rrhea is
Excretion of cholesterol in feces
Excretion of chylomicrons in feces
Excretion of large amount of fats in feces
Excretion of bile salts in urine

16 Ubiquinone is:
(a) Present in complex III
(b) Present in complex II
(c) Is a part of complex V
(d) Is a mobile electron carrier

NP is:
An inhibitor of ETC
An uncoupler of ETC
An antidote of cyanide poisoning
An antidote of CO poisoning

18 Rotenone is:
(a) An inhibitor of complex I in ETC
(b) An uncoupler of complex I in ETC
(c) Is an inhibitor of ATP synthase in ETC
(d) Is an inhibitor of cytochrome oxidase in ETC

e reduced equivalents of tertiary metabolism that ter into the ETC are:
) NADPH & FAD
) NAD & FAD
NADH & $FADH_2$
d) O_2 & H_2O

20 In ETC cytochrome c is:
(a) Complex IV
(b) Complex III
(c) A mobile electron carrier
(d) It pumps protons out of mitochondrial matrix

Complex IV in ETC:
(a) Pumps out 4 protons out of the matrix
(b) Pumps in 4 proteins into the matrix
(c) Pumps out 2 protons out of the matrix
(d) Synthesizes ATP

22 ATPs are synthesized in ETC by:
(a) Complex IV
(b) Succinate dehydrogenase complex
(c) Pyruvate dehydrogenase complex
(d) Complex V

In ETC an uncoupler:
(a) Stops the flow of electrons
(b) Stops the pumping of protons
(c) Uncouples the mobile carriers from ETC
(d) Uncouples the oxidation from phosphorylation

24 Thermogenin is:
(a) A natural inhibitor found in infants
(b) A natural uncoupler
(c) Only found in infants among humans
(d) Both (b) & (c) are correct

When energy from a high energy compound is directly transferred to nucleoside diphosphate to form a triphosphate without the help of electron transport chain it is called:
(a) Redox potential
(b) Redox couple
(c) ATP synthase complex
(d) Substrate level phosphorylation

26 Which of the following complexes in Electron Transport chain does not liberate enough energy to pump protons out of the mitochondrial matrix?
(a) Complex I
(b) Complex II
(c) Complex III
(d) Complex IV

27 Electron transport chain in located:
(a) In the cytoplasm
(b) On the outer side of outer mitochondrial membrane
(c) On the inner side of outer mitochondrial membrane
(d) On the inner mitochondrial membrane

28 Citric acid cycle (Krebs' cycle) takes place:
(a) In the cytoplasm of cell
(b) In the cytoplasm of mitochondria
(c) In the intermembranous space of mitochondria
(d) In the matrix of mitochondria

29 Inner mitochondrial membrane is:
(a) Highly selective in permeability
(b) Permeable only to H^+ ions
(c) Impermeable
(d) Freely permeable

30 Cyanide combines with:
(a) Iron in Fe^{+2} state in complex IV
(b) Iron in Fe^{+3} state in complex V
(c) Iron in Fe^{+3} state in complex IV
(d) CuA & CuB in complex IV

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: [redacted]

Roll No. : [redacted]

Marks obtained: _____

TEST ON G.I.T. & BIOENERGETICS – JAN. 2019
SECOND YEAR MBBS – MCQs

Total marks: 30
Time Allowed: 20 minutes

Select one best answer

1 **Which of the following statements regarding lipid digestion and absorption is true?**
(a) Pancreatic lipase emulsifies lipids
(b) The products of lipid digestion are resynthesized into triacylglycerols in intestinal epithelial cells.
(c) The products of lipid digestion are resynthesized into micelles in intestinal cells
(d) The products of lipid digestion are absorbed by active transport

2 **The function of enzyme enterokinase is to**
(a) Cause bicarbonate secretion by the pancreas
(b) Stimulate secretion of gastrin by the stomach
(c) Activate trypsinogen into trypsin
(d) Activate pepsinogen into pepsin

3 **The Gall bladder:**
(a) Synthesizes bile
(b) Stores bile
(c) Is stimulated to contract by the hormone CCK
(d) B and C

4 **Which is the inhibitor of gastric juice secretion?**
(a) Corticosteroids
(b) Caffeine
(c) Histamine
(d) Secretin

5 **1-6 glycosidic bonds is cleaved by which of the following enzyme?**
(a) Maltase
(b) Isomaltase
(c) Amylase
(d) Lactase

6 **Proteolytic enzymes are produced by**
(a) Stomach
(b) Small intestine
(c) Pancreas
(d) All of above

7 **Endopeptidases include all of following, except**
(a) Trypsin
(b) Carboxypeptidase
(c) Chymotrypsin
(d) Pepsin

8 **Which of the following regarding Pepsin is correct?**
(a) Secreted by oxyntic cells
(b) Converted to pepsin by Trypsin
(c) It converts proteins to proteoses and peptones
(d) Pepsin is an exopeptidase

9 **Regulation of saliva is by:**
(a) Unconditioned reflex
(b) Conditional Reflex
(c) Spontaneous secretion
(d) All of the above

10 **Regarding saliva which of the following is incorrect:**
(a) Contains amylase and lipase
(b) Contains salivary proteolytic enzymes
(c) Contains secretory IgA and lysozymes
(d) Contains peroxidases

11 **Gastric juice contains all of the following except**
(a) HCl
(b) Pepsin
(c) Intrinsic factor
(d) Vitamin B 12

12 **Chyluria is the**
(a) Excretion of milky urine
(b) Obstruction in transportation phase of lipid digestion in lacteals
(c) An abnormal connection between urinary tract and lymphatic drainage
(d) All of above

13 **Activation of fatty acids inside the intestinal mucosa cells is by**
(a) Apo-B48
(b) Pepsin
(c) Thiokinase
(d) Lipase

14 **Calcium ions facilitate action of lipase by**
(a) Facilitating the binding of the enzyme to the fats
(b) Inhibition of emulsification
(c) Micelle formation
(d) True solution formation

15 All of the following is true about Rennin except:
(a) It is involved in curdling of milk
(b) Also called as chymosin
(c) It is not present in adults
(d) It converts calcium paracaseinate to casein

16 Which of the following statement is incorrect
(a) Gastric juice is neutralized by pancreatic $NaHCO_3$
(b) Trypsin, chymotrypsin and elastase are active at neutral pH
(c) Amino acid serine is present in the active center of trypsin only
(d) Procarboxypeptidase is activated by trypsin

17 Which of the following is incorrect regarding absorption of amino acids
(a) The transport of L-amino acids occurs by an active process
(b) D-amino acids absorb by simple diffusion
(c) D-Amino acids are more rapidly absorbed than L-amino acids
(d) D and L amino acids absorption is at ileum and distal jejunum

18 Regarding absorption of proteins all is false except:
(a) Infants cannot absorb intact proteins right after birth
(b) Uptake of proteins is by special process endocytosis or pinocytosis in adults
(c) Macromolecular absorption in adults cannot cause food allergies
(d) Intact proteins absorption in infants is crucial for immunoglobulin transfer

19 Choose the correct statement about Hartnup's disease
(a) Tryptophan absorption is the most effected
(b) Tyrosine absorption is the most effected
(c) Phenylalanine absorption is the most effected
(d) Vitamin B12 is inadequate

20 Regulation of saliva is by:
(a) Unconditioned reflex
(b) Conditional Reflex
(c) Spontaneous secretion
(d) All of the above

21 Regarding saliva which of the following is incorrect:
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23 Chyluria is the
(a) Excretion of milky urine
(b) Obstruction in transportation phase of lipid digestion in lacteals
(c) An abnormal connection between urinary tract and lymphatic drainage
(d) All of above

24 Most Dietary TAG is absorbed from intestinal lumen after hydrolysis as
(a) Glycerol-P and FA
(b) Acyl CoA
(c) Acyl CoA and glycerol
(d) FA and 2 MAG

25 "Micelles" formed in intestine
(a) Contain mostly TAG
(b) Are secreted by intestinal epithelial cells
(c) Are mainly absorbed in stomach wall
(d) Are smaller than droplets of emulsified fats

26 Lipase in presence of bile salts for its optimal activity combines with a protein co-enzyme called
(a) Amylase
(b) Kinin
(c) Pepsin
(d) Colipase

27 Activation of fatty acids inside the intestinal mucosa cells is by
(a) Apo-B48
(b) Pepsin
(c) Thiokinase
(d) Lipase

28 2-MAG is converted to 1-MAG by enzyme
(a) Lipase
(b) Isomerase
(c) Cholesterol esterase
(d) Phospholipase A2

29 Calcium ions facilitate action of lipase by
(a) Facilitating the binding of the enzyme to the fats
(b) Inhibition of emulsification
(c) Micelle formation
(d) Blue solution formation

30 Steatorrhea is
(a) Excretion of cholesterol in feces
(b) Excretion of chylomicrons in feces
(c) Excretion of large amount of fats in feces
(d) Excretion of bile salts in urine

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: _____

Roll No. : _____

Marks obtained: _____

CLASS TEST ON G.I.T. - 2018
MBBS PART II– MCQs

Total marks: 30 **Time Allowed:** 20 minutes

Select one best answer

1 Which of the following regarding digestion and absorption of carbohydrates is true?
- (a) Carbohydrate digestion begins in the mouth
- (b) Polysaccharides are broken down to monosaccharides by amylase
- (c) Disaccharides are actively transported across the epithelium of the small intestine
- (d) All of the above

2 Which of the following statements regarding lipid digestion and absorption is true?
- (a) Pancreatic lipase emulsifies lipids
- (b) The products of lipid digestion are resynthesized into triacylglycerols in intestinal epithelial cells.
- (c) The products of lipid digestion are resynthesized into micelles in intestinal cells
- (d) The products of lipid digestion are absorbed by active transport

3 The function of enzyme enterokinase is to
- (a) Cause bicarbonate secretion by the pancreas
- (b) Stimulate secretion of gastrin by the stomach
- (c) Activate trypsinogen into trypsin
- (d) Activate pepsinogen into pepsin

4 Emulsification of fats
- (a) Results in the formation of small fat droplets
- (b) Depends upon the amphipathic structure of bile salts
- (c) Result in the formation of micelles
- (d) A and B

5 The Gall bladder:
- (a) Synthesizes bile
- (b) Stores bile
- (c) Is stimulated to contract by the hormone CCK
- (d) B and C

6 Which of the following substances is transported across the intestinal epithelial cells by means of a special protein called the 'intrinsic factor'?
- (a) Amino acids
- (b) Sodium
- (c) Glucose
- (d) Vitamin B_{12}

7 Which is the inhibitor of gastric juice secretion?
- (a) Corticosteroids
- (b) Caffeine
- (c) Histamine
- (d) Secretin

8 Which statement is true regarding salivary amylase?
- (a) It requires Na^+ ions for its activation
- (b) Hydrolyzes β 1-4 linkages
- (c) Optimum pH is 3
- (d) Produces maltose & maltotriose from polysaccharides

9 1-6 glycosidic bonds is cleaved by which of the following enzyme?
- (a) Maltase
- (b) Isomaltase
- (c) Amylase
- (d) Lactase

10 Which of the following monosaccharides has the fastest rate of absorption?
- (a) Galactose 110 } active absorption
- (b) Glucose 100 }
- (c) Fructose
- (d) Mannose 43 } 10 } Facilitated Transport

11 Glucose uptake in most of the cells of the body including brain and RBCs is by:
- (a) GluT 2
- (b) GluT 3
- (c) GluT 1
- (d) GluT 4

12 Proteolytic enzymes are produced by
- (a) Stomach
- (b) Small intestine
- (c) Pancreas
- (d) All of above

13 Endopeptidases include all of following, except
- (a) Trypsin
- (b) Carboxypeptidase
- (c) Chymotrypsin
- (d) Pepsin

14 Which of the following regarding Pepsin is correct?
- (a) Secreted by oxyntic cells
- (b) Converted to pepsin by Trypsin
- (c) It converts proteins to proteoses and peptones
- (d) Pepsin is an exopeptidase

AZRA NAHEED MEDICAL COLLEGE

15 In Phenylketonuria, deficient enzyme is
- (a) Phenylalanine hydroxylase
- (b) Phenylalanine decarboxylase
- (c) Phenylalanine transferase
- (d) Dehydrogenase

16 Donor of Nitrogen atoms for urea cycle are
- (a) Glycine and ammonia
- (b) Aspartate and ammonia
- (c) Tryptophan and glycine
- (d) HCO_3 and threonine

17 Compound which interlinks urea cycle and citric acid cycle is
- (a) Aspartate
- (b) Malate
- (c) Fumarate
- (d) Oxaloacetate

18 Conversion of arginine to ornithine and urea is catalyzed by
- (a) Arginase
- (b) Arginine carboxylase
- (c) Arginine oxidase
- (d) Arginine kinase

19 Steatorrhea is caused by
- (a) Malabsorption of aromatic amino acids
- (b) Malabsorption of glucose
- (c) Malabsorption of nucleoproteins
- (d) Malabsorption of fat

20 All of the following statements about phenylketonuria are correct except
- (a) Phenylpyruvate and phenyacetate are excreted in urine
- (b) It can lead to mental retardation
- (c) Phenylalanine can't be converted to tyrosine
- (d) There will be hyperpigmentation

21 Ammonia is transported from brain & body cells to liver mainly in form of
- (a) Free ammonia
- (b) Glutamic acid
- (c) Asparagine
- (d) Glutamine

22 The major site of synthesis of urea is
- (a) Brain
- (b) Skeletal muscles
- (c) Heart muscles
- (d) Liver

23 All of the following statements about Albinism are correct except
- (a) There will be mental retardation
- (b) Tyrosine will be deficient in melanocytes
- (c) Eyes are hypopigmented
- (d) Skin is hypopigmented

24 Nitric oxide is synthesized by Nitric Oxide synthase and derived from which amino acid?
- (a) Tryptophan
- (b) Arginine
- (c) Cysteine
- (d) Methionine

25 In case of renal failure which compound of protein metabolism is raised in plasma?
- (a) Creatinine
- (b) Isoleucine
- (c) Threonine
- (d) Glycine

26 Decarboxylation of which of the following amino acids forms a vital compound that functions in allergic & gastric reactions?
- (a) Alanine
- (b) Proline
- (c) Histidine
- (d) Hydroxy proline

27 Which of the following compounds is not formed from tyrosine?
- (a) Thyroid hormones
- (b) Epinephrine
- (c) Melanin
- (d) Cortisol

28 First step of urea cycle occurs in
- (a) Mitochondria
- (b) Cytosol
- (c) Smooth endoplasmic reticulum
- (d) Rough endoplasmic reticulum

29 Which of the following amino acid is ketogenic?
- (a) Leucine
- (b) Alanine
- (c) Threonine
- (d) Aspartate

30 Which of the following amino acid is both glucogenic & ketogenic?
- (a) Serine
- (b) Threonine
- (c) Tyrosine
- (d) Leucine

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: _____

Roll No: _____

Marks obtained: _____

PROTEINS METABOLISM - 2019
SECOND YEAR MBBS - MCQs

Total marks: 30
Time allowed 20 min.

Encircle one best answer.
Any cutting or overwriting will not be accepted and no marks will be given even if the answer is correct.

1 Cysteine is reduced to cysteine by
- (a) Cystine reductase
- (b) Cystine oxidase
- (c) Cysteine reductase
- (d) Cysteine oxidase

2 Amino acids without genetic code are
- (a) Hydoxylysine
- (b) Hydroxyproline
- (c) Selenocysteine
- (d) All of the above

3 During transamination by alanine aminotransferases which of the following ketoacids can act as recipient of amino group?
- (a) Pyruvate
- (b) Alpha ketoglutarate
- (c) Oxaloacetate
- (d) All of the above

4 Which of the following amino acids participates in coenzyme A synthesis?
- (a) Serine
- (b) Tyrosine
- (c) Histidine
- (d) Cysteine

5 Glucose Alanine shuttle is present in between
- (a) Liver & Brain
- (b) Brain & Muscle
- (c) Muscle & Liver
- (d) Intestine & Muscle

6 Glutamate dehydrogenase is present in
- (a) Cytosol
- (b) Endoplasmic reticulum
- (c) Lysosomes
- (d) Mitochondria

7 Number of ATPs used in the urea cycle are
- (a) 1
- (b) 2
- (c) 3
- (d) 4

8 Ornithine enters mitochondria in urea cycle by
- (a) Active transport
- (b) Diffusion
- (c) Special transport system
- (d) Malate shuttle

9 Ammonia is toxic because
- (a) Alpha-ketoglutarate is not converted into glutamic acid
- (b) Glutamate is not converted into α-ketoglutarate
- (c) It blocks the urea cycle
- (d) It blocks glycolysis

10 In the blood, ammonia is transported in the form of
- (a) Alanine
- (b) Glutamine
- (c) Urea
- (d) All of the above

11 Enzyme involved in the synthesis of Ntric Oxide (NO) from Arginine is
- (a) NO synthetase
- (b) NO synthase
- (c) NO transferase
- (d) NO carboxylase

12 Amino acid which is not degraded in liver
- (a) Leucine
- (b) Iso leucine
- (c) Valine
- (d) All of the above

13 Homocystinuria is the outcome of defective metabolism of
- (a) Cysteine
- (b) Methionine
- (c) Tyrosine
- (d) Glycine

14 Source of carbon of urea synthesis comes from
- (a) Glucose
- (b) Glycine
- (c) HCO^-_3
- (d) Methionine

2) Hepa...
3) Pregnancy
4) Burn
5) Trauma.
6) Those who undergoes hemodialysis.

Alanine
Acetal dehyde

15 Oxidative deamination of amino acids primarily occurs in

(a) Bones and spleen
(b) Liver and kidney
(c) GIT and pancreas
(d) Liver and spleen
(e) Bones and kidneys

16 Number of ATP used in urea cycle are

(a) 2
(b) 3
(c) 4
(d) None
(e) One

17 Enzyme of the rate limiting step of urea cycle is

(a) Carbamoyl Phosphate Synthetase
(b) Carbamoyl Phosphate Synthase
(c) Arginine succinate Synthetase
(d) Arginase
(e) Glutamate dehydrogenase

18 N-acetylglutamate, the regulator of urea cycle is for by

(a) Acetate and Arginine
(b) Glutamate and Acetyl Co A
(c) Glutamate and Acetate
(d) Glutamate and Arginine
(e) Glutamine and Arginine

19 Normal blood ammonia concentration in µmol/L is

(a) 100 – 200
(b) 50 – 100
(c) 5 – 50
(d) 200 – 500
(e) Should not be present

5-35 µmol/l

20 Active form of methionine is

(a) S Adenosyl homocysteine
(b) S Adenosyl methionine
(c) Homocysteine
(d) Cystathionine
(e) α – ketoglutarate

21 The enzyme required for conversion of tyrosine to DOPA is

(a) Tyrosine transaminase
(b) Tyrosine hydroxylase
(c) DOPA hydroxylase
(d) DOPA dehydrogenase
(e) DOPA decarboxylase

22 Final products of tyrosine degradation are

(a) Acetoacetate and fumarate
(b) Acetoacetate and homogentisate
(c) Fumarate and dopamine
(d) Epinephrine and norepinephrine
(e) Epinephrine and melanin

23 In mammals, the largest amount of serotonin is synthesized in

(a) Liver
(b) Spleen
(c) Bones
(d) Intestinal cells
(e) Blood

24 Nitric Oxide (NO) is produced in our body by the metabolism of

(a) Methionine
(b) Glycine
(c) Histidine
(d) Glutamate
(e) Arginine

25 Carrier compounds that transfer "one carbon units" to other compounds are

(a) THF
(b) Methionine
(c) Glycine
(d) Both a & b
(e) Both a & c

26 Most common inherited disease of amino acid metab is

(a) Phenylketonuria
(b) Albinism
(c) Alkaptonuria
(d) Homocysteinuria
(e) Cystinuria

27 Phenylketonuria is caused by the deficiency of

(a) Phenylalanine oxidase
(b) Phenylalanine decarboxylase
(c) Phenylalanine reductase
(d) Phenylalanine hydroxylase
(e) Phenylalanine synthase

28 The system predominately affected in phenylketonuri

(a) Liver
(b) Spleen
(c) Intestine
(d) Kidney
(e) Brain

29 In Maple syrup urine disease, there is deficiency of

(a) Aminotransferase
(b) Alpha keto acid dehydrogenase
(c) Thiamine
(d) Decarboxylase
(e) Lactate dehydrogenase

30 Common reactions present in metabolism of branche chain amino acids are

(a) First two
(b) Last three
(c) First three
(d) Last two
(e) None of the above

vi) In those who undergoes hemodialysis.

Alanine
Acetal dehyde

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

~~CHEMISTRY OF PROTEINS~~ Prot. Metabolism Name: _____
CLASS TEST 2nd YEAR Roll No. _____
MCQs

Total marks: 30
Time Allowed: 20 minutes

Metabolism Nucleic acid

Select one best answer

1 Which of the following groups of amino acids take part in the biosynthesis of purines
(a) Arginine, Serine, Methionine
(b) Phenylalanine, Glutamic acid, Histidine
(c) Glycine, Tyrosine, Aspartic acid
(d) Glycine, Aspartic acid, Alanine
(e) Aspartic acid, Glutamine, Glycine

2 Which of the following enzymes is needed for the biosynthesis of Pyrimidines?
(a) Carbamoyl Phosphate Synthetase – I (CPS – I)
(b) Xanthine Oxidase
(c) Nucleotidase
(d) Carbamoyl Phosphate Synthetase – II (CPS – II)
(e) Hypoxanthine guanine phosphoribosyl transferase (HGPRT)

3 Nitrogen atom no. 1 of Purine is donated by
(a) Glycine
(b) Glutamine
(c) Aspartate
(d) Alanine
(e) Serine

4 Nitrogen atoms no 3 and no 9 or purines are donated by
(a) Glycine
(b) Glutamine
(c) Aspartic acid
(d) Histidine
(e) Glutamine

5 Which of the following is not a nucleoside?
(a) Uridine
(b) Pseudouridine
(c) Thymidine
(d) Guanine
(e) Cytidine

6 Purine biosynthesis does not take place in
(a) Liver and kidneys
(b) RBCs and brain
(c) Skeletal muscles and cardiac muscles
(d) Spleen and lungs
(e) Spleen and liver

7 In Lesch Nyhan syndrome deficient enzyme is
(a) Glycogen synthase
(b) CPS – I
(c) CPS – II
(d) HGPRase I
(e) Deaminase

8 Which of the following amino acids is incorporated into purine molecule and becomes atoms no. 4, 5, and 7 of purine?
(a) Glycine
(b) Alanine
(c) Arginine
(d) Histidine
(e) Aspartic acid

9 Hyperuricemia is associated specifically with
(a) Diabetes mellitus
(b) Diabetes insipidus
(c) Gout
(d) Uremia
(e) Hyperglycemia

10 β- alanine, NH_3, and CO_2 are catabolic end products of
(a) Urea
(b) Triacylglycerol
(c) Eicosanoids
(d) Purine
(e) Pyrimidine

11 Uridine and cytidine are used for the treatment of
(a) Gout
(b) Lesch Nyhan syndrome
(c) Orotic aciduria
(d) Uremia
(e) Hypoglycemia

12 Allopurinol, a uric acid lowering drug is competitive inhibitor of
(a) HGPRT
(b) Phosphoribosyl Amido transferase
(c) Xanthine oxidase
(d) Orotate Phosphoribosyl transferase
(e) Oridine – 5 Phospho decarboxylase

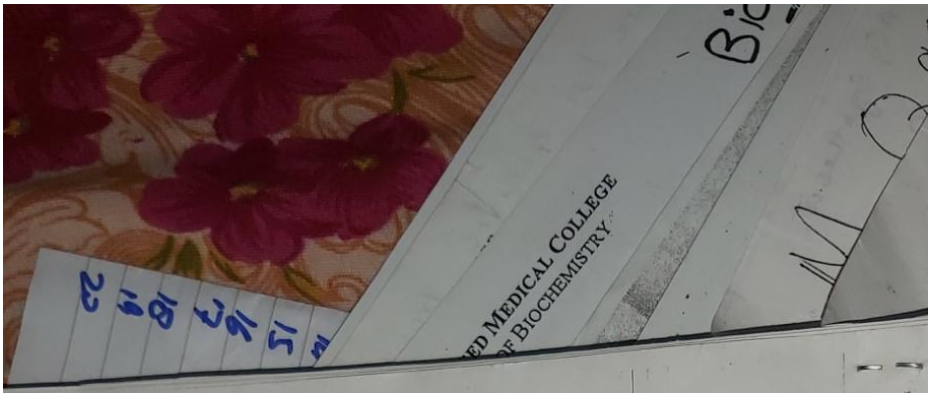
13 Tyrosine is synthesized from
(a) Dopamine
(b) Tryptophan
(c) Phenylalanine
(d) Glycine
(e) Cysteine

14 Coenzyme for all aminotransferases is
(a) Vitamin B6
(b) Co A
(c) Fe^{++}
(d) Biotin
(e) Folic acid

P.T.O

Urea gives hemodialysis.

Alanine
Acetaldehyde



17 **The number of amino acids in human growth hormone is**
(A) 91
(B) 151
(C) 191
(D) 291

18 **Cortisol is synthesized in**
(A) Zona fasiculata
(B) Zona glomerulosa
(C) Zona reticularis
(D) Chromaffin cells

19 **ADH**
(A) Reabsorbs water from renal tubules
(B) Excretes water from renal tubules
(C) Excretes hypotonic urine
(D) Causes low specific gravity of urine

20 **TSH stimulates the synthesis of**
(A) Thyroxine
(B) Adrenocorticoids
(C) Epinephrine
(D) Insulin

21 **Parathyroid hormone**
(A) Is released when serum Ca++ is too high
(B) Inactivates vitamin D
(C) Is secreted when Ca++ is too low
(D) Depends on vitamin K for adequate activity

22 **Insulin stimulates**
(A) Hepatic glycogenolysis
(B) Hepatic glycogenesis
(C) Lipolysis
(D) Gluconeogenesis

23 **The normal resting state of humans, most of the blood glucose burnt as "fuel" is consumed by**
(A) Liver
(B) Brain
(C) Kidneys
(D) Adipose tissue

24 **Glucokinase**
(A) Is widely distributed and occurs in most mammalian tissues
(B) Has a high km for glucose and hence is important in the phosphorylation of glucose primarily after ingestion of a carbohydrate rich meal
(C) Is widely distributed in Prokaryotes
(D) None of these

25 **During starvation, the first reserve nutrient to be depleted is**
(A) Glycogen
(B) Proteins
(C) Triglycerides
(D) Cholesterol

26 **Synthesis of the following enzymes is increased during starvation.**
(A) Digestive enzymes
(B) Gluconeogenic enzymes
(C) Urea cycle enzymes
(D) Glucokinase

27 **Delta Cells of Islets of Langerhans secrete**
(A) Insulin
(B) Glucagon
(C) Somatostatin
(D) Cholecystokinin

28 **Insulin is made up of**
(A) A single polypeptide chain having 51 amino acid residues
(B) A single polypeptide chain having 84 amino acid residues
(C) A-chain having 21 and B-chain having 30 amino acid residues
(D) A-chain having 30 and B-chain having 21 amino acid residues

29 **Propionyl CoA is formed on oxidation of**
(A) Monounsaturated fatty acids
(B) Polyunsaturated fatty acids
(C) Fatty acids with odd number of carbon atoms
(D) None of these

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(A) Their synthesis increases in diabetes mellitus
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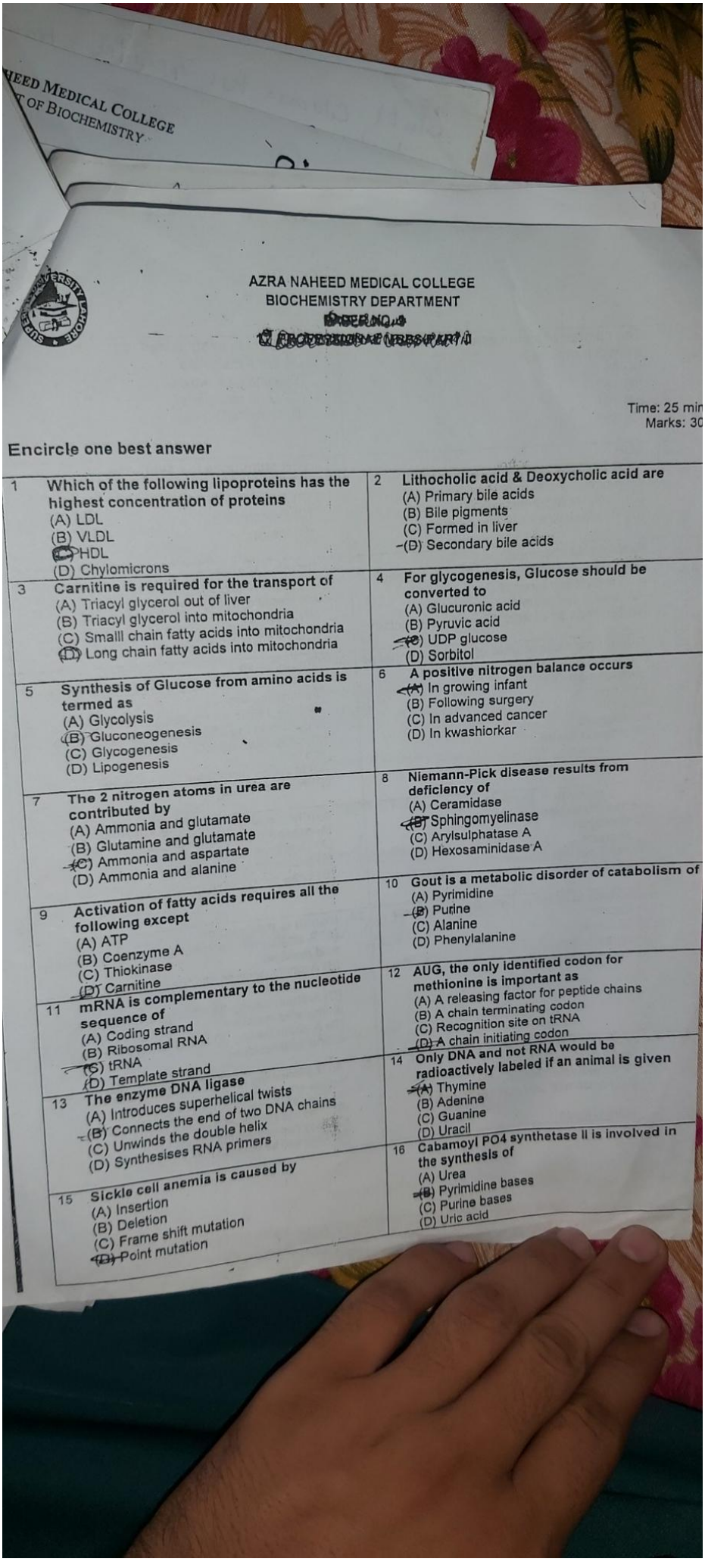

EED MEDICAL COLLEGE
T OF BIOCHEMISTRY

AZRA NAHEED MEDICAL COLLEGE
BIOCHEMISTRY DEPARTMENT

Time: 25 min
Marks: 30

Encircle one best answer

1 **Which of the following lipoproteins has the highest concentration of proteins**
(A) LDL
(B) VLDL
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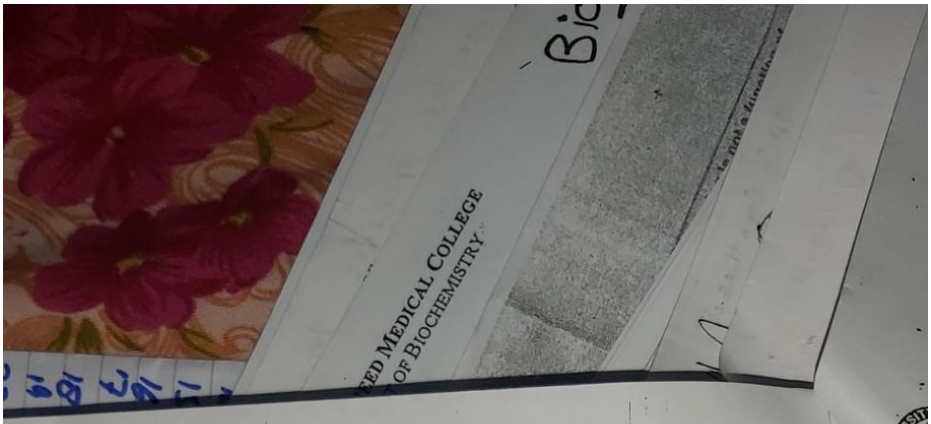

In DNA, the complementary base of adenine is
(A) Guanine
(B) Cytosine
(C) Uracil
(D) Thymine

16 All mammalian steroid hormones are formed from
(A) Purine
(B) Pyrimidine
(C) Cholesterol
(D) Pyrrole

The predominant glucocorticoid is
(A) Cortisol
(B) Aldosterone
(C) Dehydroephiandrosterone
(D) Androstenedione

18 Thyroid hormones are synthesized by the iodination of the amino acid:
(A) Glycine
(B) Phenylalanine
(C) Alanine
(D) Tyrosine

9 Which of the following is the indication of hyper thyroidism
(A) Tremors
(B) Intolerance to heat
(C) Irritibility
(D) All of these

20 Acromegaly results due to excessive release of
(A) Thyroxine
(B) Growth hormone
(C) Insulin
(D) Glucagon

:1 Non protein region on DNA is
(A) 7-methyl guanosine cap
(B) Exons
(C) Introns
(D) All of these

22 Alpha cells of islet of langerhans of the pancreas secrete
(A) Insulin
(B) Glucagon
(C) Somatostatin
(D) Pancreatic polypeptide

:3 Tissues form lactic acid from glucose. This phenomenon is termed as
(A) Aerobic glycolysis
(B) Oxidation
(C) Oxidative phosphorylation
(D) Anaerobic glycolysis

24 The enzymes involved in Phosphorylation of glucose to glucose 6- phosphate are
(A) Hexokinase
(B) Glucokinase
(C) Phosphofructokinase
(D) Both (A) and (B)

:5 The hydrolysis of Glucose-6-P is catalysed by a phosphatase that is not formed in which of the following?
(A) Liver
(B) Kidney
(C) Muscle
(D) Small intestine

26 The co enzyme which is absent in Electron Transport Chain
(A) FMN
(B) NAD
(C) UDP
(D) Co Q

:7 During starvation, the first reserve nutrient to be depleted is
(A) Glycogen
(B) Proteins
(C) Triglycerides
(D) Cholesterol

28 Synthesis of the following enzymes is increased during starvation.
(A) Digestive enzymes
(B) Gluconeogenic enzymes
(C) Urea cycle enzymes
(D) Glucokinase

:9 Beta oxidation of fatty acids occur
(A) Cytosol
(B) Matrix of mitochondria
(C) On the outer layer of mitochondria
(D) on the microsome

30 Apo B -100 are present in
(A) Chylomicrons
(B) VLDL
(C) LDL
(D) Both B & C are correct

Bioenergetic

AZRA NAHEED MEDICAL COLLEGE
BIOCHEMISTRY DEPARTMENT
PAPER-II
2nd PROFESSIONAL MBBS PART-II

2nd Yr
MBBS
Mcqs

Time: 25 min
Marks: 30

cle one best answer

ldolase A converts) Fructose-6-PO4 to glyceraldehydes-3-PO4 & hydroxy acetone PO4 B) Glucose-6- PO4 to Fructose-6-PO4 C) fructose 1-6 bisphosphate to glyceraldehydes-3-PO4 & Dihydroxy acetone PO4 D) None of these	2 Which of the following statements regarding T.C.A cycle is true? (A) It is an anaerobic process (B) It occurs in cytosol (C) It contains no intermediates for Gluconeogenesis ✓(D) It is amphibolic in nature
Tyrosine can be used for the synthesis of (A) Epinephrine (B) Norepinephrine (C) Thyroxine (D) All of these	4 When O_2 supply is inadequate, pyruvate is converted to (A) Phosphopyruvate (B) Acetyl CoA ✓(C) Lactate (D) Alanine
The main site of urea synthesis in mammals is ✓(A) Liver (B) Skin (C) Intestine (D) Kidney	6 Beta Oxidation of fatty acids requires all the following coenzymes except (A) CoA (B) FAD (C) NAD ✓(D) NADP
Lovastatin is a (A) Competitive inhibitor of acetyl CoA carboxylase (B) Competitive inhibitor of HMG CoA synthetase (C) Non-competitive inhibitor of HMG CoA reductase ✓(D) Competitive inhibitor of HMG CoA reductase	8 Chylomicron remnants are catabolised in (A) Intestine (B) Adipose tissue ✓(C) Liver (D) Liver and intestine
In DNA replication the enzyme required in the first step is (A) DNA directed polymerase ✓(B) Unwinding proteins (C) DNA polymerase (D) DNA ligase	10 Lesch-Nyhan syndrome, the sex linked, recessive absence of HGPRTase, may lead to ✓(A) Compulsive self destructive behaviour with elevated levels of urate in serum (B) Hypouricemia due to liver damage (C) Failure to thrive and megaloblastic anemia (D) Protein intolerance and hepatic encephalopathy
1 Which of the following has the highest density ✓(A) HDL (B) VLDL (C) Chylomicrons (D) LDL	12 Precursors for pyrimidine ring synthesis are ✓(A) Glycine & ammonia (B) Glutamine & tyrosine (C) Carbamyl PO4 & aspartate (D) All of these
13 The minimum effective size of an operator for lac repressor binding is (A) 5 base pairs (B) 10 base pairs (C) 15 base pairs (D) 17 base pairs	14 Okazaki fragment is related to ✓(A) DNA synthesis (B) Protein synthesis (C) mRNA formation (D) tRNA formation

17 **The number of amino acids in human growth hormone is**
(A) 91
(B) 151
(C) 191
(D) 291

18 **Cortisol is synthesized in**
(A) Zona fasiculata
(B) Zona glomerulosa
(C) Zona reticularis
(D) Chromaffin cells

19 **ADH**
(A) Reabsorbs water from renal tubules
(B) Excretes water from renal tubules
(C) Excretes hypotonic urine
(D) Causes low specific gravity of urine

20 **TSH stimulates the synthesis of**
(A) Thyroxine
(B) Adrenocorticoids
(C) Epinephrine
(D) Insulin

21 **Parathyroid hormone**
(A) Is released when serum Ca++ is too high
(B) Inactivates vitamin D
(C) Is secreted when Ca++ is too low
(D) Depends on vitamin K for adequate activity

22 **Insulin stimulates**
(A) Hepatic glycogenolysis
(B) Hepatic glycogenesis
(C) Lipolysis
(D) Gluconeogenesis

23 **The normal resting state of humans, most of the blood glucose burnt as "fuel" is consumed by**
(A) Liver
(B) Brain
(C) Kidneys
(D) Adipose tissue

24 **Glucokinase**
(A) Is widely distributed and occurs in most mammalian tissues
(B) Has a high km for glucose and hence is important in the phosphorylation of glucose primarily after ingestion of a carbohydrate rich meal
(C) Is widely distributed in Prokaryotes
(D) None of these

25 **During starvation, the first reserve nutrient to be depleted is**
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(C) Somatostatin
(D) Cholecystokinin

28 **Insulin is made up of**
(A) A single polypeptide chain having 51 amino acid residues
(B) A single polypeptide chain having 84 amino acid residues
(C) A-chain having 21 and B-chain having 30 amino acid residues
(D) A-chain having 30 and B-chain having 21 amino acid residues

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(A) Monounsaturated fatty acids
(B) Polyunsaturated fatty acids
(C) Fatty acids with odd number of carbon atoms
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AZRA NAHEED MEDICAL COLLEGE
BIOCHEMISTRY DEPARTMENT

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(C) Purine bases
(D) Uric acid

7 In DNA, three hydrogen bonds are formed between
(A) Adenine and guanine
(B) Adenine and thymine
(C) Guanine and cytosine
(D) Thymine and cytosine

18 ACTH stimulates the secretion of
(A) Glucocorticoids
(B) Epinephrine
(C) Thyroxine
(D) Luteinizing hormone

19 Excessive secretion of ACTH causes
(A) Cushing's syndrome
(B) Addison's disease
(C) Myxoedema
(D) Thyrotoxicosis

20 Catecholamine hormones are synthes
(A) Chromaffin cells of adrenal medulla
(B) Zona glomerulosa of adrenal cortex
(C) Zona fasciculate of adrenal cortex
(D) Zona reticularis of adrenal cortex

1 Epinephrine is derived from norepinephrine by
(A) Decarboxylation
(B) Hydroxylation
(C) Oxidation
(D) N-methylation

22 Insufficient free T3 and T4 results in
(A) Grave's disease
(B) Myxedema
(C) Cushing's syndrome
(D) Gigantism

Proinsulin has
(A) 74 amino acids
(B) 86 amino acids
(C) 105 amino acids
(D) 109 amino acids

24 Diabetes insipidus is caused by deficien
secretion of
(A) Insulin
(B) Glucagon
(C) Vasopressin
(D) Oxytocin

Tricarboxylic acid cycle to be continuous requires the regeneration of
(A) Pyruvic acid
(B) oxaloacetic acid
(C) □-oxoglutaric acid
(D) Malic acid

26 Most of the metabolic pathways are either anabolic or catabolic. Which of the followi pathways is considered as "amphibolic" in nature?
(A) Glycogenesis
(B) Glycolytic pathway
(C) Lipolysis
(D) TCA cycle

An uncoupler of oxidative Phosphorylation such as dinitrophenol
(A) Inhibits electron transport and ATP synthesis
(B) Allow electron transport to proceed without ATP synthesis
(C) Inhibits electron transport without impairment of ATP synthesis
(D) Specially inhibits cytochrome b

28 Which of the following can be oxidized by B oxidation pathway?
(A) Saturated fatty acids
(B) Monosaturated fatty acids
(C) Polyunsaturated fatty acids
(D) All of these

Cyclo-oxygenase is involved in the synthesis of
(A) Prostaglandins
(B) Thromboxanes
(C) Both (A) and (B)
(D) None of these

30 Synthesis of prostaglandins is inhibited by
(A) Glucocorticoids
(B) Aspirin
(C) Indomethacin
(D) All of these

AZRA NAHEED MEDICAL COLLEGE
BIOCHEMISTRY DEPARTMENT
PAPER NO. II
[illegible]

Time: 25 min
Marks: 30

Encircle one best answer

1 Replication of DNA is termed as
(A) Non conservative
(B) Semi conservative
(C) Conservative
(D) None of these

2 Before pyruvic acid enters the TCA cycle it must be converted to
(A) Acetyl CoA
(B) Lactate
(C) Alpha-ketoglutarate
(D) Citrate

3 The glycolysis is regulated by
(A) Hexokinase
(B) Phosphofructokinase
(C) Pyruvate kinase
(D) All of these

4 The enzymes of urea synthesis are found in
(A) Mitochondria only
(B) Cytosol only
(C) Both mitochondria and cytosol
(D) Nucleus

5 Which one is used as template by the reverse transcriptase enzyme?
(A) RNA
(B) DNA coding strand
(C) DNA non coding strand
(D) Leading strand

6 Ketone bodies are synthesized in
(A) Adipose tissue
(B) Liver
(C) Muscles
(D) Brain

7 Lipid stores are mainly present in
(A) Liver
(B) Brain
(C) Muscles
(D) Adipose tissue

8 Thromboxane cause
(A) Vasodilation
(B) Bronchoconstriction
(C) Platelet aggregation
(D) All of above

9 A digestive secretion that does not contain any digestive enzyme is
(A) Saliva
(B) Gastric juice
(C) Pancreatic juice
(D) Bile

10 The prostaglandins are synthesized from
(A) Arachidonic acid
(B) Oleic acid
(C) Linoleic acid
(D) Linolenic acid

11 The new DNA strand which is copied towards the replication fork is called
(A) Leading strand
(B) Lagging strand
(C) Template strand
(D) Coding strand

12 All pribnow boxes are variants of the sequence:
(A) 5'–TATAAT –3'□
(B) 5'–GAGCCA –3'
(C) 5'–UAACAA –3'□
(D) 5'–TCCTAG –3'

13 The amino terminal of all polypeptide chain at the time of synthesis in E. coli is tagged to the amino acid residue:
(A) Methionine
(B) Serine
(C) N-formyl methionine
(D) N-formal serine

14 Translation results in a product known as
(A) Protein
(B) tRNA
(C) mRNA
(D) rRNA

15 Restriction endonucleases recognize and cut a certain sequence of
(A) Single stranded DNA
(B) Double stranded DNA
(C) RNA
(D) Protein

16 Reverse transcriptase is capable of synthesizin
(A) RNA →□DNA
(B) DNA →□RNA
(C) RNA →□RNA
(D) DNA →□DNA

15 Cholesterol is the precursor of all the followings except
(a) Androstenedione
(b) Estrone
(c) Phenylbutazone
(d) Testosterone

16 Donor of Nitrogen atoms for urea cycle are
(a) Glycine and ammonia
(b) Aspartate and ammonia
(c) Tryptophan and glycine
(d) HCO_3 and threonine

17 Compound which interlinks urea cycle nd citric acid cycle is
(a) Aspartate
(b) Malate
(c) Fumarate
(d) Oxaloacetate

18 Conversion of arginine to ornithine and urea is catalyzed by
(a) Arginase
(b) Arginine carboxylase
(c) Arginine oxidase
(d) Arginine kinase

19 Steatorrhea is caused by
(a) Malabsorption of aromatic amino acids
(b) Malabsorption of glucose
(c) Malabsorption of nucleoproteins
(d) Malabsorption of fat

20 All of the following statements about phenylketonuria are correct except
(a) Phenylpyruvate and phenyacetate are excreted in urine
(b) It can lead to mental retardation
(c) Phenylalanine can't be converted to tyrosine
(d) There will be hyperpigmentation

21 Ammonia is transported from brain & body cells to liver mainly in form of
(a) Free ammonia
(b) Glutamic acid
(c) Asparagine
(d) Glutamine

22 The major site of synthesis of urea is
(a) Brain
(b) Skeletal muscles
(c) Heart muscles
(d) Liver

23 All of the following statements about Albinism are correct except
(a) There will be mental retardation
(b) Tyrosine will be deficient in melanocytes
(c) Eyes are hypopigmented
(d) Skin is hypopigmented

24 Nitric oxide is synthesized by Nitric Oxide synthase and derived from which amino acid?
(a) Tryptophan
(b) Arginine
(c) Cysteine
(d) Methionine

25 In case of renal failure which compound of protein metabolism is raised in plasma?
(a) Creatinine
(b) Isoleucine
(c) Threonine
(d) Glycine

26 Decarboxylation of which of the following amino acids forms a vital compound that functions in allergic & gastric reactions?
(a) Alanine
(b) Proline
(c) Histidine
(d) Hydroxy proline

27 Which of the following compounds is not formed from tyrosine?
(a) Thyroid hormones
(b) Epinephrine
(c) Melanin
(d) Cortisol

28 First step of urea cycle occurs in
(a) Mitochondria
(b) Cytosol
(c) Smooth endoplasmic reticulum
(d) Rough endoplasmic reticulum

29 Which of the following amino acid is ketogenic?
(a) Leucine
(b) Alanine
(c) Threonine
(d) Aspartate

30 Which of the following amino acid is both glucogenic & ketogenic?
(a) Serine
(b) Threonine
(c) Tyrosine
(d) Leucine

...eed Medical College

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: [redacted]

Roll No: _____

Marks obtained: _____

PROTEINS & LIPID METABOLISM - 2019
SECOND YEAR MBBS - MCQs

Total marks: 30
Time allowed 20 min.

...ne best answer.
...ng or overwriting will not be accepted and no marks will be given even if the answer is correct.

1 ...egulatory enzyme of Cholesterol biosynthesis is
(a) HMG-SCoA reductase
(b) HMG-SCoA synthase
(c) HMG-SCoA isomerase
(d) HMG-SCoA decarboxylase

2 Maximum amount of cholesterol is found in
(a) Chylomicrons
(b) VLDL
(c) LDL
(d) HDL

3 HDL is synthesized in
(a) Liver
(b) Kidneys
(c) Spleen
(d) Liver and intestine

4 Which of the following enzyme is inhibited by Aspirin
(a) 5 lipoxygenase
(b) 15 lipoxygenase
(c) 12 lipoxygenase
(d) Cyclo-oxygenase

5 For entry of fatty acids into mitochondria carnitine is needed, which takes in
(a) Long chain fatty acids
(b) Glycogen
(c) Short chain fatty acids
(d) Both short and medium chain fatty acids

6 Adipose tissues are unable to synthesize glycerol-3-PO_4 due to absence of
(a) Glycerol phosphatase
(b) Glycerol dehydrogenase
(c) Glycerol kinase
(d) Glycerol oxidase

7 Ceramide is needed for the synthesis of glycosphingolipids and sphingophospholipids. It is synthesized from
(a) Glycerol and phosphate group
(b) Sphingosine and Glycerol
(c) Sphingosine and phosphate group
(d) Sphingosine and fatty acids

8 Bile acids are formed from cholesterol in liver by losing:
(a) 4 carbons
(b) 5 carbons
(c) 3 carbons
(d) 2 carbons

9 End product of B oxidation of 21 carbon fatty acid will be
(a) Acetoacetyl-SCoA
(b) Acetyl-SCoA
(c) Propionyl- SCoA
(d) Succinyl- SCoA

10 Which of the following enzyme is absent in liver
(a) Thiophorase
(b) Glycogen synthase
(c) Phosphatase
(d) Phosphorylase

11 Biosynthesis of sphingosine requires
(a) Palmityl-SCo A + glycine
(b) Palmityl-SCo A + serine
(c) Palmityl-SCo A + tyrosine
(d) Palmityl-SCo A + threonine

12 Which of the following compounds is the common intermediate in ketogenesis & cholesterol biosynthesis
(a) Acetone
(b) Mevalonic acid
(c) Lecithin
(d) Acetoacetyl SCoA

13 Eicosanoids are synthesized from arachidonic acid which can be released from
(a) Dipalmityl lecithin
(b) Sphingosine
(c) Phosphotidyl inositol
(d) Cholesterol

14 Conversion of cholecalciferol to 1,25 dihydro- cholecalciferol takes place in
(a) Spleen and lungs
(b) Liver and brain
(c) Kidney and small intestine
(d) Liver and kidneys

Azra Naheed Medical College, Lahore.

Roll # _____

Class Test (2nd YEAR MBBS 2013)

prostaglandins have OH group at C_{15} except:
- PGA
- PGB
- PGE
- Prostacyclins
- PGG

tivity of 7 hydroxylase for the synthesis of bile acids is inhibited by:
- Deficiency of Ca^{++}
- Deficiency of Biotin
- Deficiency of vitamin C
- All of the above are true
- None of the above is true

Phosphatidic is the precursor for the biosynthesis of:
- Cholesterol
- Terpenes
- Lecithin
- All of the above are true
- None of the above is true

Biosynthesis of sphingosine requires:
- Palmityl-SCoA, Cysteine
- Myristyl-SCoA, Tyrosine
- Palmityl-SCoA, Arginine
- Stearyl-SCoA, Lysine
- Palmityl-SCoA, Serine

Uptake of low dose of Aspirin regularly reduces the probability of heart attack & stroke by creasing the synthesis of:
- Lipoxins
- Thromboxanes
- Lenkotriens
- All of the above are true
- None of the above is true

1: Which statement about chylomicron is true:
- These are the largest of the lipoproteins and least dense
- They are mainly composed of cholesterol & phospholipid
- These are synthesized in kidneys
- All of the above are true
- None of the above is true

13: ω-oxidation of fatty acids will yield:
- dicarboxylic acids
- glycerol- 3Po4
- Succinyl SCoA
- Aspartate
- Malate

15: Plasma free fatty acid level in starvation:
- is decreased to significant amount
- there is no change in its level
- greatly increased
- All of the above are true
- None of the above is true

17: Which of the following is glycerophospholipid:
- gangliosides
- cerebrosides
- lipoxin
- triacylglycerol
- Plasmalogen

19: Which of the following is a sphingoglycolipid:
- Lecithin
- Cephalin
- Sphingomyelin
- Ganglioside
- Cholesterol

2: Which of the following enzyme is inhibited by Aspirin:
- 15-lipoxygenase
- 5-lipoxygenase
- 12-lipoxygenase
- Cycloxygenase
- None of the above is true

4: Carnitine is formed from:
- Glutainic acid, Glycine
- Glycine & Cystine
- Lysine & Methionine
- All of the above are true
- None of the above is true

6: Energy generated by the β-oxidation of stearic acid & oleic acids
- is equal
- stearic acid gives less energy than oleic acid
- stearic acid gives more energy than oleic acid
- All of the above are true
- None of the above is true

8: Which of the following has highest concentration of cholesterol:
- HDL
- LDL
- VLDL
- Chylomicron
- None of the above

10: Lipoxins are:
- 20 carbon open chain compound
- They have 3 OH group at 5,6 & 15
- They have four alternate double bonds at 7,9,11 & 13
- All of the above are true
- None of the above is true

12: APO E_{48} is the component of:
- HDL
- LDL
- VLDL
- Chylomicron
- None of the above is true

14: Lipoprotein lipase hydrolyzes
- Triacylglycerol present in VLDL
- Methyl Malonyl SCoA to succinyl SCoA
- PGH_2 to PGI_2
- All of the above are true
- None of the above is true

16: About Lithocholic acid:
- it is least soluble of bile acids
- it has one OH group at 3 position
- it has COOH group at 24 position
- All of the above are true
- None of the above is true

18: Which of the following is not formed from cholesterol:
- bile pigments
- bile acids
- mineralocorticoids
- Vitamin D
- glucocorticoids

20: Ceramide is formed by:
- linkage of glycerol with fatty acid
- linkage of glycerol with phosphate group
- linkage of sphingosine with fatty acid
- linkage of sphingosine with phosphate group
- linkage of cholesterol with fatty acid

16 Most potent estrogen is
potent estrogen
(a) Estrone (E1)
(b) Estradiol (E2)
(c) Estriol (E3)
(d) Estetrol (E4)

17 Testosterone is converted to estradiol by enzyme
(a) 5 α reductase
(b) Isomerase
(c) Aromatase
(d) Lyase

18 Pregnenolone is formed from cholesterol by the enzyme
(a) 17 α hydroxylase
(b) Desmolase
(c) 21 hydroxylase
(d) 11 β hydroxylase

19 All are Metabolic effects of Glucocorticoids except:
(a) Promotes glycolysis
(b) Mobilization of amino acids from extra hepatic tissues
(c) Protein synthesis in liver
(d) Increases lipolysis in adipose tissue

20 Which of the following is not a function of Progesterone?
(a) Contracts smooth muscles
(b) Converts endometrium to its secretory phase
(c) During gestation it decreases maternal immune response
(d) Inhibits lactation during pregnancy

21 Glucocorticoids are produced from
(a) Zona Glomerulosa
(b) Zona Fasciculata
(c) Zona Reticularis
(d) Adrenal Medulla

22 Aldosterone acts on distal convoluted tubules of kidney to:
(a) Increase reabsorption of K^+
(b) Increase reabsorption of H^+
(c) Increase reabsorption of $NH4^+$
(d) Increase reabsorption of Na^+

23 Precursor for the synthesis of catecholamines is
(a) Methionine
(b) Arginine
(c) Tryptophan
(d) Tyrosine

24 Proopiomelanocortin (POMC) is a precursor for
(a) TSH
(b) LH
(c) ACTH
(d) GH

25 Addison's disease is
(a) Melanin pigmentation disorder
(b) Mineralocorticoid deficiency
(c) Glucocorticoid deficiency
(d) Hypoadrenalism

26 In *ACTH-secreting* pituitary adenoma large dose of *dexamethasone will:*
(a) Not suppress ACTH secretion
(b) Suppress ACTH secretion
(c) Suppress TSH
(d) Suppress GH

27 Hyperadrenalism is known as
(a) Cushing's syndrome
(b) Cushing's disease
(c) Conn's syndrome
(d) Addison's disease

28 *Beta Endorphins*
(a) *Are steroid hormones*
(b) *Increase perception of pain*
(c) *Have opioid like properties*
(d) *Formed from TSH*

29 Oxidation of Iodide in thyroid follicle is carried out by
(a) Isomerase
(b) Lyase
(c) Peroxidase
(d) Deiodinase

30 Thyroid hormone biologically available to tissues is
(a) Thyroid Hormone attached to Binding Globulin
(b) Thyroid Hormone attached to Free Albumin
(c) Thyroid Hormone attached to Albumin
(d) Free and albumin-bound thyroid hormone

31 Myxedema refers to deposition of mucopolysaccharides in the dermis due to
(a) Hyperthyroidism
(b) Hypothyroidism
(c) Hypopituitarism
(d) Hyperpituitarism

32 amino acid

15 Calcitonin stimulates
(a) Tubular reabsorption of Ca^{++}
(b) Tubular reabsorption of inorganic phosphate
(c) Ca^{++} absorption from intestine
(d) Influx of PO_4 in bones

16 Which of the following is not needed for fatty acid synthesis?
(a) ATP
(b) $FADH_2$
(c) NADPH
(d) Vitamin B_{12}

17 Activity of cyclooxygenase is inhibited by aspirin which results in the decrease synthesis of
(a) Lipoxins only
(b) Leukotrienes only
(c) Both Lipoxins and Leukotrienes
(d) Prostaglandins

18 By beta oxidation which of the following fatty acid will yield maximum energy?
(a) Stearic acid (18 carbon saturated fatty acid)
(b) Oleic acid (18 carbon mono unsaturated fatty acid)
(c) Linolenic acid (18 carbon polyunsaturated fatty acid)
(d) Palmitic acid (16 carbon saturated fatty acid)

19 Sphingophospholipids have alcohol part "Sphingosine" which is synthesized from
(a) Palmityl-SCoA and serine
(b) Palmityl-SCoA and glycine
(c) Succinyl-SCoA and tyrosine
(d) Propionyl-SCoA and phenylalanine

20 Uptake of low dose of Aspirin daily decreases the chance of heart attack and stroke by decreasing the synthesis of
(a) Lipoxins
(b) Thromboxanes
(c) Leukotrienes
(d) Conjugated bile acids

21 Which of the following lipoproteins have highest concentration of cholesterol?
(a) HDL
(b) LDL
(c) VLDL
(d) Chylomicrons

22 Activation of fatty acid for β-oxidation requires all of the following except
(a) Carnitine
(b) ATP
(c) Thiokinase
(d) Coenzyme A

23 Levostatin, cholesterol lowering drug is a competitive inhibitor of
(a) HMG-SCoA synthase
(b) HMG-SCoA hydroxylase
(c) HMG-SCoA reductase
(d) HMG-SCoA isomerase

24 Alpha oxidation of fatty acid occurs mainly in
(a) Brain
(b) Kidneys
(c) Liver
(d) Muscles

25 Ketone bodies are synthesized in liver mitochondria but liver cannot use Ketone bodies for energy purpose due to the deficiency of
(a) Thiokinase
(b) Thiophorase
(c) Lipoprotein lipase
(d) Choiinesterase

26 Lipoprotein lipase is activated by
(a) Apoprotein-D
(b) Apoprotein-C II
(c) Apoprotein B-48
(d) Apoprotein B-100

27 For the synthesis of fatty acids most of the reducing equivalents ($NADPH+H^+$) are generated from
(a) Glycolysis
(b) Glycogenolysis
(c) Gluconeogenesis
(d) HMP shunt

28 Hepatic lipogenesis is stimulated by
(a) Insulin
(b) Glucagon
(c) Epinephrine
(d) Norepinephrine

29 Lithocholic acids are secondary bile acids which are synthesized in
(a) Liver
(b) Kidneys
(c) Intestines
(d) Muscles

30 HDL is said to be a good lipoprotein because
(a) It carries cholesterol from extrahepatic tissues to liver
(b) It carries cholesterol from liver to extrahepatic tissues
(c) It has largest size amongst the lipoproteins
(d) Both (b) and (c) are correct

15 A[illegible] the [illegible]owing is true about Rennin except:
(a) It is [illegible]ived in curdling of milk
(b) Also [illegible]ed as chymosin
(c) It is n[illegible]present in adults
(d) It converts calcium paracaseinate to casein

16 Which of the following statement is incorrect
(a) Gastric juice is neutralized by pancreatic $NaHCO_3$
(b) Trypsin, chymotrypsin and elastase are active at neutral pH
(c) Amino acid serine is present in the active center of trypsin only
(d) Procarboxypeptidase is activated by trypsin

17 Which of the following is incorrect regarding absorption of amino acids
(a) The transport of L-amino acids occurs by an active process
(b) D-amino acids absorb by simple diffusion
(c) D-Amino acids are more rapidly absorbed than L-amino acids
(d) D and L amino acids absorption is at ileum and distal jejunum

18 Regarding absorption of proteins all is false except:
(a) Infants cannot absorb intact proteins right after birth
(b) Uptake of proteins is by special process endocytosis or pinocytosis in adults
(c) Macromolecular absorption in adults cannot cause food allergies
(d) Intact proteins absorption in infants is crucial for immunoglobulin transfer

19 Choose the correct statement about Hartnup's disease
(a) Tryptophan absorption is the most effected
(b) Tyrosine absorption is the most effected
(c) Phenylalanine absorption is the most effected
(d) Vitamin B12 is inadequate

20 Regulation of saliva is by:
(a) Unconditioned reflex
(b) Conditional Reflex
(c) Spontaneous secretion
(d) All of the above

21 Regarding saliva which of the following is incorrect:
(a) Contains amylase and lipase
(b) Contains salivary proteolytic enzymes
(c) Contains secretory IgA and lysozymes
(d) Contains peroxidases

22 Gastric juice contains all of the following except
(a) HCl
(b) Pepsin
(c) Intrinsic factor
(d) Vitamin B 12

23 Chyluria is the
(a) Excretion of milky urine
(b) Obstruction in transportation phase of lipid digestion in lacteals
(c) An abnormal connection between urinary tract and lymphatic drainage
(d) All of above

24 Most Dietary TAG is absorbed from intestinal lumen after hydrolysis as
(a) Glycerol-P and FA
(b) Acyl CoA
(c) Acyl CoA and glycerol
(d) FA and 2 MAG

25 "Micelles" formed in intestine
(a) Contain mostly TAG
(b) Are secreted by intestinal epithelial cells
(c) Are mainly absorbed in stomach wall
(d) Are smaller than droplets of emulsified fats

26 Lipase in presence of bile salts for its optimal activity combines with a protein co-enzyme called
(a) Amylase
(b) Kinin
(c) Pepsin
(d) Colipase

27 Activation of fatty acids inside the intestinal mucosa cells is by
(a) Apo-B48
(b) Pepsin
(c) Thiokinase
(d) Lipase

28 2-MAG is converted to 1-MAG by enzyme
(a) Lipase
(b) Isomerase
(c) Cholesterol esterase
(d) Phospholipase A2

29 Calcium ions facilitate action of lipase by
(a) [illegible]cilitating the binding of the enzyme to the fats
(b) [illegible]ibition of emulsification
(c) [illegible]celle formation
(d) [illegible]ue sol[illegible]ion formation

30 Steatorrhea is
(a) Excretion of cholesterol in feces
(b) Excretion of chylomicrons in feces
(c) Excretion of large amount of fats in feces
(d) Excretion of bile salts in urine

eed Medical College

energetic

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

BIOCHEMISTRY 2ND YEAR

Name:
Roll No. :
Marks obtained:

TEST ON HORMONES & LIPID METABOLISM
SECOND YEAR MBBS PART II – 2018 – MCQs

2018

Total marks: 30
Time Allowed: 20 minutes

Select one best answer

1 Growth hormone is protein in nature which has
- (a) 51 amino acids
- (b) 101 amino acids
- (c) 191 amino acids
- (d) 91 amino acids

2 Gigantism results due to
- (a) Increased secretion of growth hormone after puberty
- (b) Increased secretion of growth hormone before puberty
- (c) Increased secretion of thyroid hormone before and after puberty
- (d) Increased secretion of epinephrine before puberty

3 Insulin stimulates
- (a) Hepatic glycogenolysis
- (b) Entry of glucose into the cells
- (c) Lipolysis
- (d) Gluconeogenesis

4 Tumor of chromaffin cells of adrenal medulla may lead to
- (a) Diabetes mellitus
- (b) Systemic lupus erythematosus
- (c) Pheochromocytomas
- (d) Graves' disease

5 Diabetes insipidus is caused by deficiency of
- (a) Growth hormone
- (b) Cortisol
- (c) Aldosterone
- (d) Antidiuretic hormone (ADH)

6 Pygmies have
- (a) Excess thyroid hormone secretion
- (b) Low cortisol secretion
- (c) Deficient growth hormone secretion
- (d) Deficient insulin secretion

7 Stress, trauma severe exercise and secretion of epinephrine will
- (a) Increase the secretion of insulin
- (b) Decrease the secretion of insulin
- (c) Both (a) and (b) are correct
- (d) Have no effect on insulin secretion

8 Which of the following is not the anterior pituitary hormone?
- (a) Growth hormone
- (b) FSH
- (c) TSH
- (d) Somatostatin

9 Glucagon stimulates
- (a) Entry of glucose into the cells
- (b) Hepatic glycogenesis
- (c) Gluconeogenesis
- (d) Glycolysis

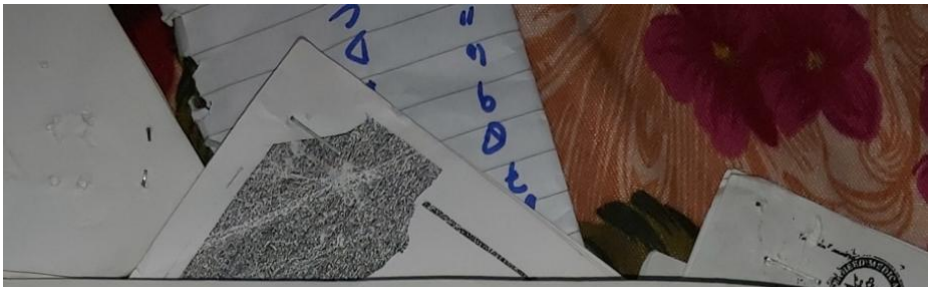
10 In starvation all of the following are elevated except
- (a) Ketone bodies
- (b) Glucagon
- (c) Epinephrine
- (d) Glycogen

11 Norepinephrine is converted to epinephrine by
- (a) Decarboxylation
- (b) Methylation
- (c) Hydroxylation
- (d) Deamidation

12 In hyperparathyroidism there will be
- (a) Increased serum calcium level and decreased serum phosphorus level
- (b) Low serum calcium level and increased serum phosphorus level
- (c) Decreased serum calcium level
- (d) Increased serum phosphorus level

13 Secretion of epinephrine will inhibit
- (a) Gluconeogenesis
- (b) Glycogenolysis
- (c) Glycolysis
- (d) Lipolysis

14 Which of the following is not a steroid hormone
- (a) Estrone
- (b) Cortisol
- (c) Aldosterone
- (d) Angiotensin II



PGG

21: Carnitine is formed from:
a. Glulainic acid, Glycine
b. Glycine & Cystine
c. Lysine & Methionine
d. All of the above are true
e. None of the above is true

22: Energy generated by the β-oxidation of stearic acid & oleic acids
a. is equal
b. stearic acid gives less energy than oleic acid
c. stearic acid gives more energy than oleic acid
d. All of the above are true
e. None of the above is true

23: Lipoxins are:
a. 20 carbon oxen chain compound
b. They have 3 OH group at 5,6 & 15
c. They have four alternate double bonds at 7,9,11 & 13
d. All of the above are true
e. None of the above is true

24: Which of the following is not formed from cholesterol:
a. bile pigments
b. bile acids
c. mineralocorticoids
d. Vitamin D
e. glucocorticoids

25: Which of the following does not take part in purine synthesis:
a. Glutamine
b. CO_2
c. Tyrosine
d. Aspartate
e. Glycine

26: The DNA strand from which RNA is copied is called:
a. Coding strand
b. Template Strand
c. Lagging Strand
d. All of the above are true
e. None of the above is true

27: Non coding region on DNA is called:
a. Introns
b. Exons
c. Poly A tail
d. Methyl Cap
e. None of the above is true

28: Anticodon region is present on:
a. mRNA
b. rRNA
c. sn RNA
d. tRNA
e. None of the above is true

29: Out of 64 codons in total, how many code for 20 amino acids?
a. 60
b. 61
c. 62
d. 63
e. None of the above is true

30: Which enzyme cuts double strand DNA at specific recognition sequ
a. Restriction endonucleases
b. Topoisomerase
c. DNA helicase
d. DNA polymerase I
e. None of the above is true

31: The mutation in which changed base codes for the same amino acid is called:
a. Silent
b. Missense
c. Nonsense
d. Frame shift
e. None of the above is true

32: Growth hormone is a polypeptide, it has:
a. 90 amino acids
b. 85 amino acids
c. 200 amino acids
d. 195 amino acids
e. 191 amino acids

33: Cortico tropic release factor (CRF) is secreted from:
a. Anterior pituitary
b. Posterior pituitary
c. Hypothalamus
d. Thyroid gland
e. Para thyroid gland

34: Stress, Trauma, Severe exercise & secretion of epinephrine will:
a. Increase the secretion of insulin
b. Decrease the secretion of insulin
c. Will have no effect on insulin secretion
d. All of the above are true
e. None of the above is true

35: Which of the following statements about Pancreatic hormones is true:
a. Insulin increases lipogenesis
b. Glucagon increases lipolysis
c. Glucagon increases proteins catabolism
d. All of the above are true
e. None of the above is true

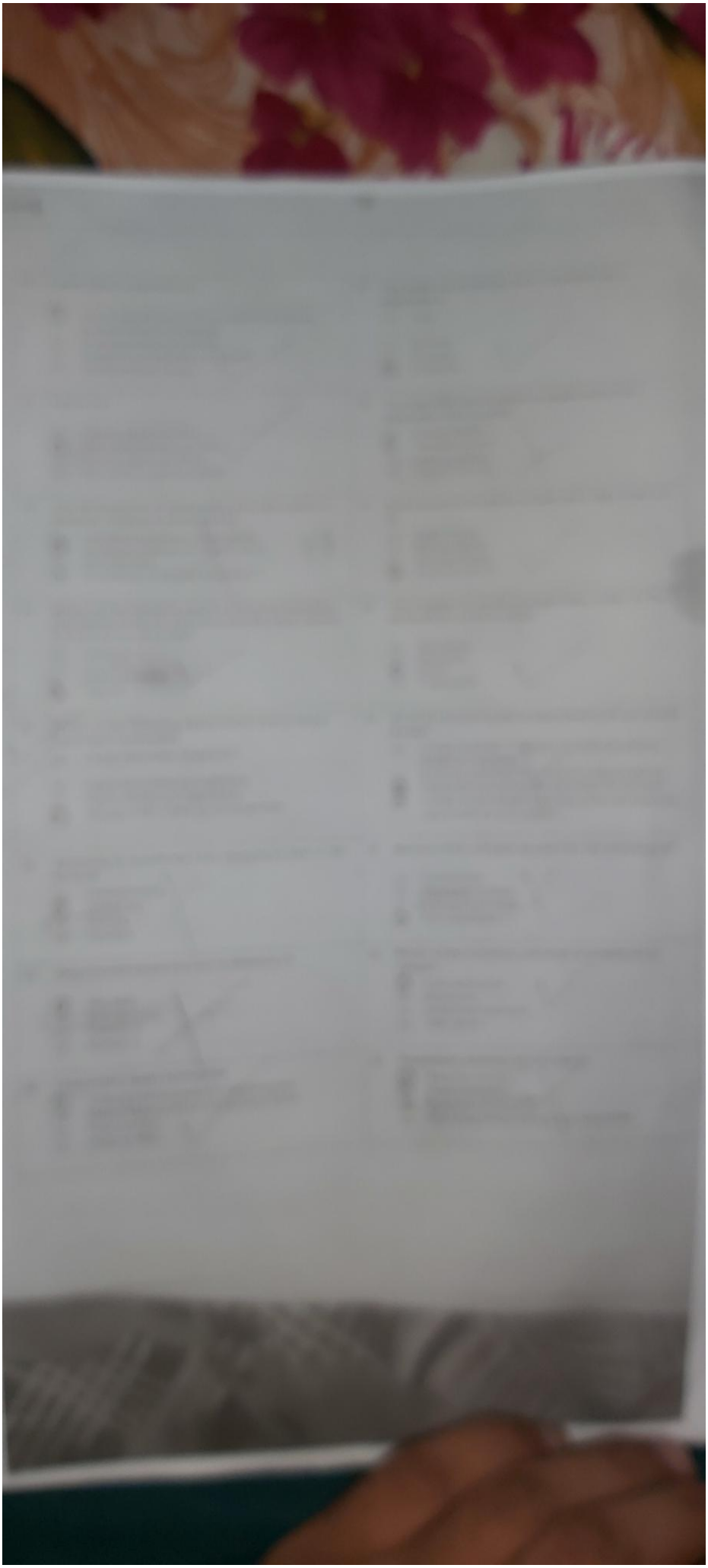
36: Hyper secretion of Aldosteron will cause:
a. Increased excretion of sodium
b. Increased retention of Potassium
c. Dehydration
d. Acidosis
e. Increase retention HCO_3 and Cl^-

37: Which of the following is the feature of hypothyroidism:
a. Intolerance to heat
b. Bradycardia
c. Tremors
d. Irritability
e. None of the above is true

38: The target cells for ADH are:
a. Hepatocytes
b. Smooth muscle cells
c. Myocardial cells
d. Collecting ducts of kidneys
e. None of the above is true

39: Major dietary lipid is:
a. Cholesterol
b. Phospholipid
c. Triacylglycerol
d. Eicosanoids
e. None of the above is true

40: Hydrolysis of starch by amylase will yield:
a. Glycogen
b. Glucose
c. Fructose
d. Galactose
e. Maltose



15 Lesch Nyhan syndrome is

(a) Due to the deficiency of hypoxanthine guanine phosphoribosyl transferase
(b) Phosphoribosyl synthetase
(c) Carbamoyl phosphate synthetase
(d) Phosphorylase kinase

16 The major catabolite product of pyrimidines in mammals is

(a) Urea
(b) Guanine
(c) Uric acid
(d) β-alanine

17 Intron is a

(a) Coding strand on DNA
(b) Non coding strand on DNA
(c) Coding region on mRNA
(d) Non coding region on mRNA

18 The new DNA strand which is copied away from replication fork is called

(a) Coding strand
(b) Template strand
(c) Leading strand
(d) Lagging strand

19 The development of neuropathy and retinopathy in diabetes mellitus is implicated to

(a) Increased synthesis of fatty acids
(b) Increased breakdown of fatty acids
(c) Glycogenesis
(d) Conversion of glucose to sorbitol

20 End product of oxidation of odd chain fatty acids will be

(a) Acetyl SCoA
(b) Malonyl SCoA
(c) Succinyl SCoA
(d) Propionyl SCoA

21 Which of the following amino acids is incorporated into purine molecule and becomes the atom number 4, 5 and seven of purine?

(a) Histidine
(b) Citrulline
(c) Hydroxy Proline
(d) Glycine

22 The mutation in which changed base, codes for the same amino acids is called

(a) Nonsense
(b) Missense
(c) Silent
(d) Frame shift

23 Which of the following statement is untrue about pancreatic hormones?

(a) Insulin stimulates lipogenesis
(b) Insulin stimulates glycogenesis
(c) Insulin inhibits glycogenolysis
(d) Glucagon stimulates gluconeogenesis

24 All of the following about phenylketonuria are correct except:

(a) Urinary excretion of phenyl pyruvate and phenyl lactate is increased
(b) It can be controlled by giving low dose of alanine
(c) Phenylalanine cannot be converted into tyrosine
(d) It leads to decreased synthesis of thyroid hormone, catecholamine and melanin

25 Ammonia is transferred from muscles to liver in the form of

(a) Free ammonia
(b) Glutamine
(c) Alanine
(d) Tyrosine

26 Niemann-Pick disease results from the deficiency of

(a) Ceramidase
(b) Hexosaminidase
(c) Sphingomyelinase
(d) Arylsulphatase A

27 Clay colored stools are due to absence of

(a) Bile salts
(b) Bile pigments
(c) Vitamin D
(d) Vitamin A

28 Which of the following pathways is amphibolic in nature?

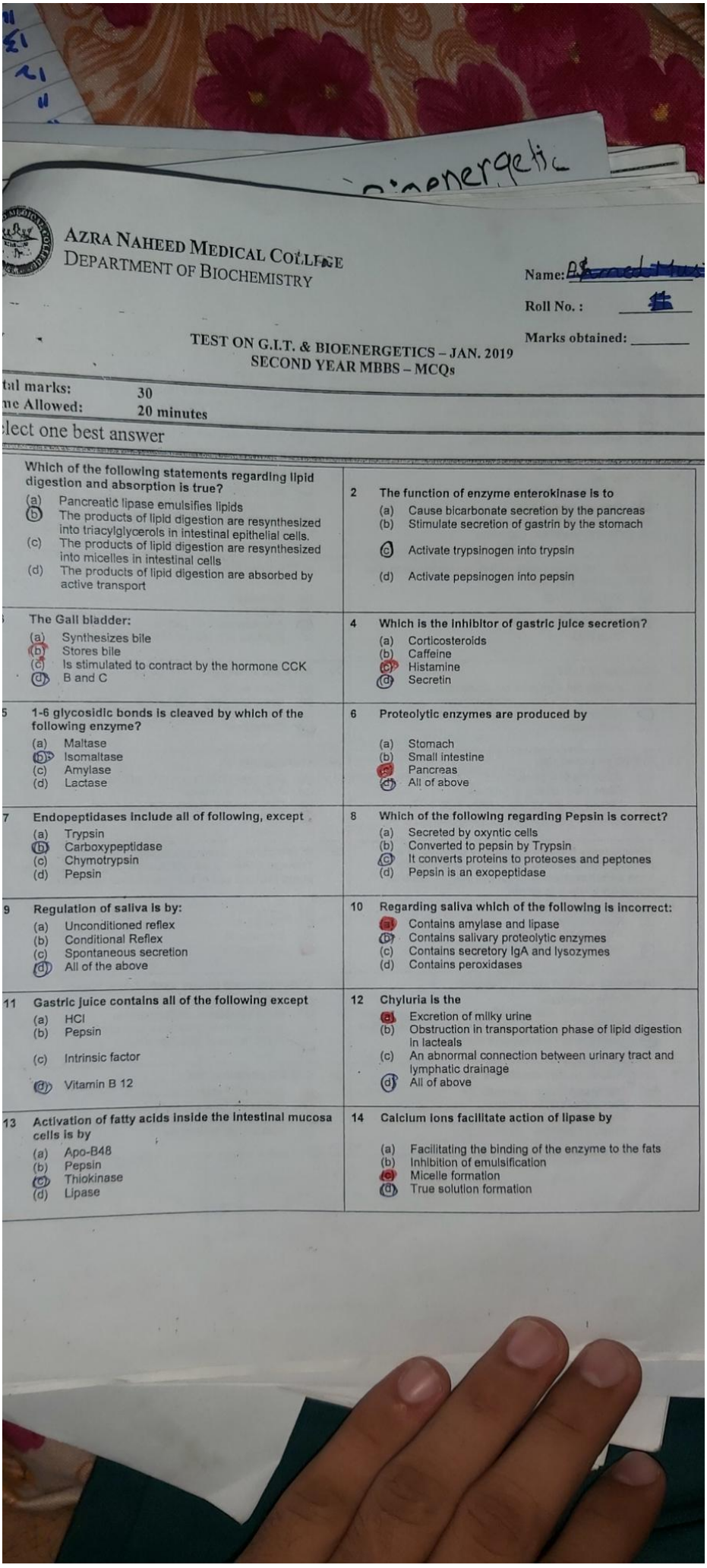
(a) Citric acid cycle
(b) Glycolysis
(c) Uronic acid pathway
(d) HMP shunt

29 Lipoprotein lipase hydrolyzes

(a) Triacylglycerol present in chylomicrons
(b) Methyl Malonyl SCoA to Succinyl SCoA
(c) PGH_2 to PGI_2
(d) PGE_2 to PGF_2

30 Respiratory acidosis occurs due to

(a) Retention of CO_2
(b) Hyperventilation
(c) Retention of HCO_3^-
(d) Overdose of some drugs e.g. salicylates



AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: [redacted]

Roll No. : 41

Marks obtained: _____

TEST ON G.I.T. & BIOENERGETICS – JAN. 2019
SECOND YEAR MBBS – MCQs

tal marks: 30
me Allowed: 20 minutes

lect one best answer

1 **Which of the following statements regarding lipid digestion and absorption is true?**
(a) Pancreatic lipase emulsifies lipids
(b) The products of lipid digestion are resynthesized into triacylglycerols in intestinal epithelial cells.
(c) The products of lipid digestion are resynthesized into micelles in intestinal cells
(d) The products of lipid digestion are absorbed by active transport

2 **The function of enzyme enterokinase is to**
(a) Cause bicarbonate secretion by the pancreas
(b) Stimulate secretion of gastrin by the stomach
(c) