparagine or glucose leads to significant increase in oxygen consumption.
- [R] : Asparagine and glucose are not utilized as energy sources by marine microorganisms.
- (A) Both [A] and [R] are true
- (B) Both [A] and [R] are false
- (C) [A] is true and [R] is the correct reason for [A]
- ~~(D)~~ [A] is true but [R] is not the correct reason for [A]
- (E) Answer not known
92. Lower food to microorganism (F/M) ratio in biological waste water treatment will lead to
- (i) Lower BOD removal
- (ii) Higher BOD removal
- (A) (i) only ~~(B) (ii) only~~
- (C) Both (i) and (ii) (D) None of the above
- (E) Answer not known

93. The name of the marine source which contains lipids and fatty acids found in their membranes and used in the intracellular components as a energy reserve
- (A) Corals (B) Thermophiles
~~(C) Micro algae~~ (D) Psychophiles
(E) Answer not known
94. ADA gene was transfered into the stem cells, obtained from the umbilical cord blood, at the time of baby's delivery. After how many days infants received the modified cells back
- (A) 2 days ~~(B) 4 days~~
(C) 15 days (D) 30 days
(E) Answer not known
95. The cloned DNA fragments is transcribed into mRNA with specific ends for probing is called
- ~~(A) End-specific RNA probes~~
(B) End-specific DNA probes
(C) End-specific cDNA probes
(D) End-specific trans probes
(E) Answer not known
96. _____ mutagenesis, the chemically synthesized oligonucleotide with mutation
- (A) Packed (B) Scharf
~~(C) Cassette~~ (D) Substrate
(E) Answer not known

97. The vector pRK404 is a derivative of _____ plasmid
- (A) PRK 230 (B) PRK 262
~~(C) PRK 2~~ (D) PRK 320
(E) Answer not known
98. The replaced portion of λ DNA is known as
- (A) Clear plaques ~~(B) Stuffer region~~
(C) Temperate phage (D) CO_S region
(E) Answer not known
99. The vector cloning technique is called
- (A) Gene therapy ~~(B) Gene cloning~~
(C) Plasmids (D) Genetics
(E) Answer not known
100. Which one of the following is INCORRECT with respect to "In Situ Hybridization (ISH)?"
- (A) ISH is used to locate specific genes in chromosomes
(B) ISH is used to map chromosomes
(C) ISH is used in the diagnosis of diseases
~~(D) ISH does not help studying translocations~~
(E) Answer not known
101. The process of treating a genetic disease by replacing a defective gene with a new, functional gene is known as
- (A) Gene targeting ~~(B) Gene therapy~~
(C) Insertion (D) Recombination
(E) Answer not known

102. Which one of the following method is used to isolate and clone a particular gene through the use of "overlapping clones"?
- (A) Chromosome joining (B) Chromosome duplication
~~(C)~~ Chromosome walking (D) Chromosome gaining
(E) Answer not known
103. In liquid chromatography, which of the following factors can most significantly affect the resolution between two closely eluting peaks?
- (A) Mobile phase viscosity (B) Detector wavelength
~~(C)~~ Column length (D) Sample Injection volume
(E) Answer not known
104. In affinity chromatography, how is the specific interaction between the target molecule and the stationary phase achieved?
- (A) By hydrophobic interactions
(B) By Vander waals forces
(C) By covalent Bonding
~~(D)~~ By specific biological interactions
(E) Answer not known
105. In affinity chromatography fractionation of pure T cells can be obtained by using
- (i) Heparin Agarose
(ii) 5' - ADP - Sepharose
(iii) Lectin - Sepharose
- (A) (i) only ~~(B)~~ (iii) only
(C) All the above (D) None of the above
(E) Answer not known

106. Function of β -mercaptoethanol in SDS-PAGE is

- (A) To give negative charges to aminoacids in proteins
- (B) For the oxidation of disulphide bonds in the protein
- (C) For breaking hydrogen bonds in the proteins
- ~~(D)~~ For the reduction of disulphide bonds in the proteins
- (E) Answer not known

