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ROLL No.

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TEST BOOKLET No.

241

TEST FOR POST GRADUATE PROGRAMMES

BIOTECHNOLOGY

Time: 2 Hours

Maximum Marks: 450

INSTRUCTIONS TO CANDIDATES

1. You are provided with a Test Booklet and an Optical Mark Reader (OMR) Answer Sheet to mark your responses. Do not soil the Answer Sheet. Read carefully all the instructions given on the Answer Sheet.
 2. Write your Roll Number in the space provided on the top of this page.
 3. Also write your Roll Number, Test Code, and Test Subject in the columns provided for the same on the Answer Sheet. Darken the appropriate bubbles with a Ball Point Pen.
 4. The paper consists of 150 objective type questions. All questions carry equal marks.
 5. Each question has four alternative responses marked A, B, C and D and you have to darken the bubble fully by a Ball Point Pen corresponding to the correct response as indicated in the example shown on the Answer Sheet.
 6. Each correct answer carries 3 marks and each wrong answer carries 1 minus mark.
 7. Space for rough work is provided at the end of this Test Booklet.
 8. You should return the Answer Sheet to the Invigilator before you leave the examination hall. However, you can retain the Test Booklet.
 9. Every precaution has been taken to avoid errors in the Test Booklet. In the event of any such unforeseen happenings, the same may be brought to the notice of the Observer/Chief Superintendent in writing. Suitable remedial measures will be taken at the time of evaluation, if necessary.
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**BIOTECHNOLOGY**

1. When a beam of light strikes the smooth surface of non-transparent material it is bounced back and is known as
 - (A) Reflection
 - (B) Refraction
 - (C) Retention
 - (D) Reparation

2. Which one of the following is a fluorescent dye?
 - (A) Trypan blue
 - (B) Crystal violet
 - (C) Fluorescein isothiocyanate
 - (D) Methylene blue

3. In a laser scanning confocal microscope, a laser is employed to provide
 - (A) Excitation light
 - (B) Reflection light
 - (C) Passing light
 - (D) Illumination

4. The wavelength of the electron radiation used in an electron microscope is about
 - (A) 0.005 nm
 - (B) 0.05 nm
 - (C) 0.5 nm
 - (D) 5 nm

5. Which one of the following is a material that is used in gradient centrifugation?
 - (A) CsCl
 - (B) NaCl
 - (C) AgCl₂
 - (D) HCl

6. Most common electro-chemical sensor is
 - (A) Glass electrode
 - (B) Calomel electrode
 - (C) Reference electrode
 - (D) Lignide electrode



7. What is a physical method used for the separation and analysis of complex mixtures?
- (A) Chromatography (B) Centrifugation
(C) Electrophoresis (D) Dialysis
8. R_f value is
- (A) retention factor (B) resolving factor
(C) refractive factor (D) retardation factor
9. Exclusion chromatography is also known as
- (A) gel filtration chromatography
(B) affinity chromatography
(C) partition chromatography
(D) adsorption chromatography
10. FID stands for
- (A) Flame Ionisation Detector
(B) Fluid Induction Detector
(C) Flame Indication Detector
(D) Flame Inducer Detector
11. Acrylamide is a(n)
- (A) interchelating agent (B) neurotoxin
(C) carcinogen (D) hepatotoxin
12. Molecule that carries both positive and negative charges is called
- (A) zwitter ion (B) cation
(C) anion (D) polar ion
13. Sodium dodecyl sulphate is a
- (A) cross linker (B) polymer
(C) detergent (D) sugar



14. Nicotine is a(n)
- (A) hormone (B) neurotoxin
(C) hepato toxin (D) addiction agent
15. Which one of the following stains is used to identify the lipoproteins in electrophoretogram?
- (A) Acid Schiff reagent (B) Sudan black
(C) Alcian blue (D) Iodine
16. Transfer of RNA from gel to membrane is known as
- (A) Northern blot (B) Southern blot
(C) Western blot (D) Dot blot
17. Intellectual property protection granted under Indian law to the creator of original work like sound recording is
- (A) copyright (B) patent
(C) trade secret (D) trademark
18. Lichen is an association of
- (A) alga - alga (B) alga - fungus
(C) fungus - fungus (D) alga - bacterium
19. Who is considered to be the 'Father of Bacteriology'?
- (A) Edward Jenner (B) Louis Pasteur
(C) Ehrenberg (D) Antony Von Leewenhoek
20. *Clostridium* and *Bacillus* produce
- (A) Endospore (B) Exospore
(C) Endospore and Exospore (D) Conidiospore



