

AKG

PROVISIONAL ANSWER KEY

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Note:

- 1). All Suggestions are to be sent with reference to website published Question paper with Provisional Answer Key Only.
- 2). All Suggestions are to be sent in the given format only.
- 3). Candidate must ensure the above complaine

101. Landsteiner was awarded the Nobel Prize in Physiology or Medicine in
(A) 1945 (B) 1930
(C) 1941 (D) 1926
102. As a Red cell indices-MCH measures the
(A) Weight of haemoglobin in the average red cell
(B) Average volume of red cells
(C) Weight of haemoglobin in a standard volume of blood
(D) Degree of size variation in red cells
103. Prostate Specific Antigen- which is released by the prostate in small amounts into the blood stream is a type of
(A) Vitamin (B) Carbohydrate
(C) Protein (D) Fat
104. Gamma Glutamyl Transferase is an enzyme used
(A) To assess stomach function. (B) To assess liver function.
(C) To assess ovary function. (D) To assess testis function.
105. The broken down percentage of neutrophils, eosinophil, basophils, monocytes, and lymphocytes is called as
(A) Leukocyte differential Rate (LDR) (B) Total Blood differential Count (LBDC)
(C) Leukocyte Derivative Count (D) Leukocyte Differential count (LDC)
106. Rh disease typically occurs only in some second or subsequent pregnancies of Rh negative women where the foetus's father is Rh positive.
(A) Is a type of brain disease of the new born.
(B) Is a type of haemolytic disease of the new born.
(C) Is a type of heart disease of the new born.
(D) Is a type of kidney disease of the new born.
107. MNS antigen system is under control of a pair of co-dominant alleles LM and LN and based on,
(A) Two genes: Glycophorin A and Glycophorin B,
(B) Two genes: Glycophorin C and Glycophorin D,
(C) Two genes: Glycophorin E and Glycophorin F,
(D) Two genes: Glycophorin D and Glycophorin G,
108. Lutheran system comprised of four pairs of allelic antigens representing single amino acid substitution in the Lutheran glycoprotein,
(A) At chromosome 19 (B) At chromosome 11
(C) At chromosome 21 (D) At chromosome 10

109. These erythrocyte antigens are the third most potent immunogenic antigen after ABO and Rh system, and are defined by an immune antibody, anti-K.
(A) Kell system (B) Duffy system
(C) Kidd system (D) Lewis system
110. It is also known as Fy glycoprotein and is present in the surface of RBCs.
(A) Lewis system (B) Kidd system
(C) Duffy system (D) Kell system
111. Jk antigen is a glycoprotein, present on the membrane of RBCs and acts as a urea transporter in RBCs and renal endothelial cells.
(A) Kidd system (B) Lewis system
(C) Lutheran blood group (D) Bombay blood group.
112. HH blood group is also known as
(A) MN blood group (B) Lutheran blood group
(C) Bombay blood group (D) None of above
113. To detect the presence of sperm following test is done,
(A) Wrinklers test (B) Lowry et al ;
(C) The acid phosphatase test (D) The alkaline phosphatase test
114. The identification of feces is done by carrying following test,
(A) Mannose (B) Urobilinogen
(C) Glucose (D) Fructose
115. In 2007, Phadebas Forensic Press Test was launched,
(A) To detect semen (B) To Detect Saliva
(C) To detect urea (D) To detect uric acid
116. The proper definition of forensic science is
(A) Using proper scientific techniques to understand a crime scene.
(B) Understanding the process in which a crime was committed.
(C) The science studying the origins and background of crime scene investigation.
(D) The application of scientific knowledge and technology to the analysis of crime scene evidence.
117. The “Father of Forensic Toxicology” is,
(A) Locard (B) Orfila
(C) Osborn (D) Lattes
118. The system known as anthropometry is developed by,
(A) Bertillon (B) Goddard
(C) Gross (D) Galton

119. Who undertook the study of fingerprints as a method of personal identification?
 (A) Gross (B) Galton
 (C) Lattes (D) Locard
120. Who devised the technique for determining the blood group of a dried blood stain?
 (A) Gross (B) . Locard
 (C) Bertillon (D) Lattes
121. A hard, heavy, ring porous hardwood. It has a prominent grain that resembles oak, and a white to light brown colour.
 (A) Cedar (B) Pine
 (C) Ash (D) Cypress
122. Arjun is a variety of timber, scientifically known as,
 (A) Ficus benghalensis, (B) Terminalia elliptica
 (C) Anogeissus latifolia (D) Artocarpus heterophyllus
123. Following is the grass with edible seeds,
 (A) Barley Mitchell grass (B) wattle signal grass
 (C) woolly butt grass (D) All above given
124. They are narrow for almost the entire leaf, but then have an abrupt round structure at the apex.
 (A) Spatulate leaves (B) Reniform leaves
 (C) Hastate leaves (D) Peltate leaves
125. Core of the grain is known as,
 (A) Hilum (B) Fissures
 (C) Lamellae (D) Extinction cross
126. It represents the male portion of the reproductive process in plants and trees.
 (A) Sperm (B) Pollen grains
 (C) Starch grains (D) Ova
127. On seedlings the first pair of leaves is typically monophyllous, the second pair having three lobes and the next pair five.
 (A) Opium (B) Coca plants
 (C) Mushrooms (D) Cannabis
128. A marked characteristic of the leaf is an areolated portion bounded by two longitudinal curved lines, one line on each side of the midrib, and more conspicuous on the under face of the leaf.
 (A) Cannabis (B) Opium
 (C) Coca plant (D) Mushrooms

129. The fleshy, spore-bearing fruiting body of a fungus typically produced above ground on soil or on its food source.
- (A) Opium (B)Coca plants
(C) Mushrooms (D)Cannabis
130. The five flower petals are contained within a corolla and can be colored white, yellow, pink, or red.
- (A) Cannabis (B)Opium
(C) Tobacco (D)Mushrooms
131. Extra nuclear genetic material is found in,
- (A) Mitochondria and plastids** (B) Nucleus and cytoplasm
 (C) . Mitochondria and nucleus (D) Plastid and nucleus
132. Types of proteins that guide cells on the move in the bloodstream to their destination at a wound site are
- (A) Gap junctions **(B) Cell adhesion molecules**
 (C) Tight junctions (D) Desmosomes
133. Choose the correct statement about cell membranes,
- (A) Desmosomes function both as ion channels and to strengthen cell membranes
 (B) Ions can pass readily through any portion of the cell membrane
 (C) Cholesterol is not a necessary component of the cell membrane.
(D) Ion channels function as gates, opening or closing to specific ions, under certain conditions.
134. Which of the following is a single membrane bound organelle?
- (A) Ribosome. (B) Nucleus.
(C) Vacuole. (D) Golgi bodies.
135. What is a polysome?
- (A) Collection of lysosome **(B) Collection of ribosome.**
 (C) Collection of peroxisome. (D) Collection of mesosome.
136. Animal cell differs from plant cells in possessing
- (A) Plastid **(B) Centrosome**
 (C) Golgi body (D) Vacuole
137. When a B cell encounters antigen to which it is targeted, it divides rapidly and produces
- (A) More antigen **(B) Plasma cells**
 (C) T cells (D) Killer cells
138. The _____ is a system of membranes designed to transport molecules within and out of cells.
- (A) Nucleolus (B) Vacuole
(C) Endoplasmic reticulum (D) Chromatin

139. Which enzyme cuts the bonds of DNA molecule at the origin of replication?
 (A) DNA polymerase (B) DNA gyrase
 (C) Endonucleas (D) DNA ligase
140. In rDNA technology a plasmid vector is cleaved by
 (A) The same enzyme that cleave the donor DNA
 (B) Modified DNA ligase
 (C) Heated alkaline solution
 (D) The different enzyme other than that cleave the donor DNA
141. Eco RI is an
 (A) Ligase (B) Polymerase
 (C) Gyrase (D) Restriction enzyme
142. The following RNA molecules serves as an adaptor molecule during protein synthesis.
 (A) tRNA (B) rRNA
 (C) mRNA (D) tRNA and mRNA
143. During translation, the role of enzyme peptidyltransferase is
 (A) Amino acid activation
 (B) Peptide bond formation between adjacent amino acids
 (C) Transfer of phosphate group
 (D) Binding of ribosome subunits to mRNA
144. Phenol used in DNA extraction,
 (A) Precipitates RNA-protein complex and leave DNA in aqueous solution
 (B) Precipitates proteins and leave nucleic acids in aqueous solution
 (C) Precipitates cell debris and leave nucleic acids-protein complex in aqueous solution
 (D) Precipitates RNA-protein complex and leave DNA in aqueous solution
145. In cell extracts with high protein content, before phenol treatment
 (A) SDS is used to break polypeptides to small fragments
 (B) Protease are used to break polypeptides to small fragments
 (C) Chloroform is used to break polypeptides to small fragments
 (D) Isopropanol is used to break polypeptides to small fragments
146. Which of the following is in correct order regarding DNA extraction?
 (A) Cell lysis>phenol treatment>protease treatment>ethanol precipitation
 (B) Cell lysis>RNAs treatment>protease treatment>ethanol precipitation
 (C) Cell lysis>phenol treatment>RNAs treatment>ethanol precipitation
 (D) RNAs treatment>protease treatment> Cell lysis t>ethanol precipitation

147. During translation proteins are synthesized,
(A) By ribosomes using the information on mRNA
(B) By ribosomes using the information on rRNA
(C) By lysosome using the information on DNA
(D) By ribosomes using the information on DNA
148. Which of the following is a chemical nucleotide sequencing method?
(A) Edmans method (B) Sanger method
(C) Automated sequencing method (D) Maxam-Gilbert method
149. The samples in Sanger's method after reaction are separated using
(A) PAGE (B) AGE
(C) 2-D gel electrophoresis (D) PFGE
150. Which of the following sequencing methods uses PCR for generating sequence templates,
(A) LMPCR (B) Sanger's method and LMPCR
(C) Sanger's method (D) LMPCR and automated DNA sequencing
151. The technique used in DNA fingerprinting is
(A) Flow Cytometry (B) Northern Blotting
(C) Southern Blotting (D) Western Blotting
152. DNA fingerprinting relies on identifying specific
(A) Promoters (B) Non coding sequences
(C) Coding sequences (D) Both B and C
153. The technique to distinguish the individuals based on their DNA print patterns is called,
(A) DNA profiling (B) DNA fingerprinting
(C) Molecular fingerprinting (D) All of the above
154. Each individual has a unique DNA fingerprint as individuals differ in,
(A) Location of minisatellite on chromosome
(B) Size of minisatellite on chromosome
(C) Number of minisatellite on chromosome
(D) All of the above
155. Minisatellite are,
(A) Short coding repetitive regions on the eukaryotic genome
(B) Are regions of chromosomes after secondary constriction
(C) Short non-coding repetitive sequences present throughout the chromosomes
(D) 10-40 bp sized short sequences within the genes
156. A mouse strain deficient in NK cells is the,
(A) Nude (B) Beige.
(C) SJL (D) MRL-lpr/lpr

157. In forensic lab analysis the presence of choline in semen samples is identified by
 (A) Acid phosphatase test (B) Barberio's test
 (C) Florence test (D) Biuret test
158. Which one is a non-organ-specific (systemic) autoimmune disease?
 (A) Systemic lupus erythematosus (SLE)
 (B) Myasthenia gravis
 (C) Insulin-dependent diabetes mellitus
 (D) Hashimoto's thyroiditis
159. In the protocol for identifying specific antibody-producing hybrid cell lines, prior to immunoassay, an enzyme that can convert a colourless substrate to a coloured one is conjugated to
 (A) Primary antibody (B) Secondary antibody
 (C) Tertiary antibody (D) None of these
160. Bacterial polysaccharides, when used as vaccines are poorly immunogenic at times. This problem is overcome by
 (A) conjugating the purified polysaccharide to carrier proteins such as tetanus toxoids
 (B) conjugating the purified polysaccharide to carrier proteins such as cholera toxoids
 (C) conjugating the purified polysaccharide to carrier proteins such as diphtheria toxoids
 (D) both a and c
161. Which immunoglobulin is able to cross placenta
 (A) IgE (B) IgM
 (C) IgG (D) IgA
162. Basophils possess high affinity receptors for one type of antibody, known as,
 (A) IgA (B) IgE
 (C) IgD (D) IgM
163. Antibodies clear out antigens by
 (A) Neutralization (B) Precipitation
 (C) Agglutination (D) All of these
164. Many small organic molecules are not antigenic by themselves but become antigenic if they bond to a larger molecule are called
 (A) Haptens (B) CDs
 (C) IgGs (D) Chemokines
165. MHC proteins are also called
 (A) Interleukins (B) IgG
 (C) HLA (D) Hybridomas

166. Activated helper T cells release regulatory molecules called
(A) Histamines (B) Antibodies
(C) Lymphokines (D) Complement
167. Memory cells,
(A) Produce cyclosporine
(B) Are responsible for passive immunity
(C) Prevent an animal from encountering certain antigens
(D) Provide an accelerated immune response upon second exposure to a particular antigen
168. Cells involved in exocytosis
(A) Neutrophils (B) B lymphocytes
(C) T helper cells (D) Mast cells
169. T helper cells are activated by antigen presented by,
(A) Class I MHC molecules on APCs
(B) Class II MHC molecules on APCs
(C) Class III MHC molecules on APCs
(D) Class I and II MHC molecules on APCs
170. IFN- γ is secreted by
(A) Th2 cells (B) Th0 cells
(C) Th1 cells (D) B cells
171. Lectins are found in,
(A) Plants (B) Animals
(C) Both in plants and animals (D) None in both
172. Optically inactive amino acid in the following group is,
(A) Glycine (B) Alanine
(C) Tryptophan (D) All
173. Which of the following is not a constituent of eukaryotic plasma membrane.?
(A) Cholesterol (B) Carbohydrate
(C) Triglycerides (D) Lecithin
174. The amino acid that causes 'knick' in the polypeptide chain is,
(A) Lysine (B) Proline
(C) Cystine (D) Tryptophan

175. Domains are the fundamental, functional and three-dimensional structural units of polypeptides with characteristics of a small
- (A) Loosely bound protein that is structurally independent of the other domains in the polypeptide chain
 - (B) Compact globular protein that is structurally independent of the other domains in the polypeptide chain**
 - (C) Loosely bound protein that is structurally dependent on the other domains in the polypeptide chain
 - (D) Tertiary protein that is structurally dependent on the other domains in the polypeptide chain
176. Isoforms are proteins that perform the same function but are encoded by different genes and have,
- (A) Different primary structure** (B) Same primary structure
 - (C) Different secondary structure (D) Same tertiary structure
177. A peptide bond
- (A) is easily ionized at physiologic pH
 - (B) has a partial double bond character**
 - (C) is stable to heating in strong acids
 - (D) occurs most commonly in the cis –configuration
178. The dominant component of the amyloid plaque that accumulates in Alzheimer’s disease is
- (A) Amyloid β ($A\beta$)** (B) Amyloid α ($A\beta$)
 - (C) Helix α ($A\beta$) (D) Helix β
179. The C-2 epimer of glucose is
- (A) Fructose **(B) Mannose**
 - (C) Galactose (D) D-glucose
180. Racemases is a class of enzymes that convert
- (A) aldose into ketose (B) ketose into aldose
 - (C) D- and L-isomers** (D) none
181. Mucopolysaccharidoses are inherited storage disease caused by
- (A) an increased rate of proteoglycan synthesis
 - (B) altered polysaccharide synthesis
 - (C) defects in proteoglycan degradation pathway**
 - (D) defects in mucopolysaccharide utilization

182. Which of the following functions as 'protective biologic lubricants'
(A) membrane bound glycolipids
(B) membrane bound glycoproteins
(C) membrane bound lipoproteins
(D) membrane bound polysaccharides
183. The phosphate end of the phospholipid molecule in the cell membrane is,
(A) hydrophobic **(B) hydrophilic**
(C) amphipathic (D) neutral
184. The enzymes present in lysosomes are,
(A) proteolytic enzymes **(B) hydrolase enzymes**
(C) lipolytic enzymes (D) epimerase enzymes
185. During pinocytosis the proteins that assist in the formation of vesicles are,
(A) actin and myosin (B) actin and clathrin
(C) clathrin and tubulin **(D) actin myosin and clathrin**
186. Amoeboid locomotion is exhibited by which of the following cells in human body,
(A) embryonic cells and red blood cells (B) white blood cells and neural cells
(C) embryonic cells and neural cells **(D) white blood cells and embryonic cells**
187. One of the features listed below is not characteristic of 'transformed' cells,
(A) immortal cell lines (B) no contact inhibition
(C) display typical cell surface receptors (D) non anchorage dependent
188. The kinetics of product formation (eg. MAb formation by hybridoma cells) is described by,
(A) Luedeking-Piret equation (B) Michelis –Menten equation
(C) Kennedy-Piret equation (D) Luedeking-Menten equation
189. Among the primary virus vectors used for gene therapy, which is an enveloped virus,
(A) Adenoviruses **(B) Retroviruses**
(C) Adeno-associated viruses (D) None
190. Identify the gene therapy involving the following protocol
-collect cells from an affected person
-correct the genetic defect by gene transfer
-select and grow the genetically corrected cells
-either infuse or transplant them back into the patient
(A) Ex vivo (B) In vivo
(C) Targeted mutagenesis (D) Neoplastic

191. Transgenic tobacco plants which expressed nitrilase activity were found resistant to the toxic activity of
 (A) Bromouracil (B) Bromoxynil
 (C) Thymoxynil (D) Thymouracil
192. Low levels of insecticidal toxin activity in BT plants was enhanced by combining the toxicity gene with
 (A) Serine protease inhibitor (B) Serine protease activator
 (C) Trypsin synthase (D) Trypsin activator
193. The vir genes in the Ti plasmid are located
 (A) in the T-DNA region (B) at the right border of T-DNA
 (C) at the left border of T-DNA (D) outside the T-DNA region
194. Which region of the Ti plasmid is absolutely required for T-DNA integration into a plant cell DNA
 (A) cloning site
 (B) right border sequence of the T-DNA region
 (C) left border sequence of the T-DNA region
 (D) both a and c
195. Glycerol phosphate acyl Transferase gene that confers cold tolerance in transgenic plants is taken from
 (A) *Pentunia.sp* (B) *Phaseolus vulgari*
 (C) *Arabidopsis.sp* (D) *Nicotiana alata*
196. In Northern Blotting technique the m-RNA in the agarose gel is transferred to
 (A) Nitroacetate filter paper (B) Nitrocellulose filter paper
 (C) Aminobenzylomethyl filter paper (D) Aminocellulase
197. Which of the following is an immune detection method
 (A) Southern Blotting (B) Northern Blotting
 (C) Western Blotting (D) Both b and c
198. When genes coding for enzymes mannitol dehydrogenase and sorbitol dehydrogenase was introduced into a plant through Ti plasmid the transgenic plant was resistant to
 (A) drought and heat (B) drought and salinity
 (C) heat and salinity (D) drought and cold
199. Transgenic plant bioreactors have successfully produced
 (A) antigenic protein of hepatitis B virus in banana
 (B) a gene for human interferon in tobacco plant
 (C) antigenic protein of hepatitis B virus I tobacco plant
 (D) both a and b

200. Production of CD4 protein for AIDS treatment in transgenic mice exemplifies
 (A) Animal bioreactors (B) Animal Pharming
 (C) Therapeutic model (D) None
201. Transgenic mosquitoes have been produced to combat malaria by incorporating genes coding for
 (A) endotoxin of Plasmodium vivax (B) cytotoxin of Plasmodium vivax
 (C) plasmatoxins of Plasmodium vivax (D) exotoxins of Plasmodium vivax
202. The BR of pBR322 stands for
 (A) F. Bolivar and R. Rodrigues (B) Bacillus Recombinant
 (C) F. Batson and R. Rodrigues (D) Bacterial Recombinant
203. DNA denaturation is usually done by
 (A) heat treatment (B) acid treatment
 (C) alkali treatment (D) both a and c
204. During the synthesis of cDNA, subsequent to Reverse transcriptase treatment, the Klenow fragment/enzyme used is from
 (A) E.coli DNA polymerase II (B) E.coli DNA polymerase I
 (C) E.coli RNA polymerase I (D) none of these
205. Shuttle vectors carry
 (A) Two types of origin of replication and selectable marker genes.
 (B) Two types of origin of replication.
 (C) Two types of selectable marker genes.
 (D) one type of origin of replication and selectable marker genes
206. Pichia pastoris is used successfully for the production of Hepatitis B virus surface antigens. The complete plasmid used has which of the following sequence cloned
 (A) AOXlp-HBsAg-AOXt (B) POXlp-HBsAg-POXt
 (C) AXlp-HBsAg-AXt (D) AOlp-HBsAg-AOt
207. In the expression vector AcMNPV, the gene of interest is cloned between
 (A) the promoter sequence of polyhedron
 (B) polyhedrin promoter and termination sequence
 (C) polyhedrin attenuation and termination sequence
 (D) the start sequence of polyhedrin and termination sequence
208. E.coli K12, a mutant bacterium that exemplifies biological containment, survives only in culture with exogenous requirement of
 (A) thymidine (B) biotin
 (C) both a and b (D) none of these

209. The amplified DNA in RAPD protocol is detected using
 (A) autoradiography
 (B) hybridization
 (C) ethidium bromide staining and fluorescence
 (D) polyethyl glycol staining and fluorescence
210. RFLP, Restriction Fragment Length Polymorphism is used to
 (A) Map chromosomes
 (B) Determine relationships between species
 (C) Infer phylogenetic relationships
 (D) a, b and c
211. The highly variable zone of the light and heavy chain called VL and VH regions of the antibody molecule has a span of approximately
 (A) 110 amino acids (B) 150 amino acids
 (C) 200 amino acids (D) 250 amino acids
212. By applying the Law of Mass Action for antigen –antibody reactions, the equilibrium constant or affinity constant, K, is given as
 (A) $K = \frac{[AbAg]}{[Ab][Ag]}$ (B) $K = \frac{[AbAg]}{[Ab][Ag]} \times 100$
 (C) $K = \frac{[Ab][Ag]}{[AbAg]} \times 100$ (D) $K = \frac{1}{[AbAg][Ab][Ag]}$
213. Proteosomes are an integral component involved in antigen processing of
 (A) MHC Class I pathway (B) MHC Class II pathway
 (C) MHC Class III pathway (D) MHC Class IV pathway
214. In patients with Hashimotos thyroiditis the serum contains antibodies to
 (A) Thyroid follicles (B) TSH
 (C) Thyroglobulin (D) None of these
215. For most autoimmune diseases, the MHC region that provides the strongest genetic component to disease susceptibility is located on
 (A) the short arm of chromosome 6 (B) the short arm of chromosome 16
 (C) the long arm of chromosome 6 (D) the long arm of chromosome 16
216. Systemic Lupus Erythematosus, is the classic autoimmune disease that exemplifies
 (A) Type IV Hypersensitivity (B) Type I Hypersensitivity
 (C) Type II Hypersensitivity (D) Type III Hypersensitivity
217. The use of microscopy following forensic procedures to characterize particles and materials involved in environmental studies.
 (A) Environmental biology (B) Environmental forensic microscopy
 (C) material sciences (D) None of above

218. A pure carbon has two electrons in 1s state and one electron each in
(A) 2s, 2px (B) 2px, 2py, 2pz
(C) 2s, 2px, 2py, 2pz (D) 2px, 2py
219. The silicon, finely subdivided into nanometre size wires, emit light is called
(A) Silicon light (B) Luminous silicon
(C) Porous silicon (D) LED
220. Fullerene C₆₀, has a symmetrically arrayed molecular ball orientation of
(A) twelve pentagonal(5 sided) and 20 hexagonal (6 sided) faces
(B) ten pentagonal(5 sided) and 20 hexagonal (6 sided) faces
(C) twelve pentagonal(5 sided) and 10 hexagonal (6 sided) faces
(D) ten pentagonal(5 sided) and 10 hexagonal (6 sided) faces
221. The folding of the graphene sheet is described by the following two parameters
(A) Zig-zag vector C and angle θ (B) Armchair vector C and angle θ
(C) Chiral vector C and angle θ (D) Chiral vector C and angle β
222. Which of the following is a physical technique used for synthesis of Nano materials,
(A) Plasma synthesis (B) Sol-gel synthesis
(C) Plasma-sol synthesis (D) Plasma-gel synthesis
223. In Scanning Electron Microscopy, by changing the width (w) of the electron beam, the magnification (M) can be changed as, $M=W/w$, where W stands for
(A) Width of the grid (B) Width of the CRT
(C) Width of the anode plate (D) None of these
224. Atomic Force Microscope does not depend on current, hence it can be used to visualize the surface of,
(A) conductors as well as non-conducting materials
(B) metallic conductors only
(C) non-conductor materials only
(D) plasma state material only
225. Which of the following properties make Quantum Dots (QD) a better choice as fluorescent labels for biomolecules when compared to organic dyes?
(A) QDs have a larger molar absorptivities and high quantum yield.
(B) QDs have a low rate of photodegradation
(C) QDs have a high rate of photodegradation
(D) both a and b
226. Nano spheres used as drug delivery systems are basically
(A) Vesicular systems (B) Matrix type systems
(C) Colloidal systems (D) both a and c

227. Among the three critical architectural domains, that functionalises a dendrimer, is the multivalent surface containing multiple potential reactive/passive sites called,
 (A) nano- scaffolding (B) nano- scaling
 (C) nano- dendrons (D) nano-wires
228. The role of TiO₂ in the silica–titania composite, known to execute simultaneous environmental monitoring and purification is to,
 (A) provide high surface area (B) concentrate the pollutants
 (C) photocatalytically oxidize the pollutants (D) recycle the pollutants
229. A regular “branched upon branched” pattern of functional nitrogen and amide group is a feature of
 (A) PAMAM Dendrimers (B) PANAM Dendrimers
 (C) PAMAM Dendrons (D) PANAM Dendrons
230. Chlorination disinfection by-products removal is best carried out by
 (A) Ozonation process
 (B) Membrane filtration process
 (C) combined ozonation/nanoparticle based membrane filtration process
 (D) Photocatalytic filtration process
231. The nanosensing method employed to detect Cholera toxin in water is
 (A) FETR-Forster Energy Transfer Resonance
 (B) FRET- Forster Resonance Energy Transfer
 (C) FETR-Fourier Energy Transfer Resonance
 (D) FRET-Fourier Resonance Energy Transfer
232. CNT-FED screen is made of thousands of pixels ,with each pixel containing three sub-pixels made of
 (A) red, green and blue phosphors (B) yellow ,green and blue phosphors
 (C) black ,green and blue phosphors (D) red, black and blue phosphors
233. In nucleic acid based nanobiosensors, riboflavin mediates electro-chemical detection of
 (A) Adenosine-related target DNA (B) Thymidine-related target DNA
 (C) Cytosine-related target DNA (D) Uracil-related target RNA
234. Recombinant P.putida JS444,is an excellent nanobiosensor for detecting
 (A) Hormones (B) Pesticides
 (C) Drug adulteration (D) Carbon monoxide
235. Name the CNT based nanosensor system that detects glucose concentration in real blood sample
 (A) POAS coated CNTs
 (B) MWCNTs
 (C) Polyvinyl ferrocene derivatised MWCNTs
 (D) SWCNTs

236. Electrochemical DNA hybridization biosensors rely on the conversion of DNA base pair recognition event into a useful electrical signal. Here the electrode is
(A) modified with a single stranded oligonucleotide probe
(B) modified with a double stranded oligonucleotide probe
(C) modified with a cDNA probe
(D) modified with a m-RNA probe
237. A common technique for the production of SWCNTs is
(A) Sol-gel synthesis (B) Hydrothermal synthesis
(C) Arc discharge method (D) Solvo-thermal synthesis
238. Deals with human diseases caused by, or associated with abnormal exposure to chemical substances.
(A) Forensic Toxicology (B) Clinical toxicology
(C) Fulminant poisoning (D) Ecotoxicology
239. Agents used to cause bodily injury,
(A) Corrosive acids and alkalies. (B) Digitalis,
(C) Abrus precatorius (D) Strychnos nux vomica.
240. Which of the following is NOT part of the etymology of the word pharmacology?
(A) Poison (B) Medicine
(C) Herb (D) Drug
241. Which of the following describes an agonist?
(A) A specific regulatory molecule in the biologic system where a drug interacts
(B) A drug that binds to a receptor and stimulates cellular activity
(C) Any substance that brings about a change in biologic function through its chemical action
(D) A drug that binds to a receptor and inhibits or opposes cellular activity
242. Which of the following describes minimal effective concentration (MEC)?
(A) The minimal drug plasma concentration to enter tissues
(B) The minimal drug plasma concentration to reach therapeutic levels
(C) The minimal drug plasma concentration to produce effect
(D) The minimal drug plasma concentration that can be detected
243. Which of the following is NOT a pharmacokinetic process?
(A) The drug is readily deposited in fat tissue
(B) The drug causes dilation of coronary vessels
(C) Movement of drug from the gut into general circulation
(D) Alteration of the drug by liver enzymes

244. Regulated by cytokines and growth factors, the Janus-Kinase JAK-STAT pathway results in which of the following?
(A) Endogenous mediator blocking (B) Ion channel modulation
(C) Gene transcription (D) Ion channel closing
245. Which of the following hormone regulate fluid balance?
(A) Oestrogen (B) Erythropoietin
(C) Antidiuretic hormone (D) Rennin
246. What is the function of the extracellular matrix?
(A) Filter blood and remove waste products
(B) Analyse levels of oxygen and carbon dioxide
(C) Transmit impulses through connective tissue
(D) To ensure connective tissue can bear weight and withstand tension
247. A muscle fibre relaxes when
(A) the nerve stimulus is too forceful (B) all the ATP is used up
(C) the nerve stimulus is removed (D) the actin binding sites are saturated
248. What is the function of a tendon?
(A) to link bones to bones (B) to bind bone cells close together
(C) to link muscles to ligaments (D) to link muscles to bones
249. Xenobiotic are considered
(A) Inorganic poisons (B) Endogenous
(C) Exogenous (D) None of above
250. A functional or anatomical change, at the cellular level, resulting from the exposure of a living organism to a substance.
(A) Mode of action (B) chemical could be "binding to DNA"
(C) Mechanism of action (D) All of above
251. As the poison gets absorbed systemically, it produces both specific CNS, spinal cord, cardiac and nonspecific shock.
(A) Local action (B) Remote action
(C) Irritant (D) Corrosive
252. Whole blood, Serum, Urine are taken for toxicological testing during,
(A) Ante mortem examination
(B) Post mortem examination
(C) Both ante and post mortem examination
(D) Environmental examination

253. Isolation and Extraction of poison or drug by various modern methods using instrumental techniques include,
(A) Fourier transform infrared spectroscopy
(B) Light microscopy
(C) Colorimetric,
(D) Photography
254. Which of the following toxins comes from the castor oil plant?
(A) Atropine **(B)** Strychnine
(C) Ricin **(D)** Digitalin
255. What hormone does the pancreatic alpha cell secrete?
(A) Insulin **(B)** Somatostatin
(C) Somatotropin **(D)** Amylase
256. Indian Pharmacopoeia (IP) which has been modelled over and historically follows from the British Pharmacopoeia. The standards that are in effects are,
(A) (IP 2011). **(B)** (IP 2008).
(C) (IP 2009). **(D)** (IP 2010).
257. The actual process of publishing the first Pharmacopoeia started in the year 1944 under the chairmanship of,
(A) Col. R. N. Rao **(B)** Col. N. N. Chopra
(C) Col. R. N. Chopra **(D)** Col. N. R. Chopra
258. What is the full form of OECD?
(A) Organization of Economic Corporation Development
(B) Organization of Equality Economic Corporation Development
(C) Organization of Equal and Challenging Development
(D) Organization of European Corporation Development
259. Trade mark,
(A) may include shapes of goods or combination of colours
(B) is represented graphically
(C) is capable of distinguishing the goods or services of one person from those of others
(D) All of the above
260. USP has _____ in enforcing its standards; enforcement is the responsibility of FDA and other government authorities in the U.S. and elsewhere.
(A) Major role **(B)** no role
(C) As per needed role **(D)** Power
261. The European Pharmacopoeia standards apply to medicines,
(A) For human use **(B)** for both human and veterinary use
(C) For veterinary use **(D)** For aquaculture use

262. Intellectual Property Rights (IPR) protect the use of information and ideas that are of
 (A) Moral value (B) Social value
 (C) Commercial value (D) Ethical value
263. The drugs which when bind receptors, cause activation of receptors.
 (A) Agonists (B) Coupling
 (C) Ligands (D) Antagonists
264. Application of Computer Investigation and Analysis Technique to gather evidence suitable for presentation in a court of Law, defines
 (A) Cybercriminologies (B) Computer Forensics
 (C) Cyberpolicing (D) All three A,B and C
265. Which of the following is/are not particularly useful in Ocean Forensics
 (A) Forensic Entomology (B) DNA Fingerprinting
 (C) Chemical Fingerprinting (D) Cyber Forensics
266. Fast Technology for nucleic acids (FTA) is used for quick DNA extraction from
 (A) Blood (B) Saliva
 (C) Stool (D) Both A and B
267. Chemical enhancement technology for fingerprinting, uses
 (A) Iodine (B) Ninhydrin reagents
 (C) "Super glue" (D) All of these A,B and C
268. Sex offender DNA database are generally useful in
 (A) Opening old cases (B) Degenerate forensic sample
 (C) Contaminated evidences (D) None
269. Some drugs, in addition to blocking access of the natural agonist to the receptor are capable of low degree of activation , are known to show
 (A) Partial agonist activity (B) Bifunctional action
 (C) Pure agonist activity (D) Partial antagonistic activity
270. The rationale for using ethanol in methanol poisoning cases is
 (A) Irreversible inhibition of enzyme activity
 (B) Competitive inhibition of enzyme activity
 (C) Substrate modification
 (D) None of these
271. Low levels of Aspirin is sufficient for anti-platelet action via
 (A) Covalent binding of Aspirin to cyclooxygenase
 (B) Covalent binding of Aspirin to cytochrome oxidase
 (C) Covalent binding of Aspirin to superoxide dismutase
 (D) All three A,B andC

272. The strength of response induced by occupancy of the receptor by an agonist, refers to the drugs
 (A) Receptor dynamics (B) Pharmacological efficacy
 (C) Therapeutic efficacy (D) All three A,B and C
273. From Pharmacokinetic point of view, which of the following is a “leaky epithelia”
 (A) Proximal renal tubule (B) Urinary bladder
 (C) Jejunum (D) Both A and C
274. Water solubility of a substance is promoted by the presence of
 (A) Halogen group (B) Amide group
 (C) Carboxylic group (D) Both B and C
275. Drugs that need to be distributed uniformly, has to substantially un-ionised at
 (A) pH 7.46±0.04 (B) pH 7.00±0.04
 (C) pH 7.05±0.04 (D) pH 7.86±0.04
276. What percentage of a drug in systemic circulation subjected to hepatic metabolic process, per circulation
 (A) 20% (B) 25%
 (C) 5% (D) 10%
277. P450 system is not involved in the oxidation reactions of which substance(s)
 (A) Amines (B) Methyl xanthines
 (C) Mercaptopurines (D) All three A,B and C
278. Allopurinol used for treatment of Gout shows hypersensitivity reactions, the HLA association here is
 (A) HLA-B*5701 (B) HLA-B*5801
 (C) HLA-B*3101 (D) HLA-B*5201
279. Indian Pharmacopoeia 2010 contains monographs on,
 (A) Antiviral and anticancerous drugs (B) Antituberculosis and herbal drugs
 (C) Radiotherapy in humans (D) Both A and B
280. 19 new Radiopharmaceutical Monographs with one General chapter on Radiopharmaceutical preparations was introduced in
 (A) Vth Edition IP-2007 (B) VIth Edition IP-2010
 (C) VIIth Edition IP-2014 (D) Vet Supplement-2000
281. Which of the following is added in IP Addendum-2015 to IP 2014
 (A) BCG for Immuno therapy
 (B) Influenza vaccine(Human live attenuated)
 (C) DTP vaccine
 (D) Both A and B

282. Patent offices function from which of these locations
 (A) Delhi and Bangalore (B) Chennai and Mumbai
 (C) Kolkata and Delhi (D) Both B and C
283. Form 26 submitted with the Application for Patent is for
 (A) Declaration to Inventor ship (B) Statement and Undertaking
 (C) Power of Authority (D) Provisional Specification
284. Which of the following not a privilege for the Patentee
 (A) A Patentee can claim damages from the date of publication of his/her application
 (B) Patentee can institute a suit for infringement only after Patent is granted
 (C) Patentee can institute a suit for infringement from the date of application for Patent
 (D) All
285. The title for Patent Application cannot include
 (A) Inventors name (B) The word "Patent"
 (C) "etc." (D) All A, B and C
286. The term of Patent for Divisional Application
 (A) 25 years from the date of filing of Divisional Application
 (B) 25 years from the date of filing of Main Application
 (C) 15 years from the date of filing of Divisional Application
 (D) 15 years from the date of filing of Main Application
287. In April 2014, the United States Patent and Trademark Office (USPTO) granted a patent on CRISPR technology for
 (A) Use of CRISPR-Cas9 to edit a cell of mammal
 (B) Use of CRISPR-Cas9 to edit a cell of prokaryote
 (C) Use of CRISPR-Cas9 to edit a cell of culture system
 (D) All
288. "Lab Type" is a DNA database that contains DNA profiles of
 (A) Individuals that have access to the laboratory space where the sample is being tested
 (B) Individuals who may come in contact with an item of evidence
 (C) Suspect individuals
 (D) Both A and B
289. The extra genic DNA of human genome amounts to approximately
 (A) 75% (B) 50%
 (C) 20% (D) 10%
290. Repetitive DNA, which is of particular use in Forensic DNA analysis, forms about
 (A) 50% of extragenomic DNA (B) 50% of genome
 (C) 30% of extragenomic DNA (D) 30% of genome

291. Which of the following sample(s) is often classed as a poor source for DNA extraction
 (A) Dead skin cells (B) Urine
 (C) Faeces (D) All three A, B and C
292. Stratum spinosum of the epidermis lies between,
 (A) Stratum granulosum and stratum lucidum
 (B) Stratum granulosum and stratum basale
 (C) Stratum basale and stratum lucidum
 (D) Stratum granulosum and stratum corneum
293. Size of starch granules is influenced by
 (A) Species and site of storage (B) Site of storage and age of granule
 (C) Site of storage and humidity (D) None of these
294. Substance responsible for pollen allergy are often products originating from
 (A) Tapetum (B) Pollen mother cell
 (C) Tetrads (D) B & C
295. Low humidity during pollen storage usually has a positive effect on pollen viability, with exceptions in some species of
 (A) Solanacea family (B) Gramineae family
 (C) Orchidaceae (D) Liliaceae
296. Opiates are good examples of
 (A) Hallucinogens (B) Sedatives
 (C) Tranquilisers (D) Stimulants
297. Which of the following has its origin in India, Myanmar and West Africa
 (A) *Pyrus communis* (B) *Pterocarpus* spp.
 (C) *Eucalyptus delegatensis* (D) *Quercus* spp.
298. *Tectona grandis*, a high quality timber, occupying major plantations is from
 (A) Africa (B) America
 (C) South East Asia (D) Australia
299. Which among the following is not a component of Eukaryotic plasma membrane
 (A) Cholesterol (B) Carbohydrates
 (C) Triglycerides (D) Lecithin
300. A peptide bond
 (A) Is easily ionized at physiologic pH
 (B) Has a partial double bond character
 (C) Is stable to heating in strong acids
 (D) Occurs most commonly in the cis –configuration