



TIKRIT UNIVERSITY COLLEGE OF MEDICINE
DEPARTMENT OF BIOCHEMISTRY
COMPARATIVE EXAMINATION IN
BIOCHEMISTRY FOR Ph. D.
STUDENTS, 2025/2026
TIME: 3 Hour Form (A)



Qualified answer in examination is your way to success

Notes:

1. Answer all of the following questions.
2. The questions are distributed over (14) pages, therefore insure that you have (14) pages.

Choose the most appropriate answer (100 marks, 1.0 for each one of them)

1. In electrophoresis variable regions are present in----
 - a. Immunoglobulins
 - b. α -Chains of T cell receptors
 - c. β -Chains of T cell receptors
 - d. All of the above
 - e. None of the above
2. All the following statements regarding calcium are correct except----
 - a. It diffuses as a divalent cation
 - b. It freely diffuses across the endoplasmic reticulum of muscle cells
 - c. It can exist in the blood as ionic form and also protein bound
 - d. It is found in high concentration in bones
 - e. May have protective effect against cancer
3. Some causes of hypermagnesaemia including ----
 - a. Parenteral nutrition
 - b. Dialysis
 - c. Adrenal insufficiency
 - d. Starvation
 - e. Diabetes mellitus
4. Increased H^+ production in excess of body's excretory capacity is caused by: except -----
 - a. Ketoacidosis
 - b. Alcoholic
 - c. Inherited metabolic disease
 - d. Poisoning
 - e. Acute and chronic renal failure
5. Some causes of Exudates pleural effusion: except ----
 - a. pneumonia or tuberculosis
 - b. pulmonary embolism.
 - c. Amiodarone
 - d. Neoplasm, e.g. primary lung or secondaries
 - e. hypothyroidism
6. Lactic acidosis except-----
 - a. Defined as an arterial pH of less than 7.2.
 - b. plasma lactate concentration greater than 5.0 mmol/L.

- c. The normal fasting blood lactate is between 0.8 and 1.5 mmol/L.
 - d. Most forms of lactic acidosis are due to increased L-lactate.
 - e. In some malabsorption states, with bacterial overgrowth, D-lactic acidosis may occur.
7. Chronic active hepatitis ----- except -----
- a. Caused by active hepatocellular distraction with episodes of relapse and remission.
 - b. It may progress to cirrhosis
 - c. It occurs at old age
 - d. It's part of an autoimmune process that sometime involves more than one organ
 - e. May be associated with viral infection
8. D-dimers and deep vein thrombosis except -----
- a. Used in diagnosis of deep vein thrombosis (DVT), for example in leg or pelvic veins.
 - b. It is important investigation to prevent fatal pulmonary embolus.
 - c. D-dimers are released into the plasma upon thrombosis formation when fibrin is converted to fibrinogen
 - d. Raised plasma D-dimer concentration is, therefore, a useful marker of the presence of a thrombus.
 - e. A raised plasma D-dimer concentration may lead the clinician to diagnosis pulmonary embolus.
9. Regarding to Features of predominant water depletion, The immediate effects of water depletion result in: -----
- a. loss of sodium in excess water.
 - b. osmolality decreased
 - c. reduction of circulating volume.
 - d. increase renal blood flow and stimulates aldosterone secretion
 - e. sodium is retained and hyponatraemia is aggravated.
10. Primary hyperaldosteronism (Conn's syndrome) ---- ----
- a. About 70 per cent of cases of this syndrome are due to a single benign adenoma of the glomerulosa cells of the adrenal cortex.
 - b. Aldosterone excess causes urinary sodium retention.
 - c. Water retention tends to increase plasma sodium concentrations.
 - d. Aldosterone secretion is subject to normal feedback suppression.
 - e. hyperkalaemic alkalosis is common
11. Some causes of hyponatraemia due to the syndrome of inappropriate antidiuretic hormone secretion (SIADH) ----- except -----
- a. Post-operation/trauma
 - b. Infections
 - c. Ectopic secretion by tumours, e.g. small cell lung
 - d. Chronic Porphyria
 - e. Non-steroidal anti-inflammatory drugs.
12. Countercurrent multiplication -----
- a. The osmolality progressively decreases in the descending limbs and renal medullary interstitium.
 - b. It depends on the close apposition of the descending and ascending limbs of the loops to the vasa recta.
 - c. The vasa recta make up a capillary network derived from the afferent arterioles and, like the loops of Henle, pass deep into the medulla.
 - d. The descending limbs are impermeable to water but the thick ascending limbs are permeable to water and solute.
 - e. Chloride is actively pumped from the descending limbs to ascending limbs.
13. Uric acid stones-----

- a. In most cases, no predisposing cause can be found.
 - b. Uric acid stones are usually large, friable and yellowish brown.
 - c. They are radiopaque but may be visualized by an intravenous pyelogram.
 - d. If the plasma urate concentration is high, fluid intake should be kept high and the urine alkalized.
 - e. A low-purine diet may help to reduce urate production but not excretion
- 14. Calcitonin -----**
- a. Increases osteoclastic activity, slows calcium release from bone
 - b. Increases osteoclastic activity, has the opposite effect on plasma of PTH.
 - c. It is probably more important than PTH in physiological homeostasis.
 - d. Plasma concentrations may be low in patients with medullary carcinoma of the thyroid.
 - e. Exogenous calcitonin has been used to treat Paget's disease of bone.
- 15. Tertiary hyperparathyroidism-----**
- a. PTH secretion becomes partly autonomous and suppressed by negative feedback by the hypercalcaemia.
 - b. The diagnosis is usually made when the cause of the original hypocalcaemia is removed.
 - c. In some cases, the glandular hypertrophy gradually regresses and the plasma calcium concentration is high.
 - d. Unlike primary hyperparathyroidism, in which plasma PTH concentration is normal.
 - e. There are other causes of hypercalcaemia where plasma levels of PTH are increase.
- 16. Sarcoidosis-----**
- a. Hypercalcaemia is a common complication.
 - b. 1,25-Dihydroxycholecalciferol is synthesized in the granuloma tissue and increases Calcium absorption from the intestinal tract.
 - c. Chronic beryllium poisoning produces a granulomatous reaction different to that of sarcoidosis.
 - d. Not associated with hypercalcaemia.
 - e. Not the same the granulomatous reaction of tuberculosis and leprosy.
- 17. Paget's disease of bone -----**
- a. decreased osteoclastic and osteoblastic function.
 - b. It may be present with deafness and cardiac failure.
 - c. Plasma calcium and phosphate concentrations are typically affected.
 - d. Plasma alkaline phosphatase activity some time very high.
 - e. Less than 10 per cent of patients may develop osteosarcomas.
- 18. Bence-Jones protein precipitates at -----**
- a. 20°–40° C
 - b. 40–60° C
 - c. 60°–80° C
 - d. 80°–100° C
 - e. 10°–20° C
- 19. The primary biochemical lesion in homozygote with familial hypercholesterolemia (type IIa) is-----**
- a. Loss of feedback inhibition of HMG reductase
 - b. Loss of apolipoprotein B
 - c. Production of LDL from VLDL
 - d. Functional deficiency of plasma membrane receptors for LDL
 - e. None of the above
- 20. Inherited deficiency of enzyme cerebrosidase produces -----**
- a. Fabry's disease
 - b. Niemann pick disease

- c. Gaucher's disease
 - d. Tay-sach's disease
 - e. Gilbert disease
21. What explains the lower ATP yield of unsaturated fatty acid oxidation compared to saturated ones?
- a. Enhanced peroxisomal oxidation
 - b. Reduced use of NADH-linked reactions
 - c. Skipping of FAD-dependent dehydrogenation
 - d. Presence of extra thiolase steps
 - e. Requirement of ketogenesis in parallel
22. What tumor marker is associated with melanoma?
- a. S-100
 - b. TRAP
 - c. Alkaline phosphatase
 - d. Bombesin
 - e. CEA
23. A patient with defective methylmalonyl-CoA mutase presents with neurological symptoms, despite normal fatty acid oxidation. What accumulates, and why is energy yield reduced?
- a. Acetyl-CoA; it inhibits pyruvate kinase
 - b. Carnitine; blocks entry of acyl groups
 - c. NAD⁺; due to increased glycolytic flux
 - d. FADH₂; peroxisomal oxidation is accelerated
 - e. Methylmalonic acid; succinyl-CoA is not formed
24. A student treats liver mitochondria in vitro with a CPT-II inhibitor. Which result is most likely observed?
- a. Increased fatty acid uptake
 - b. Reduced malonyl-CoA synthesis
 - c. Accumulation of acyl-carnitines
 - d. Enhanced β -oxidation
 - e. Increased ATP generation
25. Which of the following statements best explains the necessity of malate formation during the conversion of pyruvate to phosphoenolpyruvate in gluconeogenesis?
- a. Malate activates pyruvate carboxylase to enhance oxaloacetate formation in the cytoplasm.
 - b. Malate carries GTP from mitochondria to the cytosol for PEPCK activity.
 - c. Pyruvate must be converted to malate before entering mitochondria.
 - d. The conversion to malate allows NADH to be produced in the cytosol where it's needed.
 - e. Malate prevents futile cycling between glycolysis and gluconeogenesis.
26. What distinguishes the Glucose-Alanine cycle from the Cori cycle in terms of primary nitrogen and carbon transport?
- a. Alanine cycle exports nitrogen but not carbon to the liver.
 - b. Cori cycle transports glucose to muscle while alanine transports it to liver.
 - c. Alanine transports carbon and nitrogen; lactate transports carbon only.
 - d. Glucose-Alanine cycle occurs in erythrocytes; Cori cycle occurs in kidney.
 - e. Alanine delivers NADH; lactate delivers ammonia.
27. Of the following, which is a usual cause of ACTH-independent hyperfunction of the adrenal cortex?
- a. Macronodular dysplasia
 - b. Primary pigmented nodular adrenal dysplasia
 - c. Secretion of the hormone by a nonpituitary tumor
 - d. Therapeutic administration of corticosteroids

- e. All of the above
28. Which of the following plasma markers has the shortest half-life and is most useful for Monitoring rapid nutritional changes?
- a. Albumin
 - b. Transferrin
 - c. Retinol-binding protein
 - d. Ferritin
 - e. Prealbumin
29. Which of the following is NOT commonly increased in cholestasis?
- a. ALP
 - b. ALT
 - c. GGT
 - d. Conjugated bilirubin
 - e. Bile acids
30. Which of the following markers is best for early detection of acute kidney injury (AKI)?
- a. Serum creatinine
 - b. Serum urea
 - c. Cystatin C
 - d. Urinary neutrophil gelatinase–associated lipocalin
 - e. Creatinine clearance
31. Which compensatory mechanism occurs in metabolic alkalosis?
- a. Increased ventilation
 - b. Increased H^+ secretion
 - c. Decreased CO_2 retention
 - d. Hypoventilation to retain CO_2
 - e. Increased bicarbonate excretion
32. Which of the following is the most important diagnostic test for Addison's disease?
- a. Serum sodium and potassium levels
 - b. Plasma cortisol levels after ACTH stimulation
 - c. Serum calcium levels
 - d. Plasma renin activity
 - e. Urinary free cortisol excretion
33. Which of the following would increase measured serum creatinine without true renal impairment?
- a. Severe dehydration
 - b. High meat intake
 - c. Muscle wasting
 - d. Chronic liver failure
 - e. SIADH
34. Which of the following statements about lipoprotein(a) [Lp(a)] is true?
- a. Lp(a) is primarily associated with low-density lipoproteins (LDL) and is considered a risk factor for cardiovascular disease
 - b. Lp(a) levels are significantly affected by dietary fat intake
 - c. Lp(a) is directly responsible for the transport of triglycerides in the bloodstream
 - d. Lp(a) is a lipoprotein that primarily delivers cholesterol to the liver
 - e. Lp(a) is unrelated to genetic factors
35. Pituitary hormone triggering the male testes to generate sperm and in females, triggering follicular development on a monthly basis is
- a. prolactin
 - b. growth hormone

- c. testosterone
 - d. follicle-stimulating hormone
 - e. luteinizing hormone
- 36.** what is the primary function of glucagon in glucose homeostasis?
- a. Increases hepatic glucose production by stimulating glycogenolysis and gluconeogenesis
 - b. Inhibits insulin secretion from the pancreas
 - c. Promotes glycolysis in muscle and liver
 - d. Increases glycogen storage in muscle
 - e. Stimulates glucose uptake in adipose tissue
- 37.** Presence of significant amount of 5-HIAA in urine indicates
- a. Carcinoid in liver
 - b. Carcinoid in appendix
 - c. Metastasis of carcinoma of liver
 - d. Hepatoma
 - e. All of the above
- 38.** Why is NADH a critical product of mitochondrial β -oxidation?
- a. It stimulates carnitine shuttle transport
 - b. It directly activates fatty acid synthase
 - c. It fuels the electron transport chain
 - d. It is required for citrate synthesis
 - e. It forms FADH₂
- 39.** Which of the following is the most sensitive marker for detecting early-stage kidney dysfunction?
- a. Serum creatinine
 - b. Urine albumin-to-creatinine ratio (ACR)
 - c. Glomerular filtration rate (GFR)
 - d. Blood urea nitrogen (BUN)
 - e. Urine specific gravity
- 40.** Which of the following is the most sensitive marker for detecting acute pancreatitis?
- a. Serum amylase
 - b. Serum lipase
 - c. Serum bilirubin
 - d. Serum glucose
 - e. Serum alkaline phosphatase
- 41.** Which of the following is TRUE about the enzyme glycogen synthase?
- a. It catalyzes the breakdown of glycogen
 - b. It exists in an inactive form when phosphorylated
 - c. It is activated by glucagon
 - d. It forms alpha-1,6 glycosidic bonds
 - e. Not all of the above
- 42.** Which cofactor is required by pyruvate carboxylase
- a. NAD⁺
 - b. FAD
 - c. Biotin
 - d. Thiamine
 - e. Not all of the above
- 43.** A metabolic disorder presents with elevated plasma levels of serine and homocysteine. Which of the following enzymes is most likely defective in this condition?
- a. Cystathionine β -synthase
 - b. Methionine synthase

- c. Serine dehydratase
 - d. Homoserine dehydrogenase
 - e. Histidase
- 44.** In a patient with a deficiency in branched-chain amino acid (BCAA) transaminase, which of the following metabolic disturbances would you most likely observe?
- a. Increased production of ketone bodies and fatty acids
 - b. Decreased levels of glutamine in the liver and muscle
 - c. Inhibition of glycolysis and gluconeogenesis in muscle cells
 - d. Decreased production of pyruvate from non-essential amino acids
 - e. Accumulation of branched-chain α -keto acids in blood
- 45.** This is a metabolic waste as a result of protein metabolism
- a. ammonia, urea and creatinine
 - b. ammonia, urea and alanine
 - c. nitrogen, oxygen and urea
 - d. carbon dioxide, urea and ammonia
 - e. all of the above
- 46.** Which of the following is a zymogen that can be converted to an endopeptidase that hydrolyzes peptide bonds adjacent to Lys and Arg residues?
- a. Chymotrypsinogen
 - b. Pepsin
 - c. Pepsinogen
 - d. Trypsin
 - e. Trypsinogen
- 47.** In amino acid catabolism, the first reaction for many amino acids is a(n):
- a. decarboxylation requiring thiamine pyrophosphate (TPP).
 - b. hydroxylation requiring NADPH and O_2 .
 - c. oxidative deamination requiring NAD^+ .
 - d. reduction requiring pyridoxal phosphate (PLP).
 - e. transamination requiring
- 48.** Beta-2-microglobulin is a marker used to reflect which process?
- a. Cell turnover
 - b. Liver function
 - c. Tumor remission
 - d. Bone resorption
 - e. All of the above
- 49.** Which of the following hormones or autocooids increases the glomerular filtration rate by decreasing the vascular resistance?
- a. Norepinephrine
 - b. Endothelin
 - c. Prostaglandin
 - d. Epinephrine
 - e. Antidiuretic hormone
- 50.** Which of the following is a characteristic of an ideal tumor marker?
- a. Long half-life in circulation
 - b. Specificity for multiple types of cancer
 - c. High sensitivity and specificity for cancerous growth
 - d. Correlation with tumor remission
 - e. All of the above
- 51.** Which childhood cancer has bombesin as a tumor marker?
- a. Neuroblastoma

- b. Acute lymphoblastic leukemia
 - c. Lung cancer
 - d. Gastric cancer
 - e. Pancreatic cancers
- 52.** Which of the following doesn't require ATP to be reabsorbed by the proximal convoluted tubules?
- a. Magnesium
 - b. Chloride
 - c. Calcium
 - d. Potassium
 - e. All of the above
- 53.** what is the product generated after the transketolase catalyzes the transfer of 2 carbon units from xylulose-5-phosphate to erythrose-4-phosphate?
- a. fructose-4-phosphate
 - b. glyceraldehyde 3 phosphate
 - c. fructose-6-phosphate
 - d. both B and C
 - e. Not of them
- 54.** The glomerular filtration rate is determined by the balance of hydrostatic and colloidal osmotic pressure. Which of the following promote glomerular filtration?
- a. hydrostatic pressure of glomerular capillary
 - b. oncotic pressure of the glomerular capillary
 - c. hydrostatic pressure of Bowman's capsule
 - d. Oncotic pressure of Bowman's capsule
 - e. Not all of the above
- 55.** The Renal Plasma flow is best measured by.....?
- a. GFR estimation
 - b. Inulin Clearance Test
 - c. Creatinine Clearance
 - d. GFR estimation and Inulin Clearance Test
 - e. Para-amino hippuric acid Test
- 56.** Which of the following statements best explains the relationship between amino acid metabolism and the urea cycle in a patient with hepatic dysfunction?
- a. Excessive protein intake leads to reduced urea synthesis.
 - b. Defective urea cycle enzymes result in increased ammonia levels in the blood.
 - c. The urea cycle is upregulated in response to decreased amino acid breakdown.
 - d. High blood urea levels indicate a defect in gluconeogenesis.
 - e. The urea cycle is irrelevant in amino acid metabolism under normal conditions.
- 57.** What stimulates the pentose phosphate pathway?
- a. high concentration of insulin
 - b. low level of NADPH
 - c. high level of NADPH
 - d. both A and B
 - e. Not of them
- 58.** Which of the following is true?
- a. The disulfide bridges formed by oxidation of the sulfhydryl groups on cysteine stabilizes protein tertiary structure
 - b. The disulfide bridges formed by reduction of the sulfhydryl groups on cysteine stabilizes protein tertiary structure
 - c. The disulfide bridges formed by oxidation of the sulfhydryl groups on cysteine

- destabilizes protein tertiary structure
 - d. The disulfide bridges formed by reduction of the sulfhydryl groups on cysteine destabilizes protein tertiary structure
 - e. both b and D
- 59.** Which out of the following amino acids carries a net positive charge at the physiological pH?
- a. Valine
 - b. Leucine
 - c. Isoleucine
 - d. All of them
 - e. None of the followings
- 60.** In a patient with untreated type 1 diabetes, an increase in which of the following would most likely promote the production of ketone bodies?
- a. Insulin
 - b. Glucagon
 - c. Cortisol
 - d. Growth hormone
 - e. Thyroid hormone
- 61.** How many reactions that occur in the TCA cycle transfer electrons from a substrate to an electron accepting enzyme?
- a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
- 62.** Oxidative decarboxylations
- a. do not occur in the TCA cycle.
 - b. involve loss of CO₂ and the production of NAD.
 - c. involve loss of CO₂ and the production of NADH.
 - d. involve loss of CO₂ and the production of FADH₂.
 - e. occur three times in the TCA cycle.
- 63.** In addition to the regulators of enzyme activity within the citric acid cycle, two enzymes outside the cycle profoundly affect its activity. Which ones?
- a. Isocitrate dehydrogenase and isocitrate oxidase
 - b. Lactic acid dehydrogenase and pyruvate kinase
 - c. Acetaldehyde dehydrogenase and citrate synthase
 - d. Glucokinase and phosphofructokinase
 - e. Pyruvate carboxylase and pyruvate dehydrogenase
- 64.** What is the Product formed by maleic Dehydrogenase?
- a. Oxaloacetic Acid
 - b. Succinic Acid
 - c. Fumaric Acid
 - d. Maleic Acid
 - e. All of the above
- 65.** Which enzyme is deficient in von Gierke disease?
- a. Acid alpha-glucosidase
 - b. Glucose-6-phosphatase
 - c. Amylo-1,6-glucosidase
 - d. Muscle phosphorylase
 - e. Acid Lipase
- 66.** Which of the Following Enzymes is Considered as Defective in Galactosemia-

- a fatal Genetic Disorder in Infants?
- Glucokinase
 - Galactokinase
 - Galactose-1-Phosphate Uridyl transferase
 - UDP-Galactose 4- epimerase
 - Acid Lipase
- 67.** In protein synthesis, translocation begins with the migration of the precursor protein.
- tRNA from P-site to the A-site
 - dipeptidyl tRNA from A-site to P-site
 - tRNA from A-site to P-site
 - tRNA from P-site to E-site
 - All of the above
- 68.** In Hyperphenylalaninemia type-4 and 5, which enzyme is defected?
- Phenylalanine hydrolase
 - Dihydrobiopterin reductase
 - Dihydrobiopterin synthesis
 - None of the above
 - All of the above
- 69.** Which of the following statement NOT true?
- In citrullinemia, citrulline is accumulated
 - PKU can be treated by low phenylalanine diet
 - Classical hyperlysinemia is a tryptophan metabolism disorder
 - Histidinemia means increase in blood histidine level
 - Both a and b
- 70.** Carbonic anhydrase is an example of
- Lipoprotein
 - Phosphoprotein
 - Metalloprotein
 - Chromoprotein
 - All of the above
- 71.** Protein anabolism is stimulated by
- ACTH
 - Testosterone
 - Glucagon
 - Epinephrine
 - All of the above
- 72.** In which of the following phenomenon the end product act as co-repressor and repress the synthesis of metabolic enzymes?
- Allosteric regulation
 - Feedback repression
 - Feedback inhibition
 - Regulation by phosphorylation
 - All of the above
- 73.** Which of the following glycolytic enzyme is inhibited by an accumulation of long-chain fatty acid in the liver?
- Galactokinase
 - Glucokinase
 - Hexokinase
 - Pyruvate kinase
 - Phosphofructokinase

- 74.** Which of the following statement for hemoglobin is incorrect?
- the binding with O₂ is weaker in comparison with myoglobin.
 - iron is 5-coordinated.
 - iron is co-planer with the porphyrin ring in the absence of oxygen.
 - oxidation state of iron is ⁺²
 - None of the above
- 75.** In human gluconeogenesis cannot be performed from acetyl CoA because:
- thermodynamically it is too unfavorable
 - the reaction catalized by pyruvate dehydrogenase is irreversible
 - it is not possible to convert a hydrophobic compound into a hydrophilic one
 - the oxaloacetate formed in the Krebs cycle does not contain net carbon atoms from acetyl CoA
 - glucose is a more oxidized molecule than fatty acids
- 76.** Chylomicrons may show one of the following attributes
- high contents of Apo-B and Apo-C
 - being rich in exogenous triacylglycerols
 - no esterified cholesterol in their structure
 - high velocity of electrophoretic migration
 - higher floating density than all lipoproteins
- 77.** A carnitine deficit may bring about a low blood sugar crisis in fasting, partly because this affects the function of:
- citrate synthase
 - glucose 6-phosphatase
 - pyruvate carboxylase
 - acetyl-CoA carboxylase
 - None of the above
- 78.** Which of the following property is not shown by isoenzyme?
- Sigmoidal shaped curve
 - Electrophoretic mobility
 - Kinetic properties
 - Amino acid composition
 - All of the above
- 79.** Which of the following is not isoenzyme form of alkaline phosphatase?
- Bone
 - Muscle
 - Placenta
 - Intestine
 - None of the above
- 80.** Which of the following vitamins has a coenzyme function?
- Vitamin A
 - Vitamin C
 - Vitamin B
 - All of the above
 - None of the above
- 81.** The enzymes present in pancreatic juice are
- Amylase, Trypsinogen, Peptidase, Rennin
 - Trypsinogen, Lipase, Amylase, Procarboxypeptidase
 - Peptidase, Pepsin, Amylase, Rennin
 - Maltase, Amylase, Trypsinogen, Pepsin
 - None of the above

- 82.** Adiponectin increases the:
- synthesis of glucose by the liver
 - oxidation of fatty acids in muscle tissue
 - accumulation of TAG in adipose tissue
 - inflow of glucose into adipose tissue
 - synthesis of glycogen in the liver
- 83.** All of the following clinical situations could increase circulating troponin I levels in the body EXCEPT?
- Cardiomyocyte necrosis
 - Generation of new cardiac myocytes
 - Hypertrophic cardiomyopathy in cats
 - Sepsis with myocardial
 - None of the above
- 84.** Which of the following is a likely outcome from release of natriuretic peptides?
- Increase in sodium and water retention
 - Decrease in activation of the renin-angiotensin-aldosterone system
 - Increase in systemic blood pressure
 - Increase in total body sodium content
 - None of the above
- 85.** Which of the following hormones stimulates the production of pancreatic juice and bicarbonate?
- Insulin and glucagon
 - Cholecystokinin and secretin
 - Gastrin and insulin
 - Angiotensin and epinephrine
 - None of the above
- 86.** Grave's disease is due to _____
- Hyperactivity of thyroid gland
 - Hyperactivity of adrenal medulla
 - Hyperactivity of adrenal cortex
 - Hyperactivity of islets of langerhans
 - Both a and d
- 87.** In chronically deficient patients, this abnormality is directly related to the enlargement of the thyroid gland
- Impaired conversion of T3 and T4
 - Reduced activity of thyroperoxidase
 - Elevated levels of TSH
 - An antibody that binds to the TSH receptor in the thyroid gland
 - Both a and d
- 88.** Which of the following vitamin functions as both, hormone and visual pigment?
- Thiamine
 - Retinal
 - Riboflavin
 - Folic acid
 - Niacin
- 89.** Each molecule of albumin appears to have :
- One binding site for bilirubin.
 - Two binding sites for bilirubin.
 - Three binding sites for bilirubin.
 - Four binding sites for bilirubin.

- e. non of the above
- 90. in addition to tryptophan, which of the following amino acids is likely to be deficient in Hartnup disease?
 - a.aspartate.
 - b. leucine
 - c.lycine.
 - d. proline.
 - e.glycine
- 91. The substance deposited in skin and sclera in jaundice is:
 - a.bile salts .
 - b. only unconjugated bilirubin.
 - c.only direct bilirubin.
 - d. both bilirubin and bilirubin diglucuronide.
 - e.urobilinogen
- 92. Glycosuria may be caused by all of these conditions: except
 - a.diabetes insipidus .
 - b. fanconi syndrome.
 - c.Wilson's disease.
 - d. Pregnancy.
 - e.Renal impairment
- 93. When the velocity of enzyme activity is plotted against substrate concentration, which of the following is obtained?
 - a. Hyperbolic curve
 - b. Parabola
 - c. Straight line with positive slope
 - d. Straight line with negative slope
 - e. sigmoidal shape
- 94. Isoelectric point is a point at which :
 - a.The mass of a protein is maximum
 - b. The net charge of protein is zero
 - c.The speed of mobility is maximum
 - d. The protein loses structure
 - e.the net charge of protein is positive
- 95. Urinary excretion of Bence Jones proteins are generally associated with
 - a. heavy chain gammopathy
 - b. cryoglobulinemia
 - c. multiple myeloma
 - d. cytomegalic viral disease
 - e. Hemochromatosis
- 96. A 75 year old man is found to have prolonged bleeding from intravenous puncture sites. Platelet aggregation is inhibited by which of the following?
 - a. adenosine diphosphate (ADP)
 - b. calcium
 - c. magnesium
 - d. aspirin
 - e. Non of the above
- 97. All of the following statements about pancreatic somatostatin are true except
 - a. It is secreted by δ cells of islets of Langerhans
 - b. It stimulates the secretion of gastrin
 - c. It inhibits the secretion of secretin

- d. It inhibits the secretion of cholecystokinin pancreozymin
 - e. it inhibits the secretion of gastrin
- 98.** Which of the following statements concerning vitamin D is correct?
- a. Chronic renal failure requires administration of 1-25- dihydroxycholecalciferol.
 - b. It is required in the diet of individual exposed to sunlight.
 - c. 25-hydroxycholecalciferol is the active form of the vitamin.
 - d. It is released when there is a rise in blood calcium levels.
 - e. It is activated under the effect of parathyroid hormone
- 99.** What is the principal cation of intracellular fluid?
- a. K^+
 - b. Na^+
 - c. Ca^{2+}
 - d. Mg^{2+}
 - e. HCO_3
- 100.** The Nonalcoholic fatty liver disease (NAFLD) is caused by:
- a. Excess $NADH^+ + H^+$ produced from the oxidation of ethanol to acetaldehyde.
 - b. Raised level of plasma free fatty acids with subsequent formation of excess triacylglycerol.
 - c. Metabolic block in the production or secretion of plasma lipoproteins.
 - d. Both (B) and (C) choices are correct.
 - e. None of the above

✱ With best wishes ✱

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