107. The role of the enzyme - substrate reaction in ELISA is

- (A) To prevent antibody binding
- (B) To degrade the antigen
- (C) To immobilize the antigen
- ~~(D)~~ To release light or colour, indicating the presence of the target molecule
- (E) Answer not known

108. Microscopes that utilize light interference for enhanced contrast and visualization of specimens include

- (1) Dark field microscope
 - (2) Phase contrast microscope
 - (3) Differential interference contrast microscope
- | | |
|----------------------------|----------------------|
| (A) (1) and (2) | (B) (1) and (3) |
| (C) (2) and (3) | (D) (1), (2) and (3) |
| (E) Answer not known | |

109. The type of lens used in optical correction for chromatic aberration is

- (A) Aplanatic
- (B) Semi Apochromatic
- ~~(C)~~ Apochromatic
- (D) Semi Aplanatic
- (E) Answer not known

110. Assertion [A] : Phase contrast microscopy is best suited for live unstained specimens.

Reason [R] : Phase contrast microscopy enhances contrast by converting phase differences into refractive intensity differences.

- (A) [A] is false but [R] is true
- (B) Both [A] and [R] are false
- ~~(C)~~ Both [A] and [R] are true and [R] is the correct reason for [A]
- (D) [A] is true but [R] is not the correct explanation of [A]
- (E) Answer not known

111. Degree of scattering in transmission electron microscope is the function of

- (A) Wavelength of electron beam used
- (B) Number of atoms that lie in the electron path
- ~~(C)~~ Number and mass of atoms that lie in the electron path
- (D) Mass of atoms that lie in the electron path
- (E) Answer not known

112. The separation of labeled DNA molecules is carried out by which method?
- ☒ (A) CsCl gradient centrifugation
 - (B) Isopycnic centrifugation
 - (C) Rate-zonal centrifugation
 - (D) Sucrose gradient centrifugation
 - (E) Answer not known
113. The role of primers in PCR is
- ☒ (A) To synthesize RNA
 - ☒ (B) To provide a starting point for DNA synthesis
 - (C) To cut the DNA
 - (D) To heat the DNA
 - (E) Answer not known
114. The polymerase utilized for PCR is extracted from
- (A) Haemophilus influenzae
 - ☒ (B) Thermus aquaticus
 - (C) Escherichia coli
 - (D) Saccharomyces cerevisiae
 - (E) Answer not known
115. The primers used in the PCR are
- (A) Single stranded RNA oligo nucleotide
 - ☒ (B) Single stranded DNA oligo nucleotide
 - (C) Double stranded RNA oligo nucleotide
 - (D) Double stranded DNA oligo nucleotide
 - (E) Answer not known

116. Identification of coregulated genes in a microarray experiment helps in analyzing the
- (A) Poly A site
 - ~~(B) Promoter site~~
 - (C) Poly T site
 - (D) Intergenic Regions
 - (E) Answer not known
117. Method used to detect CpG islands in genomic DNA
- (A) Asymmetric PCR
 - (B) Thermal Asymmetric Interlaced PCR (TAIL-PCR)
 - (C) Inter Sequence Specific PCR (ISSR)
 - ~~(D) Methylation Specific PCR (MSP)~~
 - (E) Answer not known
118. The technique used to identify the biochemical pathway by introducing radioactive precursors into the biological system is called as
- (A) Radio Immuno Assay
 - ~~(B) Radioactive Tracer Technique~~
 - (C) Radio carbon Tracer Technique
 - (D) Radio hydrogen Tracer Technique
 - (E) Answer not known
119. How can the resolution of the collimator be increased?
- ~~(A) By reducing the separation between the metal plates~~
 - (B) By increasing the separation between the metal plates
 - (C) By reducing the number of metal plates
 - (D) By decreasing the number of metal plates
 - (E) Answer not known

120. Reverse osmosis is

- (1) Also known as hyper filtration
 - (2) Involves semi permeable membrane
 - (3) The driving force is osmotic pressure difference between the two sides
- (A) (1) and (2) (B) (1) and (3)
(C) (2) and (3) ~~(D) (1), (2), (3)~~
(E) Answer not known

121. Which of the following shift leads to the decreased intensity of absorption?

- ~~(A) Hypochromic~~ (B) Hyperchromic
(C) Hypsochromic (D) Bathochromic
(E) Answer not known

122. Proteins and Nucleic acids absorb UV maximally at

- (A) 220 nm and 440 nm ~~(B) 280 nm and 260 nm~~
(C) 210 nm and 220 nm (D) 420 nm and 440 nm
(E) Answer not known

123. Choose the correct answer

Which is suitable pH for maintaining cell culture media?

- (A) pH – 5 to 7.5 (B) pH – 8 to 8.2
(C) pH – 6 to 7.1 ~~(D) pH – 7 to 7.4~~
(E) Answer not known

124. Choose the right answer among the types

Which of the following statements are true about crop trait(s) and the Inheritance used in plant tissue culture Engineering?

- (A) Maize – Maternally inherited
- ☒ (B) Tobacco – Transmission through Vegetative propagation
- (C) Potato – Sexual Transmission
- (D) Sugarcane – Sexual Transmission
- (E) Answer not known

125. Which enzymes are primarily used for tissue culture?

- (A) Trypsin
- ☒ (C) Trypsin and pronase
- (B) Pronase
- (D) Mucase
- (E) Answer not known

126. From the following answer which is used of immobilized cells for large scale cultivation

- ☒ (A) Bioreactors
- (B) Metabolites
- (C) Colchicine
- (D) Asynchronous
- (E) Answer not known

127. The method in which cells are held within an open matrix through which medium flows freely to support the cell growth is called

- (A) Immobilized culture method
- (B) Immurement culture method
- ☒ (C) Entrapment culture method
- (D) Primary culture method
- (E) Answer not known

128. Consider the following statements about the growth pattern of tissues/cells by invitro and invivo pattern

- ☒ (A) Absence of cell-cell and cell-matrix interaction
- (B) Appearance of 3D architecture
- (C) Balanced hormonal and nutritional environment
- (D) Substrate does not affect cell proliferation and morphology
- (E) Answer not known

129. Choose the right matches among type

- (1) 1903 – Jolly studied behaviour of animal tissue in serum
- (2) 1907 – Ross Harrison cultured frog embryo
- (3) 1910 – Alexis Carrel cultured chick embryo tissue
- (4) 1914 – John experiment in virus cultivation enhanced cell culture

- (A) (1) and (3) are correct
- (B) (2) and (3) are correct
- ☒ (C) (1) and (2) are correct
- (D) (3) and (4) are correct
- (E) Answer not known

130. Choose the correct answer

Which animal method used to create somatic cell nuclear transfer

- (A) Tissue culture method
- (B) Tissue engineering
- ☒ (C) Dolly the sheep
- (D) Dolly the goat
- (E) Answer not known

131. Which following founder of stem cell technology in British Columbia, Canada?

- (A) Thomson and Gearhart, 1998
- ~~(B) Allen Eaves, 1993~~
- (C) J.A. Thomson, 1998
- (D) George Kohler
- (E) Answer not known

132. Choose the right answer

Which is among the following was the most suitable for stem cell biology?

- (A) HSCs – Nerve cells
- (B) NSCs – Blood cells
- ~~(C) SSCs – Epidermal stem cells~~
- (D) MSCs – Paneth cell
- (E) Answer not known

133. Unipotent stem cells have the property of self renewal that distinguishes from non-stem cells

- (A) Red blood cells
- (B) White blood cells
- (C) Platelets
- ~~(D) Muscle stem cells~~
- (E) Answer not known

134. Match the following type

- | | |
|---------------------------|--|
| (a) Edwards and Barrister | 1. First IVF baby |
| (b) Louise Brown | 2. Embryonic cell from inner cell mass |
| (c) Evans and Kaufman | 3. Clonal embryonal carcinoma |
| (d) Andrews | 4. First human egg invitro |

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 2 | 3 | 4 | 1 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 4 | 1 | 2 | 3 |
| (D) | 3 | 1 | 4 | 2 |
| (E) | Answer not known | | | |

135. The genes responsible for reprogramming human skin cells to become induced Pluripotent (iPs) cells,

- | | |
|------------------------------------|--------------------------|
| (A) c-Myc, Sox-2, Sox-3 | (B) Oct 3/4, Klf 4, als3 |
| (C) Sox 2, Oct 4, NANOG | (D) Oct 2, b-Myc, Sox-2 |
| (E) Answer not known | |

136. The cell cycle is intrinsically controlled by the protein

- | | |
|----------------------|-----------------------|
| (A) Protease | (B) Kinase |
| (C) Proteinase | (D) Polymerase |
| (E) Answer not known | |

137. Which of the following statements are true about tiger pugmark?

- (i) Front pugmarks are always unique as they are susceptible for injuries
 - (ii) Both male and female tigers produce identical pugmarks
 - (iii) Paw of a tiger consist of a pad and three toes
- ~~(A)~~ (i) only (B) (ii) and (iii) only
(C) (i) and (ii) only (D) (iii) only
(E) Answer not known

138. Arrange the following in chronological order

- (1) Biological Diversity Act
 - (2) Scheduled Tribes Act
 - (3) Indian Forest Act
 - (4) Wildlife Protection Act
- ~~(A)~~ (3), (4), (1), (2) (B) (2), (3), (4), (1)
(C) (4), (3), (2), (1) (D) (1), (3), (4), (2)
(E) Answer not known

139. Which among the following is not an In-situ conservation method of wildlife?

- (A) Conservation reserves
- ~~(B)~~ Zoological gardens
- (C) Wildlife sanctuary
- (D) National park
- (E) Answer not known

140. Select the correct matches from the following

- (1) WWF – World Wildlife Fund
- (2) RDB – Red Data Book
- (3) IBWL – International Board of Wildlife Legislation
- (4) NWAP – National Wildlife Act for Protection

- (A) (1) and (3) are correct
- (B) (2) and (3) are correct
- (C) Only (4) is correct
- ~~(D) (1) and (2) are correct~~
- (E) Answer not known

141. Passive camera traps for the wildlife census worked based on which of the following mechanism?

- (A) Pressure pads installed on the ground
- ☒ (B) Infrared light beams installed
- (C) Two sensors installed side by side
- (D) Continuous video was captured
- (E) Answer not known

142. Waterhole census method is suitable for which of the following wildlife habitat?

- (A) Area with uniform distribution of wildlife
- ☒ (B) Arid and Semi arid wilderness region
- (C) Fresh and marine water habitats
- (D) Area with an accumulated count of wildlife
- (E) Answer not known

143. The waggle dance of honey bees is otherwise called as "Figure of Eight dance" because of the following which reason?
- (A) Eight worker bees involved in the act
 - (B) Bees perform this at 8 meter distance from flowers
 - ☒ (C) Flying pattern looks like figure 8
 - (D) Bees perform this 8 times before reaching a flower
 - (E) Answer not known
144. Which among the following is not a type of hormone?
- ☒ (A) Glyco hormones
 - (B) Amine hormone
 - (C) Peptide hormone
 - (D) Steroid hormone
 - (E) Answer not known
145. Which of the following is not a grazing pattern of domestic animals in forest?
- (A) Migratory grazing
 - (B) Penning and stall feeding
 - ☒ (C) Restricted grazing
 - (D) Day grazing
 - (E) Answer not known
146. Select the correct pair of courtship displays of the following animals
- | | | |
|----------------|---|-----------------------------|
| (1) Gray lings | – | Waving pattern of wings |
| (2) Spiders | – | Smell of the scent produced |
| (3) Elephants | – | Tactile signals |
| (4) Lizards | – | Fight and evoke |
- (A) (1) and (2) are correct
 - (B) (2) and (3) are correct
 - (C) (1) and (4) are correct
 - ☒ (D) (3) and (4) are correct
 - (E) Answer not known

147. Choose the correct matches among the following

- | | | |
|---------------------|---|-----------------------------|
| (1) Mangrove swamps | – | Marine, brackish water |
| (2) Flood land | – | Rivers |
| (3) Marsh | – | Rain water |
| (4) Bog | – | Underground diffusion water |
- (A) (1), (2) and (3) are correct (B) (1), (2) and (4) are correct
☒ (C) (1) and (2) are correct (D) (2), (3) and (4) are correct
(E) Answer not known

148. Sponges (phylum porifera) have a primitive cellular organization and lack tissue structures or body symmetry. Why?

- (A) For performing asexual reproduction
(B) To change the nerve system as required
(C) To develop a digestive tract as required
☒ (D) To regulate the water flow through the body to acquire food
(E) Answer not known

149. Which of the following is not a characteristic of Phylum Arthropoda?

- (i) They are bilaterally symmetrical
(ii) The body is covered with a exoskeleton
(iii) Respiratory gas exchange takes place through parapodia
- (A) (i) only ☒ (B) (iii) only
(C) (i) and (ii) only (D) (ii) and (iii) only
(E) Answer not known

150. Match the following components of ecosystem with their appropriate pairs

- | | |
|------------------|------------------------------------|
| (a) Autotrophs | 1. Feed on dead organisms |
| (b) Heterotrophs | 2. Feed on a live host organism |
| (c) Parasites | 3. Ingestion and digestion of food |
| (d) Saprotrophs | 4. Produce its own food |

- | | (a) | (b) | (c) | (d) |
|-----|------------------|-----|-----|-----|
| (A) | 4 | 1 | 2 | 3 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 2 | 3 | 4 | 1 |
| (D) | 2 | 1 | 4 | 3 |
| (E) | Answer not known | | | |

151. The power of a statistical test described by the following statement?

- (A) The probability of correcting rejecting a true null hypothesis
- (B) The probability of failing to reject the null hypothesis when it is false
- (C) The probability of a Type I error
- (D) The probability of a Type II error
- (E) Answer not known

152. If $P(A)=0.5$, $P(B)=0.6$, and $P(A \cap B)=0.3$, calculate $P(A \cup B)$.

- | | |
|----------------------|---------|
| (A) 0.8 | (B) 1.0 |
| (C) 0.6 | (D) 0.9 |
| (E) Answer not known | |

153. Assertion [A] : The multiplication rule of probability is used when events are independent.

Reason [R] : The multiplication rule for dependent events involves conditional probability

- ☒ (A) Both [A] and [R] are true and [R] is the correct explanation for [A]
- (B) Both [A] and [R] are true but [R] is not correct reason for [A]
- (C) [A] is true and [R] false
- (D) [A] is false and [R] true
- (E) Answer not known

154. Bernoulli's theorem is applicable to which type of trials?

- (A) Trials with continuous outcomes
- ☒ (B) Independent trials with two outcomes
- (C) Trials with dependent outcomes
- (D) Trials with more than two mutually exclusive outcomes
- (E) Answer not known

155. The Non comparative scaling techniques are

- (i) Itemized rating
 - (ii) Verbal frequency scale
 - (iii) Graphic rating
- | | |
|---|-----------------------|
| (A) (ii) only | (B) (i) and (iii) |
| ☒ (C) All the above | (D) None of the above |
| (E) Answer not known | |

156. Which of the following is true about Student's t-distribution?

- (i) It is positively skewed
- (ii) It is symmetric and bell shaped
- (iii) It has lighter tails than the normal distribution
- (iv) Its mean is always positive

- ☒ (A) (ii) only
- (B) (i) and (ii)
- (C) (i) and (iv)
- (D) (i) and (iii)
- (E) Answer not known

157. The following students would lead to a Type II error.

- ☒ (A) Failing to reject a false null hypothesis
- (B) Rejecting a true null hypothesis
- (C) Failing to reject a true null hypothesis
- (D) Rejecting a false alternative hypothesis
- (E) Answer not known

158. Match the following with their correct definitions.

- | | |
|-----------------------------|--|
| (a) Standard Error | 1. Describes the spread of the sample mean |
| (b) Central limit theorem | 2. States that large sample sizes, the distribution of the sample mean will approach a normal distribution |
| (c) Population Distribution | 3. The distribution from which samples are drawn |
| (d) Sampling Distribution | 4. The distribution of values of a statistics computed from all possible samples |

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 2 | 1 | 4 | 3 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 1 | 2 | 3 | 4 |
| (D) | 1 | 4 | 3 | 2 |
| (E) | Answer not known | | | |

159. Which of the following is the limitation of MS Excel in statistical analysis

- (A) Data entry is not possible
- (B) Lack of regressive tool
- ~~(C)~~ Limited reproducibility
- (D) No charting capabilities
- (E) Answer not known

160. Match the Excel function with its correct use

Function	Purpose
(a) Concatenate	1. Counts only numbers
(b) Count	2. Joins text strings
(c) If	3. Logical comparison

- | | | | |
|--------------------------------------|------------------|-----|-----|
| | (a) | (b) | (c) |
| ☒ (A) | 2 | 1 | 3 |
| (B) | 1 | 2 | 3 |
| (C) | 2 | 3 | 1 |
| (D) | 3 | 1 | 2 |
| (E) | Answer not known | | |

161. In SPSS, which view allows you to enter and view actual data value?

- | | |
|----------------------|--|
| (A) Variable view | (B) Output view |
| (C) Syntax view | ☒ (D) Data view |
| (E) Answer not known | |

162. Reference section of a thesis or research report should not contain the _____ part.

- | | |
|-------------------------|---|
| (A) Bibliography | ☒ (B) Conclusion |
| (C) Appendices (if any) | (D) Index or glossary (if any) |
| (E) Answer not known | |

163. In PubMed, which of the following abbreviation is used for "Journal of Clinical Investigation"?

- | | |
|---|----------------------|
| ☒ (A) J.Clin. Invest | (B) J.Clin. Investig |
| (C) Clin.Invest.J. | (D) J.C. Invest |
| (E) Answer not known | |

164. Which of the following is secondary purpose of a review of literature in a Research Study?

- (A) To identify gap in existing research
- ☒ (B) To establish a theoretical framework for research
- (C) To verify the findings of previous study
- (D) To present researcher's personal opinion
- (E) Answer not known

165. A statistical study of relationship between two or more variables is

- ☒ (A) Correlation
- (B) Probability
- (C) Distribution
- (D) Inference
- (E) Answer not known

166. Calculate the mean from the following table.

Score	Frequencies
0-10	2
10-20	4
20-30	12
30-40	21
40-50	6
50-60	3
60-70	2

- (A) 34.2
- ☒ (B) 33.4
- (C) 32.6
- (D) 35.6
- (E) Answer not known

167. The width of a class interval in a frequency distribution will be approximately equal to the range of data divided by the
- (A) Highest value of the data set
 - (B) Lowest value of the data set
 - ☒ (C) Number of class intervals
 - (D) Average of the data set
 - (E) Answer not known
168. Positional average is
- (A) Mean
 - ☒ (B) Median
 - (C) Harmonic mean
 - (D) Geometric mean
 - (E) Answer not known
169. Which of the following will cause the standard deviation of a dataset to decrease?
- (A) Increasing the spread of the data
 - ☒ (B) Decreasing the spread of the data
 - (C) Adding outliers to the dataset
 - (D) Doubling all datasets
 - (E) Answer not known
170. If the dataset contain an even number of values, the median is the
- (A) Middle of the array
 - (B) First of the array
 - ☒ (C) Average of the middle items
 - (D) Average of all the items
 - (E) Answer not known

