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PROVISIONAL ANSWER KEY [CBRT]

Name of The Post

Assistant Professor, Biochemistry, General State Service, Class-1

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Instructions / સૂચના

Candidate must ensure compliance to the instructions mentioned below, else objections shall not be considered: -

- (1) All the suggestion should be submitted in prescribed format of suggestion sheet Physically.
- (2) Question wise suggestion to be submitted in the prescribed format (Suggestion Sheet) published on the website.
- (3) All suggestions are to be submitted with reference to the Master Question Paper with provisional answer key (Master Question Paper), published herewith on the website. Objections should be sent referring to the Question, Question No. & options of the Master Question Paper.
- (4) Suggestions regarding question nos. and options other than provisional answer key (Master Question Paper) shall not be considered.
- (5) Objections and answers suggested by the candidate should be in compliance with the responses given by him in his answer sheet. Objections shall not be considered, in case, if responses given in the answer sheet /response sheet and submitted suggestions are differed.
- (6) Objection for each question shall be made on separate sheet. Objection for more than one question in single sheet shall not be considered & treated as cancelled.

ઉમેદવારે નીચેની સૂચનાઓનું પાલન કરવાની તકેદારી રાખવી, અન્યથા વાંધા-સૂચન અંગે કરેલ રજૂઆતો ધ્યાને લેવાશે નહીં

- (1) ઉમેદવારે વાંધા-સૂચનો નિયત કરવામાં આવેલ વાંધા-સૂચન પત્રકથી રજૂ કરવાના રહેશે.
- (2) ઉમેદવારે પ્રશ્નપ્રમાણે વાંધા-સૂચનો રજૂ કરવા વેબસાઈટ પર પ્રસિધ્ધ થયેલ નિયત વાંધા-સૂચન પત્રકના નમૂનાનો જ ઉપયોગ કરવો.
- (3) ઉમેદવારે પોતાને પરીક્ષામાં મળેલ પ્રશ્નપુસ્તિકામાં છપાયેલ પ્રશ્નક્રમાંક મુજબ વાંધા-સૂચનો રજૂ ન કરતા તમામ વાંધા-સૂચનો વેબસાઈટ પર પ્રસિધ્ધ થયેલ પ્રોવિઝનલ આન્સર કી (માસ્ટર પ્રશ્નપત્ર)ના પ્રશ્ન ક્રમાંક મુજબ અને તે સંદર્ભમાં રજૂ કરવા.
- (4) માસ્ટર પ્રશ્નપત્ર માં નિર્દિષ્ટ પ્રશ્ન અને વિકલ્પ સિવાયના વાંધા-સૂચન ધ્યાને લેવામાં આવશે નહીં.
- (5) ઉમેદવારે જે પ્રશ્નના વિકલ્પ પર વાંધો રજૂ કરેલ છે અને વિકલ્પ રૂપે જે જવાબ સૂચવેલ છે એ જવાબ ઉમેદવારે પોતાની ઉત્તરવહીમાં આપેલ હોવો જોઈએ. ઉમેદવારે સૂચવેલ જવાબ અને ઉત્તરવહીની જવાબ ભિન્ન હશે તો ઉમેદવારે રજૂ કરેલ વાંધા-સૂચન ધ્યાનમાં લેવાશે નહીં.
- (6) એક પ્રશ્ન માટે એક જ વાંધા-સૂચન પત્રક વાપરવું. એક જ વાંધા-સૂચન પત્રકમાં એકથી વધારે પ્રશ્નોની રજૂઆત કરેલ હશે તો તે અંગેના વાંધા-સૂચનો ધ્યાને લેવાશે નહીં.

001. Which of the following statement about glutamine is incorrect?
(A) Degrades in solution due to intra molecular cyclization
(B) Frozen storage is essential for quantification
(C) Supplies nitrogen atom for pyrimidine biosynthesis
 (D) CSF concentrations are lesser than serum concentrations
002. Which among the following is not a negative acute phase reactant?
(A) Transferrin (B) Ferritin
(C) Retinol binding protein (D) Thyroxine binding globulin
003. Identify the correct statement about albumin
(A) Albumin gene is located on chromosome 6
(B) Heparin tubes are preferred for sample collection for albumin estimation by dye binding method
 (C) International protein reference standard is CRM 470
(D) Plasma concentration of albumin is not posture dependent
004. Which of the following principle is not applied in blood gas measurements?
(A) Boyle's law (B) Charles' law
 (C) Bayes' theorem (D) Dalton's law
005. Which of the following statement about formation and globin composition of fetal hemoglobin is incorrect?
(A) Zeta (ζ) globin chains are produced by yolk sac during embryonic life
 (B) Zeta (ζ) and epsilon (ϵ) globin chains combine to form embryonic hemoglobin Hb Gower 2
(C) Production of the ζ -chain ceases at a gestational age of 4 months
(D) D. Production of α - and γ - chains starts at 6 weeks
006. Hypervolemia with urine sodium greater than 20 meq/l is seen in –
(A) Congestive heart failure (B) Liver Cirrhosis
 (C) Renal failure (D) Nephrotic syndrome
007. All are used to measure osmolality except
 (A) Vapor pressure elevation (B) Freezing point depression
(C) Vapor pressure depression (D) Boiling point elevation
008. Which of the following is not a property of water?
(A) Has a positive partial charge (B) Forms a dipole
 (C) It is electrophilic (D) Has a skewed tetrahedron shape
009. Naturally occurring D - amino acids are all except
(A) D-serine (B) D-glutamate
(C) D-aspartate (D) D-lysine
010. Chaperone proteins
(A) Plays a role in unfolding of proteins resulting in denaturation
(B) Binds to mature protein
(C) Binds to hydrophilic amino acids within the polypeptide
 (D) Binds to hydrophobic amino acids within the polypeptide

011. True statement about Van der Waals forces is
 (A) Interaction between opposite charged groups within biomolecules
 (B) Interaction between opposite charged groups between biomolecules
 (C) Attractions between transient dipoles
 (D) Strongest of all non-covalent bonds
012. Agarose is
 (A) Cross linked polymer of D-Galactose and L-galactose
 (B) Linear polymer of D-Galactose and 3, 6 anhydro L-galactose
 (C) Cross linked polymer of D-Glucose and 3, 6 anhydro L-galactose
 (D) Linear polymer of D-Glucose and 3,6 anhydro L-galactose
013. Sanger reagent is
 (A) 1-chloro 2, 4 dinitrobenzene (B) 1-fluoro 2, 4 dinitrobenzene
 (C) 1-nitro 2, 4 difluorobenzene (D) 2-chloro, 4-nitrobenzene
014. Epimers of glucose are
 (A) Isomers with variations in configuration of –OH and –H group on carbon atoms 1, 2, 4 of glucose
 (B) Isomers with variations in configuration of –OH and –H group on carbon atoms 2, 3, 4 of glucose
 (C) Galactose is epimer of glucose at carbon 2
 (D) Mannose is epimer of glucose at carbon 4
015. Dienoic fatty acid is
 (A) γ -linolenic acid (B) α -linolenic acid
 (C) oleic acid (D) linoleic acid
016. Keratan sulfate consists of repeating units of
 (A) Galactose – N acetyl glucosamine (B) Galactose – N acetyl galactosamine
 (C) Glucose – N acetyl galactosamine (D) Glucosamine – Iduronic acid
017. True statement regarding Alpha helical secondary structure is
 (A) Each alpha helical turn contains 10 amino acids
 (B) R groups of each amino acyl residue in alpha helix faces outward
 (C) Proteins contain both L- and D-amino acids
 (D) Left handed helix is more stable than right handed helix
018. Which among the following is incorrect with respect to primary immune response to injected antigen?
 (A) Antibody response of low magnitude (B) Antibody response short duration
 (C) Response peaks at around 10 to 20 days (D) Does not have immunological memory
019. Which among the following is not the CD (cluster of differentiation) markers present on T helper cells?
 (A) CD 2 (B) CD 56
 (C) CD 5 (D) CD 45

020. Which among the following is not a signal transduction pathway for B cell receptor?
 (A) Ras/Map kinase cascade activates transcription
 (B) Phospholipase C pathway induces calcium release
 (C) Protein kinase C activates NF- β transcription factor
 (D) Phospholipase C pathway induces activation of Protein kinase A
021. Which among the following proteins does not have immunoglobulin domains?
 (A) MHC(Major Histocompatibility complex) class III molecule
 (B) ICAM (Intercellular adhesion molecule)
 (C) CD 56
 (D) LFA(leukocyte function-associated antigen)-3
022. J (Junction) chain is seen in which of the following immunoglobulin?
 (A) Immunoglobulin G (B) Immunoglobulin D
 (C) Immunoglobulin E (D) Immunoglobulin A
023. Which antibody recognizes antigenic determinants specific to each heavy chain class?
 (A) Anti-Fab (Fragment, antigen-binding) (B) Anti- isotype
 (C) Anti- allotype (D) Anti- idiotype
024. Membrane bound and secretory forms of Immunoglobulin are created due to which of the following process?
 (A) m RNA editing (B) Alternative mRNA splicing
 (C) Gene amplification (D) Gene rearrangement
025. Which among the following statement about X-Linked agammaglobulinemia is incorrect?
 (A) Mutations in the Btk gene
 (B) Defective B-cell development.
 (C) Results from single base pair substitution
 (D) High CD19 expression is seen
026. Which among the following is not interleukin involved in innate immunity?
 (A) Tumor necrosis factor α (B) Interferon β
 (C) Transforming growth factor β (D) Interleukin 1
027. Which among the following in not a chemokine?
 (A) Interleukin 8
 (B) CCL 19 (Chemokine ligand- 19)
 (C) RANTES (Regulated upon Activation, Normal T cell Expressed and Presumably Secreted)
 (D) Interleukin 6
028. Which among the following statements is incorrect with respect to Adaptive immunity?
 (A) Response time is usually days
 (B) Occasional failures in self antigen discrimination
 (C) Antigen presenting cells are involved
 (D) Cannot distinguish differences in structure of microbial or non-microbial molecules
029. Which among the following statement is not correct about calprotectin?
 (A) Involved in innate immunity (B) Limits growth of viruses
 (C) Secreted by skin (D) Binds and sequesters divalent cations

030. Which of the following toll like receptor and ligand pair is wrongly matched?
 (A) TLR 3 : double stranded DNA (B) TLR 7 : single stranded DNA
 (C) TLR 8 : single stranded DNA (D) TLR 5 : double stranded DNA
031. Which of the following statements about paroxysmal nocturnal hemoglobinuria is incorrect?
 (A) Lack of glycosyl phosphatidyl inositol anchor
 (B) Lack of expression of CD 55
 (C) Lack of expression of protectin
 (D) Decay Accelerating Factors inhibits breakdown of C3 Convertases
032. Which of the following pair is correctly matched for chromosomal locations of immunoglobulin genes in humans and mice?
 (A) Kappa light chain: chromosome 2 in humans
 (B) Kappa light chain: chromosome 6 in mice
 (C) Gamma light chain: chromosome 16 in humans
 (D) Heavy chain: chromosome 14 in humans
033. Which among the following statement about Severe combined immunodeficiency (SCID) is incorrect?
 (A) Nonfunctional Recombination Activating Gene
 (B) No circulating B cells
 (C) T cell receptor gene rearrangement is affected
 (D) Abnormal increase in Natural killer cells
034. Identify the incorrect statement with respect to major histocompatibility complex
 (A) Peptide-binding domain in MHC I is $\alpha 1/ \alpha 2$
 (B) Peptide-binding domain in MHC II is $\alpha 1/ \beta 1$
 (C) Genes are located on chromosome 17
 (D) Maternal and paternal gene products of MHC loci are expressed at the same time
035. Which among the following statement about T cell is incorrect?
 (A) Immature thymocytes are CD4 - CD8 - (double negative)
 (B) Thymocytes committed to T-cell lineage become CD4+ and CD8+ (double positive)
 (C) Cytotoxic T cell lineage express CD 8 +
 (D) Only CD4+ and CD8+ (double positive) thymocytes develop into natural killer T cells
036. Which among the following is positive costimulatory molecule for T cells?
 (A) Inducible costimulator (ICOS)
 (B) PD (programmed cell death protein) - 1
 (C) B and T lymphocyte attenuator (BTLA)
 (D) Cytotoxic T lymphocyte associated protein (CTLA) - 4
037. Abatacept, an anti-rheumatoid arthritis drug , is an Immunoglobulin fused to which of the following protein?
 (A) CD 28
 (B) B and T lymphocyte attenuator (BTLA)
 (C) Cytotoxic T lymphocyte associated protein (CTLA) - 4
 (D) CD 279

038. Identify the incorrect statement about super antigens.
- (A) These are viral or bacterial proteins
 (B) Binds simultaneously to V β regions of T-cell receptors and a chain of class II MHC molecules
 (C) Bypasses T cell receptor antigen specificity
 (D) Does not require T cell costimulation
039. Interleukin 5 signals B cells to undergo class switch recombination (CSR) to produce which of the following isotype?
- (A) IgG1 (B) IgE
 (C) IgG2b (D) IgA
040. Which monoclonal antibody and the targets are correctly matched?
- (A) Rituximab: Human epidermal growth factor receptor 2
 (B) Cetuximab: CD 20
 (C) Bevacizumab : VEGF
 (D) Trastuzumab: CD 52
041. Which among the following cell adhesion molecule does not belong to Immunoglobulin super family?
- (A) ICAM – 1
 (B) LFA (Leukocyte function associated antigen) – 1
 (C) VCAM – I
 (D) LFA – 2
042. Which of following examples for types of hypersensitivity reactions is wrongly matched?
- (A) Type I : Atopy (B) Type II : Glomerulonephritis
 (C) Type III : Rheumatoid arthritis (D) Type IV : Graft rejection
043. Which among the following intracellular pathogens does not induce type IV hypersensitivity?
- (A) Trypanosoma (B) Mycobacterium leprae
 (C) Pneumocystis carinii (D) Lishmenia
044. Which among the following is true about qualitative data?
- (A) These are continuous data (B) Size of attribute can be measured
 (C) Analysed by chi square test (D) Cannot be expressed as ratio
045. Which of the following can be used to represent quantitative data?
- (A) Pie chart (B) Scatter plot
 (C) Bar diagram (D) Pictogram
046. Which among following is not a measure of variability of individual observations?
- (A) Standard error of mean (B) Coefficient of variation
 (C) Standard deviation (D) Inter quartile range
047. All the following statements about unpaired t test are correct except -
- (A) Used for independent observations on individuals of two different groups
 (B) Tests if the difference between the two means is real
 (C) Applied for normally distributed variable
 (D) Used to compare the effect of two drugs given to same individuals on two different occasions

048. Which of the following correlation coefficient can be used for normally distributed variables?
 (A) Pearson's correlation coefficient
 (B) Odds ratio
 (C) Relative risk
 (D) Spearman's rank order correlation coefficient
049. Identify the correctly matched definition.
 (A) Sensitivity : Diseased individuals who are correctly classified by the test
 (B) Specificity : Fraction of those without the disease that the test correctly predicts
 (C) False positives : Non diseased individuals misclassified by the test
 (D) True negatives : Non diseased patients correctly classified by the test
050. Which of the following statement about Receiver Operating Characteristic Curves is incorrect?
 (A) Sensitivity is plotted in y-axis
 (B) False-positive rate is plotted in x-axis
 (C) Area under the ROC curve is a relative measure of a test performance
 (D) Data on y axis represent 1 - specificity
051. Which of the following statement about systematic sampling is incorrect?
 (A) Applicable when the population is small
 (B) Usually done in field studies
 (C) Requires complete list of population from which sample is to be drawn
 (D) Applicable to non-homogeneous population
052. Incorrect statement about confidence interval is –
 (A) Range between two confidence limits
 (B) Population mean ± 2.58 Standard error of sample mean covers 95% confidence interval
 (C) 95% of sample means lie within 95% confidence limits
 (D) The probability of sample mean lying outside the 95% confidence interval is one in 20 times
053. Identify the incorrect statement about statistical hypothesis.
 (A) Null hypothesis nullifies claim that experimental result is different from the one observed already
 (B) Alternative hypothesis states that the sample result is different than hypothetical value of population
 (C) Type I error is false rejection of null hypothesis when it is true
 (D) Type II error is accepting the alternative hypothesis when it is false
054. Identify the incorrect statement about Robust method for calculating reference limits.
 (A) It is a parametric method
 (B) Uses mean and standard deviation of sample
 (C) Biweight estimation technique used to give more weight is given to observations closer to the center and less to values farther
 (D) Box-Cox transformation is used to convert data in to symmetrical data
055. Which among the following is not a technologies used for automatic identification and data collection of sample?
 (A) Optical character recognition
 (B) Radiofrequency identification (RFID)
 (C) Optical mark readers
 (D) Diode array

056. Which of the following is not a molecule involved in activation of bone resorption?
(A) Colony Stimulating Factor 1 (CSF-1)
 (B) Osteocalcin
(C) Tartrate resistant acid phosphatase (TRACP)
(D) Cathepsin K
057. Which of the following statements about Parathyroid hormone is incorrect?
(A) Synthetic PTH as potent as intact PTH in interacting with PTH/PTHrP receptor
(B) Oxidation of the methionine at position 8 results in loss of biological activity
 (C) Second generation PTH assays are called as true intact PTH assays
(D) Intact PTH is rapidly cleared from plasma by Kupffer cells of the liver
058. Which of the following method is recommended for accurate measurement of urinary glucose?
(A) Glucose oxidase peroxidase method (B) Glucose dehydrogenase method
(C) Modified glucose oxidase method (D) Alkaline cuprate method
059. Which of the following statement about cardiac troponin T (cTnT) is incorrect?
(A) Cardiac troponin T has same amino acid sequence as of skeletal troponin T isoform
 (B) International guidelines defined cTnT increase above 95th percentile limit as an abnormal result
(C) Heparin interferes with cTnT antibody-binding affinity
(D) Chronic elevation of cTnT is seen in patients with renal failure
060. Identify the incorrect statement about B type natriuretic peptide (BNP)
(A) Whole blood or plasma with EDTA is only acceptable specimen of choice
 (B) A single cut- off of 100 pg/mL is used for all ages
(C) Plastic blood collection tubes are necessary for BNP
(D) proBNP is detected in BNP assays
061. Select the wrong statement about glucometers-
(A) False high glucose values in presence of anemia
 (B) Inaccurately high blood glucose in diabetic ketoacidosis
(C) Falsely low glucose in polycythemia
(D) Based in glucose dehydrogenase method
062. Identify the incorrect statement about platelet aggregation studies
(A) In evaluation of platelet aggregation Light transmission aggregometry (LTA) is considered as gold standard method
(B) Impedance method can be used in presence of blood cells
 (C) LTA evaluation requires smaller sample volume than impedance method
(D) Ristocetin is commonly used platelet aggregation agonist
063. Which of the following factors reduces glomerular filtration rate?
 (A) Contraction of mesangial cells (B) Afferent renal arterial dilation
(C) Efferent renal arterial constriction (D) Increased glomerular surface area

064. Which of the following statements about Cystatin c for clearance tests is incorrect?
 (A) Cystatin C is a low molecular weight cysteine protease inhibitor peptide
 (B) Excreted exclusively by renal system
 (C) Measured by latex particle–enhanced turbidimetric immunoassay
 (D) Serum Cystatin C concentration increased at same time as creatinine representing declining GFR
065. Which of the following condition does not cause high anion gap metabolic acidosis?
 (A) Methanol toxicity (B) Uremia of renal failure
 (C) Intestinal fistula (D) Isoniazid toxicity
066. Chloride resistant metabolic alkalosis is seen in all except-
 (A) Congenital adrenal hyperplasia (B) Cystic fibrosis
 (C) Excessive licorice ingestion (D) Bartter syndrome
067. Which of the following statement about measurement of prolactin is incorrect?
 (A) Macroprolactin, is causing 10% of misdiagnoses in hyperprolactinemia
 (B) Macroprolactin is removed by precipitation with Poly ethylene glycol
 (C) Sample for Prolactin is collected early morning after an overnight fast
 (D) Blood specimens collected into pre chilled polystyrene EDTA tubes and immediately placed on ice
068. Strenuous exercise increases blood levels of all of the following analytes except?
 (A) Aspartate aminotransferase (B) Creatinine
 (C) Phosphate (D) Iron
069. Identify the incorrect statement about biochemical markers of second trimester screening in Down's syndrome
 (A) Maternal serum AFP concentrations are lower than normal pregnancy
 (B) Unconjugated estriol is 25% lower
 (C) Concentrations of chorionic gonadotropin are lower
 (D) Inhibin A concentrations are two times higher
070. Which of the following test is not an indicator of fetal lung maturity?
 (A) Positive Phosphatidylglycerol testing (B) Lecithin sphingomyelin ratio > 2.5
 (C) Lamellar body count > 50,000/ μ L (D) Foam stability index < 0.47
071. Identify the Westgard multirule which is sensitive to random error.
 (A) R_{4s} : One observation exceeding the mean + 2SD and another exceeding mean – 2SD
 (B) 2_{2s} : Two consecutive control observations exceeding same mean \pm 2SD
 (C) 4_{1s} : Four consecutive observations exceeding the mean \pm 1SD or
 (D) 10_x : Ten consecutive control observations falling on one side of the mean
072. Which of the following parameter in serum is reduced when venous occlusion is prolonged for 3 minutes?
 (A) Total protein (B) Potassium
 (C) Iron (D) Cholesterol

073. Quantity of HbA2 reduced in all of the following conditions except
 (A) Presence of Hb lepore (B) β thalassemia trait
 (C) α thalassemia (D) δ thalassemia
074. All are effects of EDTA contamination in sample except
 (A) Increased potassium
 (B) Increased creatine kinase
 (C) Reduced magnesium in colorimetric assays
 (D) Reduced alkaline phosphatase
075. Oxygenation of hemoglobin is accompanied by
 (A) Heme iron moves away from the plane of heme ring
 (B) Movement of His F8 towards the plane of ring
 (C) Movement of His E7 towards the plane of ring
 (D) Transition of R state to T state
076. Which of the following assay shows decrease in levels due to interference by hemolysis
 (A) Tri glycerides (B) Cholesterol
 (C) Albumin (D) CK MB by immunoinhibition
077. All are true regarding delta check except
 (A) Comparison of a results of the current specimen with those of the previous results of the same patient
 (B) Delta check value for fasting glucose value is $\pm 30\%$
 (C) Decreases the probability of reporting erroneous results
 (D) Delta check value for serum creatinine value is $\pm 10\%$
078. The antibodies that can be assayed in celiac disease are all except-
 (A) Antireticulin antibody
 (B) IgA anti Ro antibody
 (C) IgA antitissue transglutaminase antibody
 (D) IgA- deamidated gliadin peptide antibody
079. Identify the incorrect statement about bilirubin estimation methods
 (A) Ditaurobilirubin of bovine serum used as calibrator overestimates bilirubin
 (B) Enzymatic methods for bilirubin estimation uses oxidation of bilirubin with oxidase
 (C) Icterometer uses a reflectance photometry
 (D) Urine bilirubin is detected using diazo reagent
080. Common causes for failed delta checks are all except
 (A) Specimens drawn above intravenous line
 (B) Heparinised plasma
 (C) Contaminated specimen
 (D) Misidentified specimen
081. Active transport across placenta is observed with all of the following except-
 (A) Glucose (B) Urea
 (C) Amino acids (D) Calcium
082. Gs class of guanine binding proteins are
 (A) Heterodimers with α , β subunit (B) Heterotrimers with α , β , γ subunits
 (C) Heterotrimers with α , β , δ subunits (D) Heterotetramers with α , β , γ , δ subunits

083. Cell death can be assayed by all of the following methods except-
 (A) Carboxyfluorescein Succinimidyl ester assay
 (B) Chromium 51 release assay
 (C) Fluorescently Labelled Annexin V
 (D) TUNEL assay
084. Calnexin is
 (A) Chaperone protein in endoplasmic reticulum
 (B) Recognize amino terminal end of protein part of glycoprotein
 (C) When bound to glycoprotein , it results in aggregation
 (D) Binds to phospholipids
085. The targeting sequence that directs proteins to lumen of endoplasmic reticulum is
 (A) Mannose-6-Phosphate (B) Diacidic sequence
 (C) N-terminal signal peptide (D) Carboxyl terminal-KDEL sequence
086. Type VII collagen is present in
 (A) Endothelium (B) Dermal-epidermal junction
 (C) Hypertrophic cartilage (D) Skin hemi desmosomes
087. Defective COL4A3 gene results in
 (A) Osteogenesis imperfect type I (B) Ehler danlos syndrome
 (C) Alport syndrome (D) Epidermolysis bullosa
088. During intracellular signaling binding of cAMP to protein kinase A leads to -
 (A) Inhibitory subunits dissociate thereby activating the enzyme
 (B) Inhibitory subunits bind to regulatory subunit thereby inactivating the enzyme
 (C) Catalytic subunits bind to two regulatory subunits thereby activating the catalytic subunits
 (D) Regulatory subunits of PKA dissociate, thereby activating the catalytic subunits
089. Gamma carboxylated protein in bone is
 (A) Osteopontin (B) Osteonectin
 (C) Osteoprotegerin (D) Osteocalcin
090. Identify the incorrect statement about Ion exchange chromatography
 (A) Charged groups are bound to a stationary phase
 (B) Anion-exchange solid phases have quaternary amines
 (C) Solutes are eluted with a solution containing sodium for anion exchange
 (D) Used for analyses hemoglobins
091. Which of the following is a quantitative method for estimating urinary protein?
 (A) Latex agglutination inhibition test
 (B) Bromophenol blue method
 (C) Monoclonal IgG antibody complexed to β -galactosidase
 (D) Immunoturbidimetry

092. Which among the following statement about electrolyte exclusion effect is incorrect?
(A) Causes spuriously low electrolyte values with direct ISE methods
(B) Exclusion of electrolytes from the fraction of plasma volume that is occupied by solids
(C) Affects flame photometry
(D) Causes falsely low electrolyte values in hyperlipidemia
093. Which of the following is wrong about Total carbon dioxide estimation?
(A) Total CO₂ value increases by 5 mmol/L per hour on exposure to air
(B) Direct ISE methods for total CO₂ has less specificity
(C) In enzymatic methods alkali is used to convert CO₂ and carbonic acid to bicarbonate
(D) Indirect electrode based methods uses acids to determine the amount of released gaseous CO₂
094. Which of the following is not a stain used to visualise separation of serum proteins?
(A) Amido Black (B) Silver nitrate
(C) Coomassie Brilliant Blue (D) Ponceau S
095. Which of the following statement about Hemoglobin electrophoresis is correct?
(A) Electrophoresis on agarose gel with citrate buffer is performed when an abnormal band is noted on alkaline Hb electrophoresis
(B) At alkaline pH Hb S moves fastest
(C) Order of migration is Hb H, Hb A, Hb F, and Hb C. (slowest to fastest)
(D) Hemoglobins D and G co-migrate with Hb A
096. Which among the following is a hard ionization method used in mass spectrometry?
(A) Chemical ionization (B) Inductively coupled plasma
(C) Electrospray ionization (D) Atmospheric pressure chemical ionization
097. Identify the incorrect statement about cuvettes used in photometry.
(A) Glass or plastic cuvettes are suitable for measurements in visible spectrum
(B) Quartz cells are used for readings below 340 nm
(C) Cuvette are cleaned by soaking in dichromate cleaning solution
(D) Absorbance of distilled water against reference blank over the wavelengths used should be zero
098. Identify the incorrect statement about Analytical Measurement Range and Limits of Quantification
(A) Measurement range extends from lower limit of quantification (LloQ) to the upper limit of quantification (UloQ)
(B) Limit of detection (LoD) is the lowest value that significantly exceeds the measurements of a blank sample
(C) In ranges between LoD up to LloQ, result is reported as detected but not provide a quantitative result.
(D) LloQ of a method is same as analytical sensitivity.
099. Example of photosensitive semiconductor materials is
(A) Indium arsenide (B) Selenium arsenide
(C) Tellurium arsenide (D) Lead antimonide

100. Background interference from interfering chromogens in spectrophotometer is eliminated by
(A) Cut off filters (B) Multiple wavelength readings
(C) Using neutral density filters (D) By taking duplicate measurements
101. Factors influencing light scattering in turbidimetry are all except
(A) Particle size (B) Molecular weight
(C) Effect of polarization of incident light (D) Color of the solution
102. All are true regarding mechanism of ion selective electrodes except
(A) Charged dissociated ion exchanger (B) Charged associated carrier
(C) Neutral ion carrier (D) Redox carrier
103. Most relevant HPLC mode used to determine organic acids are all except
(A) Ion exchange (B) Ion-moderated partition
(C) Affinity (D) Reversed phase
104. Column bleed in Gas chromatography refers to
(A) Irregular carrier gas flow rate
(B) Reduced surface activity of support material
(C) Column material gets degraded and eluted at high temperatures
(D) Results when eluting acidic sample
105. Which of the following is the characteristic feature of hollow cathode lamp?
(A) Made of the metal of substance to be analysed
(B) Serves as a light source for atomic emission spectroscopy
(C) Provides a continuous spectrum in the UV light range
(D) Electrodes are placed in a vacuum chamber
106. Band broadening in chromatography is affected by all except
(A) Diffusion coefficient of chemical in mobile phase
(B) Flow rate
(C) Size of the separating molecules
(D) Degree of compound retention
107. Flash derivatization refers to
(A) Derivatization technique carried out after elution
(B) Derivatization carried out with the help of carrier gas at high temperature
(C) Derivatization carried out before sample injection
(D) Derivatization carried out at the site of injection port
108. All are true statements about radial immunodiffusion except
(A) Antibody uniformly dispersed in gel
(B) Linear relationship exists between antigen concentration and the square of precipitin ring
(C) Polyethylene glycol in gel medium enhance the precipitin line
(D) Unidirectional migration of antigen

109. All are examples of oxidisable interfering substances in glucose oxidase dependent biosensors except-
- (A) Uric acid (B) Ascorbic acid
(C) Acetaminophen (D) Oxalic acid
110. Which of the following statement about microchip electrophoresis is incorrect?
- (A) Voltage is applied between sample inlet to sample outlet to inject the sample into the separation channel
(B) Commonly used detection method is optical detection
(C) Laser-induced fluorescence (LIF) method for detection has good sensitivity
(D) Sample outlet is used as point of detection
111. What is the macromolecular complex that associates with intron during mRNA splicing?
- (A) Slicer (B) Splicer
(C) Spliceosome (D) Dicer
112. Which of the following statement is true about histones
- (A) Carboxy terminal end is rich in basic amino acids
(B) H3 and H4 form a dimer in the nucleosome
(C) Nucleosome core particles are arranged continuously while forming 10 nm chromatin fibril
(D) Regulatory post translational modification occurs at amino terminal end
113. DNA polymerase involved in Mitochondrial DNA synthesis is
- (A) γ (B) β
(C) Π (D) α
114. Which of the following statement is true
- (A) Nick sealing reaction by DNA topoisomerase I is ATP dependent reaction
(B) Nick sealing reaction by DNA topoisomerase I is ATP-energy independent reaction
(C) DNA ligase repairs double stranded breaks during DNA replication/proof reading
(D) DNA ligase has unwinding activity
115. Defective homologous DNA repair mechanism results in
- (A) Trichothiodystrophy
(B) Severe Combined Immunodeficiency syndrome
(C) Cockayne syndrome
(D) Bloom syndrome
116. All are true regarding miRNA except
- (A) Pri miRNA's do not have poly A tail at 3' end
(B) Transcription unit is present in intronic DNA
(C) Processed by dicer nuclease in cytoplasm
(D) Has a unique hair pin structure
117. In mitochondria UGA codes for
- (A) Valine (B) Cysteine
(C) Tryptophan (D) Tyrosine

118. Role of λ exonuclease is
 (A) Removes nucleotides from 3'ends of DNA
 (B) Catalyse site specific removal of nucleotides
 (C) Removes nucleotides from 5'ends of DNA
 (D) Removes nucleotides from both strands of DNA
119. Which of the following vector have higher DNA insert size
 (A) YAC (B) BAC
 (C) Lambda Charon 4A (D) Cosmids
120. Myoclonic epilepsy with ragged-red fiber disease (MERRF) is –
 (A) Mutation in the mitochondrial gene coding a tRNA specific for Lysine
 (B) Normal shaped mitochondria in skeletal muscle
 (C) Single base change in mitochondrial gene ND4
 (D) Affects complex I of electron transport chain
121. Which among the following statement about telomere is correct?
 (A) In germ line cells telomere shortening is seen with cell division
 (B) Simple sequence repeat DNA occur in telomeres
 (C) Destabilizes DNA molecule
 (D) Telomere length is unaffected by cell division
122. Identify the incorrect statement about stem cells
 (A) Totipotent cells can differentiate into a complete organism
 (B) Pluripotent stem cells forms cells of all three germ layers
 (C) Adult stem cells have a limited capacity to regenerate tissues
 (D) Stem cells cannot undergo self-renewal
123. Riboswitch –
 (A) Is a trans acting regulatory element
 (B) The drug that binds to adoMet riboswitch can be used as antibiotic
 (C) Acts as feed forward loop
 (D) Increases the expression of genes replenishing the ligand to which it binds
124. Which of the following statement is incorrect about Gene silencing by RNA interference?
 (A) Involves small temporal RNA
 (B) Dicer process the duplex RNA into small interfering RNA
 (C) si RNA interacts with and degrades target RNA
 (D) Drosha is an exonuclease
125. Which of the following is not a protein involved in mismatch repair?
 (A) Rec J nuclease (B) Mut H protein
 (C) ABC exinuclease (D) Dam methylase
126. Enzymes used in recombinant DNA technology are all except-
 (A) Alkaline phosphatase (B) DNA ligase
 (C) Polynucleotide kinase (D) DNA photolyase

127. All of the following are limitations of fluorescence measurements except
(A) Concentration quenching (B) Rayleigh light scattering
(C) Raman light scattering (D) Reflectance light
128. Chemiluminescence is
(A) Light is absorbed by a molecule and subsequently emitted as light of longer wavelength
(B) Light emission from excited triplet electronic state
(C) Light is emitted as a result of chemical energy and no light is absorbed
(D) Light is absorbed by a molecule and subsequently emitted as light of shorter wavelength
129. Phosphorescence label is
(A) Lanthanide (B) Phycoerythrin
(C) Quantum dot (D) Umbelliferone
130. Label used in Electro chemiluminescent immunoassay is
(A) Europium (B) Ruthenium
(C) Iodine-125 (D) Luciferase
131. True statement regarding phosphor immunoassay is
(A) Influenced by reaction temperature (B) Emitted light is of longer wavelength
(C) Low background noise (D) Multiplexing is not possible
132. Which is a copper containing hydroxylases
(A) Prolyl 4 hydroxylase (B) Aspartate beta hydroxylase
(C) Peptidyl glycine hydroxylase (D) Tyrosine hydroxylase
133. All inhibit adenylyl cyclase except
(A) MSH (B) Somatostatin
(C) Angiotensin II (D) Acetylcholine
134. Enzyme not regulated by calmodulin is
(A) Cyclic nucleotide phosphodiesterase (B) Nitric oxide synthase
(C) Phosphorylase kinase (D) Phospholipase C
135. All are properties of enzyme as catalyst except
(A) Effective in small concentration
(B) Unchanged by the reaction
(C) Lesser specificity than usual chemical catalysts
(D) Do not shift the final proportions of substrate and product in equilibrium state
136. Amino acids present at enzyme active site are all except
(A) Tyrosine (B) Histidine
(C) Lysine (D) Methionine
137. One international unit of enzyme activity is
(A) Number of milli moles of substrate that is converted to product per minute
(B) Time required to convert one mole of substrate into product
(C) One molar substrate that is converted to product per minute
(D) Number of micro moles of substrate that is converted to product per minute

138. Kinetic effects of uncompetitive inhibition are
 (A) Increased K_m , increased V_{max} (B) Increased K_m , no change in V_{max}
 (C) Increased K_m , decreased V_{max} (D) decreased K_m , decreased V_{max}
139. Which of the following enzyme activity becomes unstable within 24 hours when the sample is frozen at -25°C
 (A) Alanine aminotransferase (B) Leucine aminopeptidase
 (C) Ferroxidase I (D) Cholinesterase
140. Catalytic inhibition techniques is commonly used for isoform analysis of
 (A) Cholinesterase (B) Lactate dehydrogenase
 (C) Amylase (D) Creatine kinase
141. All are true about covalent catalysis except
 (A) Transient Chemical modification of enzyme
 (B) Covalent bond is formed between enzyme and substrate
 (C) Rate of reaction becomes slower
 (D) Commonly seen in group transfer reactions
142. Reaction equilibrium constant
 (A) Ratio of reaction rates (B) Rate of substrate to product reaction
 (C) Ratio of reaction rate constants (D) Rate constant of substrate to product reaction
143. All are true about Hill equation except
 (A) Nonlinear curve
 (B) Used to evaluate cooperative substrate binding kinetics
 (C) Hill coefficient depends on strength of interactions of substrate binding sites
 (D) Hill coefficient greater than 1 indicates positive cooperativity
144. In an enzymatic reaction, Inhibitory constant K_i
 (A) Used to compare different enzymes inhibited by the same inhibitor
 (B) Lower the value of K_i , inhibitor is less effective
 (C) For simple competitive inhibitor K_i and dissociation constant for enzyme inhibitor complex are different
 (D) Used to compare different inhibitors of the same enzyme
145. The substrate used to perform isoform analysis of acid phosphatase using substrate specificity method is
 (A) Urea (B) L-phenylalanine
 (C) Dibucaine (D) α -naphthyl phosphate
146. Catalase is
 (A) Hemeprotein with 4 heme groups (B) Non heme protein
 (C) Hemoprotein with 2 heme groups (D) Hemoprotein with only one heme
147. Rieske Fe-S cluster of Complex III of ETC is
 (A) Fe linked to 2 histidine residues
 (B) Fe linked to 2 cysteine residues
 (C) Fe linked to 1 histidine and 1 cysteine residues
 (D) Fe linked to 2 serine residues

148. Inner membrane of mitochondria is freely permeable to
 (A) Malate (B) Cis-aconitate
 (C) 3-hydroxy butyric acid (D) citrate
149. Which of the following is an example for initiation reaction of lipid peroxidation
 (A) $\text{ROO}\cdot + \text{R}\cdot \rightarrow \text{ROOR}$ (B) $\text{X}\cdot + \text{RH} \rightarrow \text{R}\cdot + \text{XH}$
 (C) $\text{R}\cdot + \text{O}_2 \rightarrow \text{ROO}\cdot$ (D) $\text{R}\cdot + \text{R}\cdot \rightarrow \text{RR}$
150. Which among the following is a high energy phosphate?
 (A) Glucose-6-phosphate (B) Fructose-6-phosphate
 (C) Glycerol-3-phosphate (D) Carbamoyl phosphate
151. Which disorder of carbohydrate metabolism is wrongly matched to the deficient enzyme?
 (A) Essential Pentosuria : l-xylulose reductase
 (B) Hereditary Fructose Intolerance : Fructose-1-phosphate aldolase
 (C) Von Gierke disease : Glucose 6 phosphate dehydrogenase
 (D) Galactosemia : Galactokinase
152. In assay for catecholamines and metabolites, which of the following statement is incorrect?
 (A) Subjects should be resting in supine position for 30 minutes before sampling for metanephrines
 (B) Catecholamine metabolites are less stable than their parent amines
 (C) Catecholamine metabolite excretion is normalized against urinary creatinine excretion
 (D) Urine should be acidified to pH 4.0 and frozen after 24-hour collection is received
153. Which of the following Glucose transporter is wrongly matched to its function?
 (A) GLUT 1 : Basal glucose transport
 (B) GLUT 2 : non rate limiting glucose transport in liver
 (C) GLUT 4 : Insulin mediated glucose transport in neurons
 (D) GLUT 5 : Transports fructose
154. Identify the incorrect statement about Gilbert syndrome.
 (A) Mutated bilirubin UDP glucuronosyl transferase gene
 (B) Ratio of bilirubin mono-glucuronide to di-glucuronide is decreased
 (C) Predisposed to acetaminophen toxicity
 (D) Bilirubin concentration increase with fasting.
155. Which of the following apolipoprotein and functions are wrongly matched?
 (A) Apo A : Cofactor for LCAT
 (B) Apo B-100 : Secretion of triglyceride from liver
 (C) Apo C-I : Cofactor for LPL
 (D) Apo C-III : Inhibits apo C-II
156. NCEP recommendations for lipid and lipoprotein measurements includes all except-
 (A) Samples for HDL and LDL cholesterol should be collected after a 12-hour fast
 (B) Recommends use of glycerol blanking for triglyceride measurement
 (C) Blood samples should be collected in seated position
 (D) Measurements in EDTA plasma can be converted to serum equivalent values by dividing the plasma value by factor of 1.03

157. Identify the correctly matched inborn error of metabolism and the biochemical defect.
- (A) Tyrosinemia Type I : Tyrosine amino transferase
 (B) Tyrosinemia type II : Fumaryl acetoacetate hydrolase
 (C) Hawkinsinuria : 4-Hydroxy phenylpyruvate dioxygenase
 (D) Citrullinemia : Ornithine transcarbamylase
158. Which among the following is not a phase II metabolic enzyme?
- (A) Debrisoquine hydroxylase (B) N-Acetyl transferases
 (C) Thiopurine S-Methyltransferase (D) Dihydropyrimidine dehydrogenase
159. Which of the following biochemical changes is not seen after consumption of caffeine?
- (A) Stimulates adrenal medulla, causing increased secretion of epinephrine
 (B) Increased excretion of free cortisol, 11-hydroxycorticoids, and 5-HIAA
 (C) Increases plasma free fatty acid concentration
 (D) Caffeine has anti diuretic effect
160. All of the following are statement about molecules derived from proopiomelanocortin except
- (A) Beta lipotropin is derived from POMC
 (B) Pro-ACTH gives rise to gamma-MSH
 (C) Beta-endorphin is derived from beta lipotropin
 (D) Beta-MSH is contained within Pro-ACTH
161. Cortisol clearance is increased in all except-
- (A) Hyperthyroidism (B) Patient on Rifampin
 (C) Cushing syndrome (D) Anorexia nervosa
162. Identify the incorrect statement about Gunther disease
- (A) Severe form of cutaneous porphyria
 (B) Reddish-brown staining of diapers
 (C) Mutated uroporphyrinogen decarboxylase gene
 (D) Brownish red teeth fluoresce in Ultraviolet A
163. Irreversible step in one carbon metabolism is
- (A) Methylene to formyl (B) Methyl to formyl
 (C) Methylene to methyl (D) Methenyl to formyl
164. N⁵ N¹⁰ methenyl THF is utilized in
- (A) Serine metabolism (B) Glycine metabolism
 (C) Thymidylate synthesis (D) Purine synthesis
165. Vitamin B6 responsive inborn errors of metabolism is
- (A) Xanthurenic aciduria (B) Propionic aciduria
 (C) Isovaleric aciduria (D) Argininosuccinic aciduria

166. A 6-month old female child was found in a nonresponsive state was brought to the emergency department. Her blood glucose was 45 mg/dL, and upon receiving intravenous glucose the child became responsive. Blood analysis revealed absence of ketone bodies, normal levels of acyl carnitine, and the presence of the dicarboxylic acids. Which of the following enzyme defect may be present in this child?
- (A) Fatty acyl-CoA synthetase (B) Medium chain acyl-CoA dehydrogenase
(C) Carnitine acyltransferase I (D) Glucose 6 phosphatase
167. On routine screening new-born was identified with elevated levels of phenylpyruvate and phenyl lactate in the blood. Despite treating the child with a restricted diet, evidence of developmental delay became apparent. Supplementation with which of the following would be beneficial to the child?
- (A) Tyrosine (B) Phenylalanine
(C) Alanine (D) 5-hydroxytryptophan
168. Amino acids which yield α -ketoglutarate are all except
- (A) Histidine (B) Proline
(C) Valine (D) Arginine
169. Low or near absence of HDL seen in all except
- (A) Tangier disease (B) Fish-eye disease
(C) Familial α -lipoprotein deficiency (D) Hepatic lipase deficiency
170. In ubiquitin dependent protein degradation
- (A) Bond is formed between amino terminal of ubiquitin and ϵ -amino group of lysyl residue of target protein
(B) Bond is formed between carboxyl terminal of ubiquitin and ϵ -amino group of cysteinyl residue of target protein
(C) Bond is formed between carboxyl terminal of ubiquitin and ϵ -amino group of lysyl residue of target protein
(D) Bond is formed between amino terminal of ubiquitin and ϵ -amino group of histidine residue of target protein
171. Enzyme deficient in hunter syndrome is
- (A) Iduronate sulfatase (B) α -L-Iduronidase
(C) α -N-Acetylglucosaminidase (D) β -Galactosidase
172. Glyoxalate pathway is-
- (A) Is modified Glycolysis pathway
(B) Pathway occurs in lysosome
(C) Malate synthase is an enzyme of this pathway
(D) Isocitrate dehydrogenase cleaves isocitrate to form succinate and glyoxylate
173. Major metabolic pathway occurring inside slow twitch muscle is-
- (A) β -oxidation (B) Aerobic Glycolysis
(C) Anaerobic glycolysis (D) Gluconeogenesis

174. True statement regarding provitamin A
 (A) Endogenous provitamin
 (B) Provitamins are water soluble solids
 (C) β -cryptoxanthin is a dietary carotenoid
 (D) Cryptoxanthin have a symmetric chemical structure, hence yield a higher vitamin A activity
175. Vitamin B₂ deficiency leads to
 (A) Normocytic Hypochromic anemia (B) Megaloblastic anemia
 (C) Microcytic hypochromic anemia (D) Normocytic normochromic anemia
176. Vitamin C is a cofactor for the following enzymes except
 (A) Lysine hydrolase (B) Tryptophan hydrolase
 (C) Phenylpyruvate dioxygenase (D) Dopamine β hydroxylase
177. Vitamin K dependent proteins are all except
 (A) Proconvertin factor (B) Plasma thromboplastin
 (C) Stuart factor (D) Proaccelerin
178. Reduction of oxidized NAD coenzyme occurs at
 (A) Meta(4) position of nicotinamide ring (B) Ortho(4) position of nicotinamide ring
 (C) Para(4) position of nicotinamide ring (D) Para(2) position of nicotinamide ring
179. Pellagra is associated with all of the following conditions except-
 (A) Carcinoid syndrome (B) Wernicke korsakoff syndrome
 (C) Hartnups disease (D) Treatment with isoniazid
180. How many copper atoms in ceruloplasmin help in its ferroxidase activity?
 (A) 2 (B) 4
 (C) 6 (D) 8
181. Which among the following is not a manganese dependent enzyme?
 (A) Arginase (B) Glycosyl transferase
 (C) Pyruvate carboxylase (D) Sulfite oxidase
182. Glutathione peroxidase type 1 is present in
 (A) Plasma (B) RBC cytosol
 (C) Gastrointestinal mucosa (D) Cell membrane phospholipids
183. Thyroxine-5-deiodinase type I is present in all except
 (A) Brown adipose tissue (B) Kidney
 (C) Liver (D) Thyroid
184. Which one of the following is a chain breaking antioxidant
 (A) Glutathione peroxidase (B) Catalase
 (C) Selenium (D) Superoxide dismutase
185. Urinary excretion of Isovaleric acid is an indicator of deficiency of which of the following vitamin?
 (A) Biotin (B) Pyridoxine
 (C) Folic acid (D) Riboflavin

186. Hap Map is for
 (A) Protein sequence database
 (B) Collection of Single nucleotide polymorphism
 (C) Technology used for gene mapping and chromosome walking
 (D) Collection of RNA transcripts from the whole genome
187. Aptamers are
 (A) Synthetic single stranded nucleic acids (B) Synthetic double stranded nucleic acids
 (C) Computation designed antibody (D) Type of monoclonal antibody
188. Identify the correctly matched primary human immunodeficiency diseases and underlying defects
 (A) Bare-lymphocyte syndrome (BLS) : Defect in class I MHC gene promoter
 (B) DiGeorge syndrome : Thymic hyperplasia
 (C) Chediak Higashi syndrome : Defective intracellular transport protein
 (D) Leukocyte adhesion defect : Defective cytoskeletal protein
189. Which among the following is a RNA virus causing cancer?
 (A) Human T-cell leukemia virus -1 (B) Human herpesvirus-8
 (C) Human papilloma virus (D) Hepatitis C virus
190. Identify the wrongly matched proto-oncogene and its function pair
 (A) sis : Growth factors (B) fms : Growth factor receptors
 (C) jun : Transcription factor (D) myc : Signal transducer
191. Which among the following is not a tumor suppressor gene?
 (A) Rb (B) NF1
 (C) K-ras (D) APC
192. The mechanism of tumor cells to evade immune recognition includes all of the following except-
 (A) Reduced MHC expression (B) Up-regulation of anti-apoptotic mediators
 (C) Increased co stimulatory signals (D) Expression of mutated death receptors
193. Identify the wrongly matched screening procedures for detection of drugs.
 (A) Salicylate toxicity: ferric chloride test
 (B) Ethylene glycol poisoning: Trinder test
 (C) Ethylene glycol poisoning: Urine fluorescence
 (D) Methaemoglobin: spectrophotometric method
194. Identify the incorrect statement about affinity sensors-
 (A) Has immobilized DNA as biological recognition element with high binding affinity to analytes of interest
 (B) pH or temperature change can be used as regeneration step
 (C) Sample has to be diluted while using affinity sensors
 (D) Non separation Electrochemical Enzyme Immunoassay does not require washing steps

195. Genetic systems used in Forensic Identification are all except
- (A) Variable numbers of tandem repeat loci (VNTR) analysis by RFLP
 - (B) Short Tandem Repeats analysis
 - (C) Long interspersed elements (LINE) markers
 - (D) Site directed mutagenesis
196. Which of the following is true about carbohydrate deficient transferrin (CDT)?
- (A) High sialic acid content
 - (B) CDT returns to a normal concentration after 72 hours of abstention from alcohol
 - (C) Reliably distinguish alcoholic hepatitis from non-alcoholic fatty liver disease
 - (D) Reduced levels of CDT are seen in persons with end-stage liver disease
197. True about nucleic acid sequence–based amplification (NASBA) is –
- (A) Amplifies target without thermal cycling
 - (B) Primer dependent technology
 - (C) Advantageous when the target is DNA
 - (D) It is self-sustained sequence replication
198. Which of the following about Enzyme Multiplied Immunoassay Technique (EMIT) is incorrect?
- (A) Requires separation step
 - (B) Antibody against the analytes is added with substrate to the patient’s sample
 - (C) Easily automated
 - (D) Used to detect drug, and metabolite
199. Identify the incorrect statement about Des- γ -Carboxy prothrombin (DCP)
- (A) Also called as PIVKA-II (proteins induced by vitamin K absence or antagonism II)
 - (B) Tumor marker for hepatocellular carcinoma
 - (C) In cases of vitamin K dietary deficiency DCP is produced
 - (D) Reduced DCP is seen in obstructive jaundice
200. Which of the following is not considered as unethical act under Professional Conduct, Etiquette and Ethics Regulations, 2002?
- (A) Printing of self-photograph in letter head or on sign board of the consulting room
 - (B) Running an open shop for sale of medical or surgical appliances
 - (C) Prescribing and dispensing secret remedial agents of unknown composition
 - (D) Physicians should recognize and promote practice of different paramedical services