143/2025

Question Booklet Alpha Code **A**

Question Booklet Serial Number

Total No. of questions : 100 Time : 1 Hour 30 Minutes

Maximum : 100 Marks

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz. A, B, C & D.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is un-numbered, please get it replaced by new question booklet with same alpha code.
6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the question booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball-Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

143/2025

Maximum : 100 marks

Time : 1 hour and 30 minutes

1. Which type of microscope can be used for viewing detail of surface structures?

(A) SEM (B) TEM

(C) Both (A) and (B) (D) Compound microscope

2. SYBR green bind to which grove of DNA?

(A) Major groove of dsDNA (B) Minor groove of ssDNA

(C) Major groove of ssDNA (D) Minor groove of dsDNA

3. All of these factors described are characteristics for tissue fixation except :

(A) Arrests autolysis

(B) Activates bacterial decomposition

(C) Minimises loss of soluble cytoplasmic components

(D) Stabilises tissue for further processing and treatment

4. Name the method used for purification of antigen using specific antibody?

(A) Affinity chromatography (B) Ion - exchange chromatography

(C) Gel filtration (D) Salting out

5. Which ratio is measured by mass spectrometry?

(A) E/m (B) m/v

(C) m/z (D) m/e

6. Which of the following solvent is not used in NMR?

(A) D_2O (B) $CHCl_3$

(C) CCl_4 (D) $CDCl_3$

7. Chemical shift has the units of :

(A) Parts per million (B) Parts per billion

(C) Tesla (D) No units

8. Which of the following analytical methods would you choose to investigate whether a compound is a monomer, dimer or trimer?

(A) IR spectroscopy (B) ESI-MS

(C) NMR spectroscopy (D) Elemental analysis

9. Which parameters are used while designing a primer?

(A) GC content
(B) Length of primer
(C) Temperature
(D) All of the above

10. What is the role of SDS in SDS-PAGE?

(A) Protein denaturing, impart net negative charge
(B) Impart overall negative charge to the protein
(C) Impart equal mass to the protein
(D) Protein unfolding and impart net positive charge

11. Which type of microscope uses laser as a source of light?

(A) Confocal microscopy
(B) Phase contrast microscopy
(C) SEM
(D) Polarisation microscopy

12. Which of the following dyes used in histology is an acidic dye?

(A) Hematein
(B) Orange G
(C) Hematoxylin
(D) Eosin

13. Select the wavelength range corresponding to UV-visible region :

(A) 400-800 nm
(B) 200-800 nm
(C) 25 μm-2.5 μm
(D) 2.5 μm-1 mm

14. PCR technique designed to minimize amplification of non- specific PCR product using 2 primer sets?

(A) Multiplex PCR
(B) Mini primer PCR
(C) Nested PCR
(D) q PCR

15. Which of the following is used as a carrier gas in gas chromatography?

(A) Carbondioxide
(B) Oxygen
(C) Helium
(D) Methane

16. In which of the following Chromatography Stationary phase and mobile phase are both liquid?

(A) GSC
(B) GLC
(C) HPLC
(D) TLC

17. The electrophoresis technique that uses isoelectric focusing is :

(A) AGE
(B) PFGE
(C) SDS-PAGE
(D) 2D-PAGE

18. Denaturation of DNA at a PCR occurs at?

(A) 54 (B) 74

(C) 94 (D) 60

19. In reverse phase chromatography, stationary phase is :

(A) Non-polar (B) Polar

(C) Both (A) and (B) (D) None of these

20. Heavy metals can be analyzed by :

(A) HPLC (B) Atomic absorption Spectrometry

(C) pH meter (D) Gas Chromatography

21. Which of the following statement is /are correct about Hexokinase?

(i) It is a group specific enzyme

(ii) It show stereoisomeric specificity

(iii) Can phosphorylate D - mannose

(iv) Can phosphorylate D - glucose

(A) Only (i) (B) Only (i) and (ii)

(C) Only (i), (ii) and (iii) (D) (i), (ii), (iii) and (iv)