21. If 100ml of 1 molar sugar solution is mixed with 100ml of 1 molar sodium chloride solution, what will be the molarity of the resultant solution?
- (A) 1 Molar (B) 1.5 Molar
(C) 0.5 Molar (D) 2 Molar
22. *Pseudomonas aeruginosa* is characterised by its
- (A) oxidase positive
(B) oxidase positive and pigment production
(C) pigment production
(D) oxidase negative
23. Strands of cytoplasm that pass through pits to adjacent cell is known as
- (A) Plasmodesmata (B) Endoplasmic reticulum
(C) Cytoplasm (D) Protoplasm
24. Cytoplasm deprived of all its organelles is called
- (A) Tonoplasm (B) Hyaloplasm
(C) Neutroplasm (D) Leucoplasm
25. Bacterial viruses are generally known as
- (A) Phages (B) Prions
(C) Viral agents (D) Phases
26. Smooth endoplasmic reticulum is associated with
- (A) protein synthesis (B) lipid synthesis
(C) synthesis of ketone bodies (D) glucose synthesis
27. Inulin is the polymer of
- (A) Fructose (B) Ribose
(C) Ribulose (D) Fucose



28. Which of the following linkages makes cellulose unsuitable for human digestion?
- (A) Alpha D – Glucosidic linkages
 - (B) Beta D – Glucosidic linkages
 - (C) Alpha L – Glucosidic linkages
 - (D) Beta L – Glucosidic linkages
29. The amino acid which does not have a genetic code is
- (A) Glycine
 - (B) Hydroxyproline
 - (C) Arginine
 - (D) Serine
30. Most abundant protein in human body is
- (A) Collagen
 - (B) Keratin
 - (C) Myosin
 - (D) Albumin
31. MMR vaccine is used to induce protection against the infection by
- (A) bacteria
 - (B) virus
 - (C) protozoan
 - (D) fungus
32. The semi-conservative replication of DNA was experimentally shown by
- (A) Nirenberg
 - (B) Meselson and Stahl
 - (C) Ochoa
 - (D) Khorana
33. Sealing of 'nicks' in dsDNA is carried out by
- (A) restriction nuclease
 - (B) DNA ligase
 - (C) reverse transcriptase
 - (D) RNA polymerase I
34. The chain termination codons are
- (A) UAG, UGA
 - (B) UGA, UAA
 - (C) UAG, UGA, UAA
 - (D) UAC, UCA, UCC



35. Bacterial conjugation is mediated by
- (A) F plasmid (B) Ti plasmid
(C) R plasmid (D) Col plasmid
36. Nucleoplasm is also known as
- (A) karyolymph (B) lymph
(C) coenocytes (D) syncytium
37. Vero cell line is derived from
- (A) African Green monkey (B) Rhesus monkey
(C) Hamster (D) Human liver
38. "K" is the single letter code for the amino acid
- (A) lysine (B) leucine
(C) isoleucine (D) threonine
39. The Nobel Prize for physiology and medicine for 2012 was shared by
- (A) Hausen, Sinoussi and Montagnier
(B) Blackburn, Greider and Szostak
(C) Beutler, Hoffmann and Steinman
(D) Edwards and Venture
40. Adjuvants are
- (A) polyclonal activators (B) immunosuppressors
(C) immune tolerance (D) super antigens
41. In RIA, antigen or antibody is tagged with radio active
- (A) Thymidine (B) FITC
(C) HRP (D) Beta gal



42. Which one of the following connects the muscle with bone?
- (A) Tendons (B) Ligaments
(C) Fiber (D) Tissues
43. Bacteria that grow better in low oxygen tension is
- (A) aerobic (B) anaerobic
(C) microaerophilic (D) thermophilic
44. PCR was invented by Kary Mullis in the year
- (A) 1982 (B) 1983
(C) 1992 (D) 1993
45. Intermittent sterilisation is also known as
- (A) Tyndalisation (B) Pasteurisation
(C) Sterilisation (D) Disinfection
46. Study about the recovery of genetic material directly from the environmental samples is
- (A) proteomics (B) genomics
(C) metagenomics (D) megagenomics
47. Poly (A) tail occurrence is a common feature in
- (A) Cyanobacteria (B) Bacteria
(C) Eukaryotes (D) Phages
48. The most non-polluting bio-fuel is
- (A) H_2 (B) CH_4
(C) CH_3OH (D) C_2H_5OH

56. Which of the following types of antibody is known to be responsible for allergy reaction?
- (A) Ig G (B) Ig A
(C) Ig M (D) Ig E
57. Immunotoxins are
- (A) Bacterial toxins
(B) Antibody for specific antigen tagged with toxins
(C) Low immunogenic toxins
(D) Anti-toxins
58. Unit of distance between genes on the chromosomes is
- (A) nm (B) Morgan
(C) Centimorgan (D) Angstrom
59. In prokaryotes IF₂ binds to
- (A) Initiator tRNA and GTP
(B) Aminoacyl tRNA and ATP
(C) mRNA and 30S subunit of ribosome
(D) 80S subunit of ribosome
60. The function of telomerase is
- (A) synthesis of DNA at ends of chromosome
(B) synthesis at RNA primers
(C) replication of normal DNA
(D) reverse transcriptase causing cancer
61. A Shine-Dalgarno sequence
- (A) serves as binding site for bacterial ribosome
(B) is involved in bacterial transcription
(C) serves as recognition site for termination of translation
(D) forms part of mRNA trailers



62. A gene which suppresses the action of another gene not situated on the same locus on the same chromosome is termed as
- (A) Jumping gene (B) Epistatic gene
(C) Supplementary gene (D) Hypostatic gene
63. Which one of the following amino acids has the maximum number of codons?
- (A) Leucine (B) Proline
(C) Tryptophan (D) Glutamic acid
64. Which one of the following therapeutic antibiotics blocks the peptidyltransferase reaction of protein synthesis?
- (A) Chloramphenicol (B) Erythromycin
(C) Tetracycline (D) Puromycin
65. Kink in a protein is mainly due to
- (A) Proline (B) Lysine
(C) Histidine (D) Glycine
66. Mitochondrial DNA resembles that of
- (A) Virus (B) Phage
(C) Bacterium (D) All of the above
67. Preserving germplasm in frozen state is called
- (A) Cryopreservation (B) Cold storage
(C) *In situ* preservation (D) Vernalisation



68. In callus culture, roots can be induced by the supply of
- (A) auxin and no cytokinin
 - (B) higher concentration of auxin and lower concentration of cytokinin
 - (C) higher concentration of cytokinin and lower concentration of auxin
 - (D) both auxin and cytokinin in equal proportions
69. Oral polio vaccine consists of
- (A) dead poliovirus
 - (B) protein subunit from poliovirus
 - (C) live attenuated poliovirus
 - (D) a toxoid from poliovirus
70. Glycolysis is an example of
- (A) Catabolism
 - (B) Anabolism
 - (C) β -oxidation
 - (D) Deamination
71. The circulating blood of a two-month-old breast-fed baby will contain maternal
- (A) IgA
 - (B) IgD
 - (C) IgE
 - (D) IgG
72. Which of the following is a non-organ-specific (systemic) autoimmune disease?
- (A) Myasthenia gravis
 - (B) Systemic lupus erythematosus (SLE)
 - (C) Hashimoto's thyroiditis
 - (D) Insulin-dependent *diabetes mellitus*



73. An example of a known oncogenic virus is
- (A) Herpes zoster
 - (B) HIV-2
 - (C) Epstein-Barr virus
 - (D) Vesicular stomatitis virus
74. Which of the following are all present in animal cells?
- (A) Mitochondria, cell membrane, cell wall, cytoplasm
 - (B) Chloroplasts, cytoplasm, vacuole, nucleus
 - (C) Nucleus, cell membrane, mitochondria, cytoplasm
 - (D) Vacuole, cell membrane, nucleus, mitochondria
75. Protein insertion into the mammalian ER membrane is typically
- (A) cotranslational
 - (B) pretranslational
 - (C) post-translational
 - (D) quasitranslational
76. DNA replication is initiated by
- (A) rRNA
 - (B) RNA primer
 - (C) DNA primer
 - (D) None of the above
77. The mitotic spindle is made of
- (A) collagen
 - (B) condensin
 - (C) histones
 - (D) microtubules
78. Pulse-field gel electrophoresis is used for separation of
- (A) Centromeres
 - (B) Telomeres
 - (C) DNA
 - (D) Chromosomes
79. The molecular formulae of deoxyribose sugar and ribose sugar, respectively are
- (A) $C_5H_{10}O_4$ and $C_5H_{10}O_6$
 - (B) $C_5H_{10}O_4$ and $C_5H_{10}O_5$
 - (C) $C_5H_{10}O_5$ and $C_5H_{10}O_4$
 - (D) $C_5H_{10}O_5$ and $C_6H_{10}O_4$