171. One of the following statement is truly representing Hardy-Weinberg law.
- (A) Allele frequency predicts genotype frequency
 - (B) Equilibrium reaches in one generation of random mating
 - (C) At equilibrium allele and genotype frequencies remain constant
 - ~~(D)~~ All of the above
 - (E) Answer not known
172. In a sample from a population, there were 65 individuals with BB genotype, 30 individuals with Bb genotype and 15 individuals with bb genotype. The frequency of the b allele is
- (A) 0.59
 - ~~(B)~~ 0.27
 - (C) 0.41
 - (D) 0.73
 - (E) Answer not known
173. One of the following is used as marker for Genetic Linkage Analysis.
- (A) Alleles
 - ~~(B)~~ SNP
 - (C) Trait
 - (D) All of the above
 - (E) Answer not known
174. The site of origin of DNA replication is rich in
- ~~(A)~~ AT
 - (B) GC
 - (C) AA
 - (D) TT
 - (E) Answer not known

175. RecA protein involved in

- (A) SOS Response
- ~~(C)~~ Recombination Repair
- (E) Answer not known
- (B) Direct Repair
- (D) Mismatch Repair

176. F₁ dihybrid is crossed with a double recessive parent leads to crossing over two points it is called

- (A) Crossing over
- ~~(B)~~ Two point test crosses
- (C) Hybrid crosses
- (D) Three point test crosses
- (E) Answer not known

177. The structure of DNA from B-form to Z-form by the modification of DNA in Eukaryotic gene regulation process is

- ~~(A)~~ Cytosine Methylation
- (B) Histone Modification
- (C) Chromatin conformation change
- (D) None of these
- (E) Answer not known

178. Naturally occurring mutagens produced by fungi is

- (A) Enterotoxin
- ~~(B)~~ Aflatoxin B₁
- (C) Shiga toxin
- (D) Chemotoxin
- (E) Answer not known

179. Assertion [A] : Plasmid used as a vector in cloning process.

Reason [R] : Its poses single origin of replication and antibiotic resistance gene

- ~~(A)~~ [A] and [R] is correct [R] is the correct reason for [A]
(B) [R] is the not correct reason for [A]
(C) [A] and [R] is not correct
(D) [A] false [R] correct
(E) Answer not known

180. Alzheimer's disease patients were found to have a specific protein, namely

- ~~(A)~~ Amyloid (B) p⁵³
(C) Superoxide dismutase (D) Cfr protein
(E) Answer not known

181. Match the following about the recombination process

- | | |
|--------------------|-------------------|
| (a) Lytic cycle | 1. Sex Pilus |
| (b) Competent Cell | 2. Conjugation |
| (c) Hfr Strain | 3. Transformation |
| (d) F Plasmid | 4. Transduction |

- | | (a) | (b) | (c) | (d) |
|----------------|------------------|-----|-----|-----|
| (A) | 3 | 4 | 2 | 1 |
| (B) | 4 | 3 | 2 | 1 |
| (C) | 4 | 3 | 1 | 2 |
| (D) | 4 | 1 | 2 | 3 |
| (E) | Answer not known | | | |

182. The gene which deals about metabolic potential of microbial communities is called
- (A) Functional genomic (B) Proteomics
(C) System biology ~~(D) Metagenomics~~
(E) Answer not known
183. An AT $\rightarrow$ GC mutation is an example of
- ~~(A)~~ Point mutation, transition
(B) Point mutation, transversion
(C) Frame-shift mutation, insertion
(D) Frame shift mutation, deletion
(E) Answer not known
184. Stop codons are read by some specific factors, they are called as
- (A) Reducing factors (B) Reading factors
~~(C)~~ Releasing factors (D) Risk factors
(E) Answer not known
185. The fluctuation in gene frequency is
- (A) Gene fluctuation (B) Gene flow
~~(C)~~ Genetic drift (D) Gene aberration
(E) Answer not known
186. The spermatid undergoes some changes before it is liberated as an active sperm. These changes are known as
- ~~(A)~~ Spermatogenesis (B) Spermiolysis
(C) Spermiogenesis (D) Sperm maturation
(E) Answer not known

187. Which of the following suggestion are true about Berrill (1971).

- (A) Activation of egg is by tubule material
- ~~(B)~~ Activation of egg is done by Peri acrosomal material
- (C) Activation of egg is done by Adenyl cyclase
- (D) Activation of egg is done by amino acid
- (E) Answer not known

188. The cells destined to become the embryo proper in a mammal constitute the

- (A) Trophoblast
- ~~(C)~~ Inner cell mass
- (B) Cells of Rauber
- (D) Cellular capsule
- (E) Answer not known

189. Which embryo is most difficult to map?

- (A) Chick embryo
- ~~(B)~~ Mammalian embryo
- (C) Birds embryo
- (D) Reptiles embryo
- (E) Answer not known

190. Correctly order events of fertilization

- 1. Regulation of sperm entry into the egg
 - 2. Fusion of genetic material from the two gametes
 - 3. Contact and recognition between sperm and egg
 - 4. Activation of egg metabolism to start development
- (A) 1, 3, 4, 2
 - ~~(B)~~ 3, 1, 2, 4
 - (C) 3, 1, 4, 2
 - (D) 1, 3, 2, 4
 - (E) Answer not known

191. Mineral required for the alkalization of the egg, activates egg metabolism, protein synthesis and DNA synthesis is
- (A) Zn^{2+} (B) K^{2+}
(C) Ca^{2+} (D) Mg^{2+}
(E) Answer not known
192. In an amphibian, embryo containing 16-64 cells is commonly called as
- (A) Gastrula (B) Blastula
(C) Morula (D) Blastopore
(E) Answer not known
193. The protein connexin participated in
- (A) Active transport
(B) Gap junction
(C) Synoptic transmission
(D) Secondary active transport
(E) Answer not known
194. Flow cytometry works in this order in biophysical technology?
1. Protein engineering
 2. Cell sorting
 3. Cell counting
 4. Biomarker detection
- (A) 3, 2, 4, 1 (B) 4, 2, 3, 1
(C) 3, 4, 2, 1 (D) 1, 2, 3, 4
(E) Answer not known

195. Tus protein is important for

- (A) Initiation
- ~~(C)~~ Termination
- (E) Answer not known
- (B) Elongation
- (D) Mutation

196. Which one is the complete cell cycle?

- (A) D, G₁, G₂, M, S
- (B) S, M, D, G₁, G₂
- (C) G₂, G₁, D, M, S
- ~~(D)~~ G₁, S, G₂, M, D
- (E) Answer not known

197. Hershey and chase studied the experimentation with T₂ phage for confirming the DNA as the genetic material by radio active labelling of DNA and protein by

- (A) DNA labelled with ³²P
- (B) Protein labelled with ³⁵S
- ~~(C)~~ Both (A) and (B)
- (D) None of these
- (E) Answer not known

198. Cell organelles which is responsible for oxidation of food substances and energy to be used by cell

- (A) Centrioles
- ~~(C)~~ Mitochondria
- (E) Answer not known
- (B) Cytoplasm
- (D) Lysosome

199. Intervening sequences in Eukaryotic mRNA are cleaved out of the transcript by a controlled mechanism, named as
- (A) Splicing
 - (B) Poly A Tailing
 - (C) Capping
 - (D) Curing
 - (E) Answer not known
200. During proteolytic cleavage polymerase - I produces large and short fragment. Large fragment has $5' \rightarrow 3'$ polymerase and $3' \rightarrow 5'$ exonuclease activity. Name the fragment.
- (A) Klenow Fragment
 - (B) Coding strand
 - (C) Non coding strand
 - (D) Template strand
 - (E) Answer not known
-