22. Among the following which enzyme has the longest half life :

(A) AST (B) ALT

(C) Creatine Kinase (D) ALP

23. Enzyme assays are performed during :

(A) Lag phase (B) Linear phase

(C) Zero order reaction (D) Substrate - depletion phase

24. Which among the following is an example for non plasma specific enzyme?

(A) Acid phosphatase (B) ALP

(C) Lipase (D) Lipoprotein lipase

25. Which statement about LDH1 isoenzyme is/are correct?

(i) Preferentially catalyses pyruvate to lactate

(ii) Predominates in cardiac tissue and rbc

(iii) Permits energy producing reaction

(A) Only (i) (B) Only (ii)

(C) Only (i) and (ii) (D) (i),(ii) and (iii)

26. Among the following which organ is the principal source of 5' Nucleotidase in blood?

(A) Liver
(B) Bone
(C) Pancreas
(D) Skeletal muscle

27. Which of the following enzyme come is under class - 6, Ligase, in IUBMB enzyme classification?

(A) Synthase
(B) Synthatase
(C) Hydrolase
(D) Hydroxylase

28. Which of the following enzyme has high activity in its phosphorylated stage?

(A) Citrate lyase
(B) Acetyl - CoA Carboxylase
(C) Pyruvate dehydrogenase
(D) HMG - CoA reductase

29. Which of the following metalloenzyme has copper as cofactor?

(A) Tyrosinase
(B) Catalase
(C) Carbonic anhydrase
(D) Xanthine oxidase

30. Which of the following enzyme has Histidine at its active site?

(A) ALP
(B) Hexokinase
(C) Carbonic anhydrase
(D) Aldolase

31. Which of the following statement about cooperative binding is false?

(A) Does not strictly obey Michaelis Menten kinetics
(B) Saturation curve is bell shaped
(C) Determination of Km value is invalid
(D) Can explain oxygen binding to Hb

32. ATP is allosteric activator for which of the following enzyme :

(A) Aspartate transcarbomoylase
(B) Phosphofructokinase
(C) Citrate synthase
(D) Carbamoyl phosphate synthase II

33. Anti inflammatory action of Aspirin is based on :

(A) Competitive inhibition
(B) Non competitive inhibition
(C) Uncompetitive inhibition
(D) Suicide inhibition

34. Which of the following graph is used for detecting inhibition constant in enzyme kinetics?

(A) Double reciprocal curve
(B) Lineweaver plot
(C) Michaelis Menten plot
(D) Dixon plot

35. Purity of enzyme preparation is measured by :

(A) Vmax/number of active site
(B) Vmax/number of enzyme molecule
(C) Vmax/protein concentration
(D) K cat/Km

36. Which of the following isoform of ALP is referred as bone ALP?

(A) α1 ALP
(B) α2 ALP
(C) Pre β ALP
(D) γ ALP

37. All of the following are sub class in Oxidoreductases except :

(A) Oxygenase
(B) Hydroxylase
(C) Peroxidase
(D) Fumarase

38. Which of the following substrate has greater affinity towards Hexokinase?

(A) ATP
(B) Glucose
(C) Fructose
(D) Galactose

39. Which of the following statement is /are true about K series allosteric enzyme?

(A) Substrate saturation kinetic is competitive
(B) Confirmational change will weaken the bond between substrate and substrate binding residue
(C) Km is raised without an effect on Vmax
(D) All of the above

40. Which of the statement/statements is true about Histone code?

(i) Is a classical example of epigenetics
(ii) Partial proteolysis regulating catalytic activity
(iii) Hereditary transmission of information by genomes
(iv) Modification by acetylation of DNA binding protein

(A) Only (i)
(B) Only (i) and (ii)
(C) Only (i), (iii) and (iv)
(D) All the above (i), (ii), (iii) and (iv)

41. In a clinical laboratory's Quality Assurance program, which of the following activities primarily belongs to the post-analytical phase?

(A) Verification of calibration curves

(B) Monitoring specimen transport conditions

(C) Review and validation of patient test reports before release

(D) Checking reagent lot-to-lot consistency

42. In internal quality control, the Levey-Jennings chart is primarily used to :

(A) Compare laboratory results with those from other institutions

(B) Detect trends and shifts in control measurements over time

(C) Evaluate precision of reference methods only

(D) Determine the clinical validity of new assays

43. According to principles of Good Laboratory Practice (GLP), which of the following best ensures traceability of laboratory results in clinical chemistry?

(A) Performing duplicate analyses for each patient sample

(B) Maintaining detailed documentation linking each test result to instrument, reagent lot, and operator

(C) Verifying linearity of each assay before every analytical run

(D) Participating in external proficiency testing programs

44. Which of the following statements best describes the selection of Quality Control (QC) materials for quantitative measurement procedures?

(A) QC materials should always be prepared fresh daily to ensure accuracy

(B) Only one concentration of QC material is sufficient for all analytical procedures

(C) QC materials should represent clinical decision values across the analytical measuring range

(D) QC materials should be selected solely based on their availability in the market

45. Which of the following best defines quality control in a laboratory according to WHO guidelines?

(A) Procedures that ensure cost-effectiveness of laboratory testing

(B) The sum of all procedures undertaken to ensure the accuracy, reliability, and purity of laboratory test results

(C) Activities related only to sample labelling and storage

(D) Guidelines for reporting laboratory results to clinicians

46. Which of the following document deals with *Medical laboratories – Requirements for quality and competence*?

(A) ISO 15189:2022
(B) ISO 14001:2015
(C) ISO 9001:2015
(D) ISO 22000

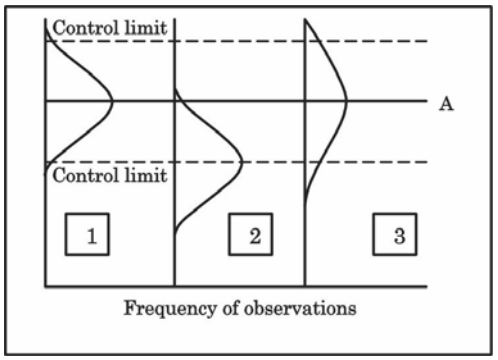
47. The number of true positive results divided by total number of true positives and false negative results (TP/TP +FN) is referred to :

(A) Sensitivity of the diagnostic test
(B) Prevalence of the disease
(C) Specificity of the diagnostic test
(D) Likelihood ratio

48. What is the role of Quality Improvement (QI) in the five-Q framework of quality?

(A) establishes standard processes for the way things are done
(B) provide measures or checks on how well things are done
(C) emphasizes statistical control procedures but also includes non-statistical check procedures
(D) identify the root cause of a problem and find a remedy for that problem

49. In the below Levey - Jennings control Chart, what does the 2nd number graph indicates :



(A) Stable performance
(B) Accuracy performance
(C) Precision performance
(D) Resolution performance

50. Which of the following is a controllable pre - analytical variable for laboratory testing?

(A) Diet
(B) Sex
(C) Age
(D) Underlying disease

51. An evacuated blood collection tube with a light blue stopper contains which of the following additives :

(A) EDTA
(B) Sodium fluoride
(C) Sodium citrate
(D) Heparin

52. When a patient's clinical condition is generally stable and differences between repeated test results are small, the difference between successive results of patient may be used as a form of quality assurance. This is known as :

(A) Proficiency testing
(B) Delta check
(C) Internal quality control
(D) Limit check

53. The process by which simulated patient specimens made from a common pool are analyzed by laboratories; the results of this procedure are evaluated to determine the "quality" of the laboratories' performance is referred to as :

(A) Total quality management
(B) Internal quality control
(C) Lean six sigma metrics
(D) Proficiency testing

54. Which of the following is a systematic error?

(A) Unstable calibrating solutions
(B) Pipetting error
(C) Reagent – sample mixing error
(D) Temperature error

55. Which of the following Control rule tend to respond to random errors?

(A) 1_{3s}
(B) 2_{2s}
(C) 4_{1s}
(D) 10x

56. Which of the following statement is /are incorrect about specimen collection?

(i) Lithium heparin tubes are widely used for chemistry tests and require clotting before use.