80. DNA molecules make a complete turn after every
- (A) 20 Å (B) 34 Å
(C) 3.4 Å (D) 10 base pairs
81. Eco RI is a
- (A) Ligase (B) Polymerase
(C) Restriction enzyme (D) Gyrase
82. Which enzyme is the target of drugs used to treat diseases caused by influenza virus?
- (A) Hyaluronidase (B) Neuraminidase
(C) Proteinase (D) Collagenase
83. A riboside is
- (A) Base + phosphate (B) Ribose + phosphate
(C) Ribose + phosphate + base (D) Ribose + base
84. Best method to determine paternity is
- (A) protein analysis (B) chromosome counting
(C) gene counting (D) DNA finger-printing
85. Most abundant RNA type in a cell is
- (A) tRNA (B) rRNA
(C) mRNA (D) SnRNA
86. A blood group that has both A and B antigens but no antibodies is
- (A) A (B) O
(C) AB (D) B



87. A person is injected with gamma-globulin against hepatitis B. It offers protection against hepatitis through
- (A) artificially acquired passive immunity
 - (B) artificially acquired active immunity
 - (C) naturally acquired active immunity
 - (D) naturally acquired passive immunity
88. BCG vaccine provides protection against
- (A) measles
 - (B) cholera
 - (C) T.B
 - (D) small pox
89. Histamines or inflammation producing substances are formed by
- (A) Macrophages
 - (B) Dendritic cells
 - (C) Mast cells
 - (D) Eosinophils
90. Example of a water-soluble plant pigment is
- (A) Chlorophyll-a
 - (B) Chlorophyll-b
 - (C) Anthocyanin
 - (D) Xanthophyll
91. Electric potential of the brain is recorded by
- (A) CT Scan
 - (B) Sphygmomanometer
 - (C) ECG
 - (D) EEG
92. The gene for sickle-cell anaemia is inherited through
- (A) Blood cells
 - (B) B cells
 - (C) Sex chromosomes
 - (D) Autosomes
93. Restriction endonucleases which recognise and cut the same recognition sequences are known as
- (A) isoschizomers
 - (B) isozymes
 - (C) isoaccepting endonucleases
 - (D) abzymes



94. Continuous feed during fermentation is used to maintain
- (A) temperature
 - (B) substrate concentration
 - (C) water level
 - (D) product concentration
95. Ethidium bromide-stained DNA gels can be viewed at
- (A) 302nm
 - (B) 395nm
 - (C) 202nm
 - (D) 295nm
96. The portion of the brain which coordinates locomotory movements is
- (A) cerebrum
 - (B) cerebellum
 - (C) medulla oblongata
 - (D) olfactory lobes
97. Leydig cells are
- (A) interstitial cells of testes
 - (B) accessory cells of ovary
 - (C) stem cells in bone marrow
 - (D) cancerous cells
98. Which of the following modified nucleotides is used for Sanger's DNA sequencing method?
- (A) Deoxyribose 5-methyl cytosine triphosphate
 - (B) Bromodeoxyuridine triphosphate
 - (C) Dideoxyribose adenine triphosphate
 - (D) Deoxyribose 5-bromo uracil triphosphate
99. The primary lymphoid organs are
- (A) thymus and liver
 - (B) liver and bone marrow
 - (C) bone marrow and spleen
 - (D) thymus and bone marrow



100. The analysis of a gene reveals that 30% of the nucleotides is G residues. Then what is the percentage value for A?
- (A) 10% (B) 20%
(C) 30% (D) 40%
101. Which one of the following is an agent of mutation?
- (A) Water (B) Air
(C) Light (D) Radiation
102. Which one of the following is a sex-linked disease?
- (A) Cancer (B) Haemophilia
(C) Hydrophobia (D) Diabetes
103. Another name for baking soda is
- (A) sodium carbonate (B) calcium carbonate
(C) sodium bicarbonate (D) calcium bicarbonate
104. RNA molecules that exhibit catalytic activity are called
- (A) mRNAs (B) Ribonucleases
(C) Ribozymes (D) Ribosomes
105. HEPA filter stands for
- (A) High Efficiency Particulate Air Filter
(B) Highly Effective Particulate Air Filter
(C) Highly Efficient Particle Aerosol Filter
(D) High Efficiency Particle Air Filter
106. Sarcoma is a cancer of
- (A) skin (B) bones
(C) connective tissue/organ (D) blood



107. Virus-mediated transfer of cellular genetic material from one bacterial cell to another is called
- (A) induction (B) transfection
(C) transduction (D) transformation
108. Stain that is used for visualising chromosome is
- (A) acetocarmine (B) methylene blue
(C) methyl green (D) haemotoxylin
109. DNA duplication occurs in
- (A) Meiosis I and Mitosis (B) Mitosis
(C) Meiosis II and Mitosis (D) Meiosis only
110. During photosynthesis, evolution of oxygen is from
- (A) Water (B) CO₂
(C) Glucose (D) Chlorophyll
111. Penicillin inhibits bacterial multiplication because it
- (A) inhibits replication
(B) destroys protein synthesis machinery
(C) inhibits cell wall formation
(D) inhibits RNA synthesis
112. Gel filtration is a technique which is used to separate protein based on the
- (A) size and net + charge (B) size and net -- charge
(C) net charge only (D) net size only
113. Blood serum albumin is sterilised by
- (A) autoclaving (B) using disinfectants
(C) irradiation (D) filtration



114. Wobble hypothesis was proposed by
- (A) M.W. Nirenberg (B) H. Khorana
(C) F.H.C. Crick (D) P. Leder
115. Gene maps are prepared through a study of
- (A) Test cross ratios (B) Recombination frequencies
(C) χ^2 test (D) *In situ* hybridisation
116. Human genome project (HGP) was a coordinated effort involving the countries
- (A) US, UK, Canada, Australia, Japan and France
(B) US, UK, Japan, France, Germany and China
(C) US, UK, Canada, France, Germany and Japan
(D) US, UK, Australia, New Zealand, France and Germany
117. Staphylococci, Streptococci and *E. coli* have one trait in common, that is, they
- (A) cause anemia
(B) coagulate fibrinogen
(C) cleave immunoglobins
(D) lower viscosity of exudates
118. Which hormone is detected using ELISA, within a few days of postconception?
- (A) Gonadotropin (B) Somatotropin
(C) Chorionic gonadotropin (D) Estrogen
119. Genetically controlled allelic forms of immunoglobulin molecules that are not present in all individuals are called
- (A) Isotypes (B) Neotypes
(C) Idiotypes (D) Allogens



120. The superficial layer of body of water which is constantly stirred by wind is called
- (A) Epilimnion (B) Metalimnion
(C) Thermocline (D) Hypolimnion
121. Mucopolysaccharides are commonly known as
- (A) Homopolysaccharides (B) Acrodextrins
(C) Fructosans (D) Glycosaminoglycans
122. Which vaccines are produced by transferring genes encoding key antigens, from infectious agents into plants?
- (A) DNA based vaccines (B) Edible vaccines
(C) Peptide vaccines (D) Attenuated vaccines
123. Which macromolecules are known as informational macromolecules?
- (A) DNA and RNA (B) Nucleic acids and proteins
(C) DNA (D) Polysomes and lipoproteins
124. TCA cycle is a/an
- (A) Anabolic pathway (B) Catabolic pathway
(C) Amphibolic pathway (D) None of the above
125. The function of an enzyme is to
- (A) cause a chemical reaction that would not otherwise take place
(B) change the rates of chemical reactions
(C) control the rates of chemical reactions
(D) change the directions of reactions
126. A monkey cell line CV-1, stably transformed with SV40 viral replicon gives rise to
- (A) MRC-90 cell line (B) C2 cell line
(C) COS cell line (D) MDCK cell line

127. The serum antibody present in the blood group O is
- (A) Anti-A (B) Anti-B
(C) Anti-A and Anti-B (D) None of the above
128. Each turn of alpha helix in secondary structure of protein has
- (A) 3.0 amino acids (B) 3.2 amino acids
(C) 3.5 amino acids (D) 3.6 amino acids
129. The interconnections between carbohydrate and protein synthesis pathways is an example of
- (A) physiological adaptation (B) biochemical adaptation
(C) behavioural adaptation (D) anatomical adaptation
130. Digestion of intracellular substances is done by
- (A) desmosomes (B) chromosomes
(C) ribosomes (D) lysosomes
131. Which one of the following virus possesses double-stranded RNA?
- (A) Reovirus (B) Cauliflower mosaic virus
(C) T₄ phage (D) TMV
132. Expression of eukaryotic protein in *Escherichia coli* is not favoured because
- (A) the expressed proteins are defective
(B) the cost of maintaining fermentation is high
(C) purification procedure is complex and expensive
(D) the integration of eukaryotic DNA with bacterial vector is difficult
133. The crown gall is caused by
- (A) *Streptomyces scabies* (B) *Agrobacterium tumefaciens*
(C) *Erwinia carotovora* (D) *Pseudomonas pisi*



134. The first human gene therapy was initiated in US in 1990 on two young girls with
- (A) Canavan disease (B) Fanconi anemia
(C) Haemophilia A (D) ADA deficient SCID
135. When a cell membrane protein on one cell surface interacts with the adjacent cell surfaces, these events are called as
- (A) Juxtacrine interactions (B) Paracrine interactions
(C) Endocrine interactions (D) Stem cell factors
136. In Calvin cycle, CO₂ joins a 5-carbon compound to form a 6-carbon compound. The name of the 5-carbon compound is
- (A) Pentose phosphate (B) α -keta glutarate
(C) Ribulose1,5-diphosphate (D) D-ribose
137. The premature drop of fruits such as apple, pear and citrus can be prevented to a great extent by spraying the tree with a dilute solution of
- (A) Auxins (B) Gibberellins
(C) Cytokinins (D) Antiauxins
138. The first step in the differentiation of individual cell or a clone is
- (A) Cell enlargement (B) Cell division
(C) Induction of polarity (D) All of the above
139. Bacteria and cyanobacteria are comparable due to their
- (A) photosynthetic ability (B) motility
(C) prokaryotic nature (D) aquatic nature



140. The enormous diversity of protein molecule is due mostly to the diversity of
- (A) R-groups in the amino acids
 - (B) Peptide bonds
 - (C) Amino acid sequences within protein molecules
 - (D) Amino groups in the amino acids
141. Aleurone layer is a special tissue found on grains which store
- (A) Carbohydrates
 - (B) Proteins
 - (C) Lipids
 - (D) Vitamins
142. Self-incompatibility is advantageous for
- (A) production of hybrid seeds
 - (B) production of foundation seeds
 - (C) production of breeder seeds
 - (D) None of the above
143. HIV infects
- (A) T-cells and macrophages
 - (B) Erythrocytes
 - (C) Fibroblasts
 - (D) Epithelial cells
144. The chemical widely used for protoplast fusion is
- (A) Mannitol
 - (B) Glycerol
 - (C) Polyethylene glycol
 - (D) Sorbitol
145. Which one of the following plants is a good source of an alternative hydrocarbon that can be used as a lubricant?
- (A) *Palaquium oblongifolium*
 - (B) *Cryptostegia madagascariensis*
 - (C) *Funtumia elastica*
 - (D) *Simmondsia chinensis*

146. The choice of viral vector for transformation of animal cells is based on
- (A) types of cells or animals to be infected
 - (B) whether cell transformation or cell lysis is required
 - (C) the size of DNA to be cloned
 - (D) All of the above
147. Elevated level of RBCs and low affinity of haemoglobin for oxygen are an adaptation for
- (A) High altitude
 - (B) Poles
 - (C) Low altitude
 - (D) Marine
148. The subunit of RNA polymerase involved in initiation of bacterial transcription is designated
- (A) Alpha
 - (B) Gamma
 - (C) Sigma
 - (D) Rho
149. The Lock and Key model of ES formation was proposed by
- (A) King Fischer
 - (B) Emil Fischer
 - (C) Sweden Fischer
 - (D) Koshland
150. Plasmids under native condition do exist as
- (A) Supercoiled
 - (B) Linear
 - (C) Sometimes single-stranded
 - (D) Closed nick, circular