(ii) An EDTA anticoagulated specimen can be used for calcium determination.

(iii) A sodium fluoride tube helps to prevent glycolysis and is used for glucose measurement.

(A) Only (i) and (ii)
(B) Only (ii) and (iii)
(C) Only (i) and (iii)
(D) All of the above (i), (ii) and (iii)

57. Which of the following statement is/are correct about Cerebrospinal fluid?

(i) CSF usually has total protein concentrations about 100-fold lower than plasma.

(ii) Increased intrathecal synthesis of immunoglobulin, particularly IgM, occurs in demyelinating diseases of the central nervous system.

(iii) Conditions such as viral meningitis, encephalitis, haemorrhage may all compromise the blood-brain barrier, resulting in increased CSF protein.

(A) Only (i) and (ii)
(B) Only (ii) and (iii)
(C) Only (i) and (iii)
(D) All of the above (i), (ii) and (iii)

58. Which of the following statement is /are correct about Amniotic fluid?

(i) Intrauterine growth restriction and anomalies of the fetal urinary tract are associated with oligohydramnios.

(ii) Polyhydramnios occurs in anencephaly, spina bifida and maternal diabetes mellitus.

(iii) Fetal cells shed in amniotic fluid are a source of DNA for karyotype analysis for suspected aneuploidy.

(A) Only (i) and (ii)
(B) Only (ii) and (iii)
(C) Only (i) and (iii)
(D) All of the above (i), (ii) and (iii)

59. Which of the following statement is /are incorrect about urine collection?

(i) Proper collection technique on an infant utilizes "bagging" with a small plastic collection bag.

(ii) Sample should be kept at room temperature for timed collections.

(iii) A 24-hour collection includes the first morning urine sample both at the start and the finish of collection.

(A) Only (i) and (ii)
(B) Only (ii) and (iii)
(C) Only (i) and (iii)
(D) All of the above (i), (ii) and (iii)

60. Which type of specimen label has resulted in a reduction in preanalytical specimen identification errors and is used extensively in automated specimen identification?

(A) Label containing barcodes that are unique identifiers
(B) Social security numbers stamped on all individual specimen containers
(C) Hospital identification numbers written on tubes of blood
(D) Medical accounting numbers written on the lids of all containers

61. Why should internal quality control be performed?

(A) To be sure that the quality control material is of good quality
(B) To be able to pass the accreditation inspection
(C) To have a high probability that correct patient results are released
(D) To examine if my measurement procedure gives results similar to other laboratories

62. One serious issue with the use of accelerating/decelerating pneumatic tube systems to deliver specimens to the laboratory is the occurrence of :

(A) Clot formation
(B) Specimen breakage
(C) Haemolysis
(D) Specimen volume loss

63. Which of the following statement is /are correct about Microtiter plate systems?

(i) Microtiter plate systems are commonly used in estimation of lipid profile

(ii) Microtiter plates are usually made of polystyrene and have 48 or 96 wells

(iii) Measurement of absorbance and data processing are also automated in many instruments

(A) Only (i) and (ii)
(B) Only (ii) and (iii)
(C) Only (i) and (iii)
(D) All of the above (i), (ii) and (iii)

64. The transport of a quantity of analyte or reagent from one specimen reaction to subsequent one is referred to as :

(A) Batching
(B) Carryover
(C) Misdelivery
(D) Indiscrete handling

65. Which type of software would likely apply to the control of specimen routing / motion on a total laboratory automation system?

(A) Laboratory Automation System (LAS)
(B) Laboratory Information System (LIS)
(C) Electronic Health Record (EHR)
(D) Middleware

66. The marker enzyme for organophosphorous poisoning is :

(A) Asparaginase
(B) Adenosine deaminase
(C) Collagenase
(D) Pseudocholineesterase

67. The following enzymes exist as multienzyme complexes EXCEPT :

(A) Fatty acid synthase
(B) ALA synthase
(C) CAD protein
(D) Pyruvate Dehydrogenase

68. In Enzyme Linked Immuno sorbent Assay, most commonly used enzyme is :

(A) Taq Polymerase
(B) Glucose oxidase
(C) Peptidyl transferase
(D) Horse radish peroxidase

69. Non-Protein part of enzyme is known as :

(A) Coenzyme
(B) Apoenzyme
(C) Holoenzyme
(D) Proenzyme

70. Zinc is used as co factor in :

(A) Carbonic anhydrase
(B) Hexokinase
(C) Gamma Glutamyl transferase
(D) Tyrosinase

71. Which of the following is the diagnostic feature of hepatocellular cancer?

(A) Reduced alpha 1 antitrypsin level

(B) HFE gene mutation

(C) Elevated alpha fetoprotein level

(D) Decreased serum ceruloplasmin

72. All of the following enzymatic markers reflect cholestasis EXCEPT :

(A) Alkaline phosphatase (B) 5' Nucleotidase

(C) Gamma glutamyl transpeptidase (D) Lactate Dehydrogenase

73. Which of the following is a marker of autoimmune process of type 1 Diabetes mellitus?

(A) Glutamic acid decarboxylase (B) Lactate dehydrogenase

(C) Alanine amino transferase (D) Pyruvate decarboxylase

74. All of the following are GLP-1 receptor agonists EXCEPT :

(A) Dulaglutide (B) Lixisenatide

(C) Pramlintide (D) Semaglutide

75. All of the following mutations are seen in Diabetes mellitus EXCEPT :

(A) Mitochondrial DNA Mutations

(B) Hepatocyte nuclear transcription factor 4 alpha mutation

(C) Glucokinase gene mutation

(D) p53 mutations

76. The LH Receptor mutation causes precocious puberty in :

(A) Male (B) Female

(C) Both gender (D) Trans women

77. MEN 1 is characterised by mutations in:

(A) 12q12 (B) 11q13

(C) 12q14 (D) 11q14

78. The MEN 2 syndrome is caused by :

(A) Activating mutation of RET protooncogene

(B) Inactivating mutation of RET protooncogene

(C) Second hit to 11p15

(D) Silencing mutation of RET protooncogene

79. The G alpha activating mutation in somatotrophs causes :

(A) Short stature (B) Tall stature

(C) Normal height (D) Hypothyroidism

80. The Testosterone levels in XY androgen resistance males are :

(A) Very high (B) Low

(C) Undetectable (D) Normal

81. Which of the following statements regarding the regulation, metabolic fate, and diagnostic detection of hypothalamic-pituitary-thyroid axis hormones is correct?

(A) TRH (thyrotropin-releasing hormone) is primarily metabolized by hepatic glucuronidation, and its secretion follows a strict circadian pattern that peaks at midnight, with serum levels best measured by an ultrasensitive ELISA for routine thyroid function assessment

(B) TSH (thyroid-stimulating hormone) secretion is regulated by both negative feedback from free thyroxine (FT4) and direct dopaminergic inhibition, and TSH half-life is sufficiently long to allow accurate diagnosis of subclinical hypothyroidism in random serum samples, with bioactivity constant across glycoforms

(C) TSH glycosylation pattern alters its bioactivity and serum half-life; ultra-sensitive TSH immunoassays may show falsely normal results in central hypothyroidism, as TRH-stimulated TSH secretion is blunted and most TSH released is biologically inactive

(D) TSH is under GHRH regulation

82. Which of the following statements regarding glucocorticoid (cortisol) receptor isoform diversity and its clinical and molecular implications is correct?

(A) The mineralocorticoid receptor (MR) binds cortisol with a 100-fold higher affinity than aldosterone, and its tissue specificity is exclusively ensured by 11β-HSD1-mediated conversion of cortisol to cortisone

(B) GRβ, a splice variant of the glucocorticoid receptor (GR), lacks the ligand-binding domain required for glucocorticoid activation, acts as a dominant-negative modulator of GRα, is upregulated in hypercortisolism, and may contribute to glucocorticoid resistance in certain tissues

(C) All glucocorticoid receptor isoforms possess identical DNA-binding domains but differ in their ligand affinities due solely to single nucleotide polymorphisms within the NR3C1 gene, with no effect from alternative splicing

(D) The mitochondrial activity of GRγ is unrelated to cellular glucocorticoid sensitivity and this isoform cannot affect basal respiration or ATP synthesis in target tissues

83. Which of the following statements best describes the mechanism and clinical relevance of the prozone phenomenon in immunoassays, as discussed in contemporary sources and echoed in recent endocrinology literature?

(A) The prozone phenomenon causes a false positive result in immunoassays, attributed to antigen excess saturating all available antibody binding sites, most commonly seen in early primary syphilis and hypothyroidism

(B) Prozone phenomenon results from overwhelming antibody titers in a sample, leading to failure of antigen-antibody lattice formation and thus a falsely negative test result; this effect is especially seen in nontreponemal syphilis serology and can be corrected by serial dilution of serum

(C) The prozone phenomenon occurs only in the context of T-cell mediated responses, never in humoral antibody testing or endocrine hormone immunoassays

(D) Modern two-site "sandwich" immunoassays are immune to the prozone phenomenon and reliably detect all hormone and antibody excess states irrespective of concentration, making routine dilutions obsolete

84. Which of the following correctly describes a major pathway of estrogen biosynthesis in humans?

(A) Estrone (E1) is synthesized primarily in the adrenal cortex from pregnenolone and is the most potent estrogen acting directly on estrogen receptors in target tissues

(B) Aromatase catalyzes the irreversible conversion of androstenedione and testosterone into estrone and estradiol respectively, primarily in ovarian granulosa cells and adipose tissue, constituting the key step in estrogen biosynthesis

(C) Estrogen formation bypasses androgen precursors in postmenopausal women and occurs mainly via de novo synthesis from cholesterol in the liver

(D) Estradiol (E2) synthesis predominates exclusively in adipose tissue and is independent of enzyme activity in ovarian tissues or the placenta

85. Which of the following best describes a key feature of IGF-1 physiology and its regulation?

(A) IGF-1 is synthesized exclusively in the liver and secretion is independent of growth hormone (GH) stimulation or nutritional status

(B) IGF-1 mediates many of the anabolic and growth-promoting effects of GH by binding to a specific receptor that shares structural similarity with the insulin receptor and activating intracellular signaling cascades

(C) IGF-1 circulates freely in plasma without binding proteins, allowing rapid clearance and limiting its biological half-life below 10 minutes

(D) IGF-1 production is inhibited by insulin and sex steroids, which downregulate gene expression in target tissues during puberty

86. Which of the following genes is most commonly mutated in hereditary pheochromocytoma and represents a key component of the pseudohypoxia pathway?

(A) RET proto-oncogene, associated with multiple endocrine neoplasia type 2 (MEN2) syndrome and kinase-signaling pathway activation

(B) SDHB (succinate dehydrogenase subunit B), involved in mitochondrial complex II dysfunction leading to accumulation of succinate and hypoxia-inducible factor (HIF) activation in the pseudohypoxia cluster

(C) NF1 gene, encoding neurofibromin, a tumor suppressor regulating RAS signaling, primarily associated with neurofibromatosis type 1

(D) TMEM127, a gene implicated exclusively in sporadic pheochromocytomas without familial inheritance

87. Which of the following best describes a fundamental feature of the insulin receptor and its signaling mechanism?

(A) The insulin receptor is a G-protein coupled receptor (GPCR) with seven transmembrane domains that activates adenylate cyclase upon insulin binding

(B) Insulin receptor is a heterotetrameric tyrosine kinase receptor composed of two extracellular α-subunits that bind insulin and two transmembrane β-subunits with intrinsic tyrosine kinase activity; activation initiates phosphorylation cascades mediating glucose uptake

(C) Insulin receptor signaling is independent of autophosphorylation and relies solely on secondary messenger cAMP to mediate metabolic effects

(D) The primary biological effect of insulin receptor activation is inhibition of glycogen synthase, leading to reduced glycogen storage in hepatocytes and muscle

88. Which of the following best explains the clinical significance of measuring serum TSH and free T4 in thyroid function testing?

(A) Elevated serum TSH with decreased free T4 levels definitively indicates primary hypothyroidism due to thyroid gland failure, with TSH being the most sensitive single marker for thyroid dysfunction

(B) Normal serum TSH and elevated free T3 levels are the hallmark of central hypothyroidism, necessitating further imaging of the hypothalamic-pituitary axis

(C) Serum TSH alone is sufficient to diagnose all forms of thyroid dysfunction, including secondary (central) hypothyroidism, irrespective of free T4 or T3 levels

(D) In cases of non-thyroidal illness syndrome (NTIS), serum TSH is typically markedly elevated, correlating directly with the severity of illness

89. Which of the following statements correctly describes a key regulatory mechanism in lipid metabolism?

(A) Lipoprotein lipase (LPL) hydrolyzes triglycerides in circulating chylomicrons and very-low-density lipoproteins (VLDL) primarily in skeletal muscle and adipose tissue, and its activity is upregulated by insulin during the fed state

(B) Hepatic lipase (HL) is responsible for the initial assembly of chylomicrons in enterocytes and is mainly regulated by glucagon to increase postprandial lipid clearance

(C) Apolipoprotein B 100 is synthesized exclusively in the intestine and serves as a ligand for the LDL receptor on peripheral tissues

(D) Cholesteryl ester transfer protein (CETP) primarily facilitates the transfer of triglycerides from HDL to VLDL and LDL, and its inhibition is associated with increased atherosclerosis risk

90. Which of the following best describes a key regulatory action of insulin on glucose metabolism?

(A) Insulin increases hepatic gluconeogenesis by upregulating phosphoenolpyruvate carboxykinase (PEPCK) and glucose-6-phosphatase enzymes during the postprandial state

(B) Insulin promotes glucose uptake in skeletal muscle and adipose tissue primarily by translocating GLUT4 transporters to the plasma membrane, enhancing peripheral glucose disposal

(C) Insulin inhibits glycogen synthesis by activating glycogen phosphorylase and suppressing glycogen synthase activity in hepatocytes

(D) Insulin's primary action on pancreatic α-cells is to stimulate glucagon secretion, thus maintaining euglycemia during fasting

91. Fraction of administered drug that reaches the systemic circulation in the unchanged form is:

(A) First pass metabolism (B) Bioavailability

(C) Distribution (D) Clearance

92. Number of half lives required to attain steady state plasma concentration is:

(A) 1-2 (B) 2-3

(C) 3-4 (D) 4-5

93. Drug antagonist has:

(A) Intrinsic activity and No Affinity

(B) Only Intrinsic activity

(C) No Intrinsic activity and No Affinity

(D) Affinity same as Agonist and devoid of Intrinsic activity

94. A highly ionized drug:

(A) Is excreted mainly by the kidney

(B) Can cross the placental barrier easily

(C) Is well absorbed from the intestine

(D) Accumulates in the cellular lipids

95. Preferred route of administration for highly irritant drugs:

(A) Intramuscular (B) Oral

(C) Intravenous (D) Subcutaneous

96. In metabolism of xenobiotics, all of the following reactions occur in phase one EXCEPT?

(A) Oxidation (B) Reduction

(C) Conjugation (D) Hydrolysis

97. Which of the following cytochrome P450 isoenzymes is involved in the metabolism of largest number of drugs in human beings and has been implicated in some dangerous drug interactions:

(A) CYP 3A4 (B) CYP 2C9

(C) CYP 2E1 (D) CYP 1A2

98. Which among the following is chlorinated hydrocarbon insecticide:

(A) Malathion (B) Lindane

(C) Propoxur (D) Carbaryl

99. Which of the following is a synthetic hallucinogen derived from a fungus:

(A) Heroin (B) Lysergic acid diethylamide

(C) Cocaine (D) Nicotine

100. Tachyphylaxis differs from tolerance in that Tachyphylaxis:

(A) Develops rapidly

(B) Develops slowly

(C) Is due to enzyme inhibition

(D) None of these

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK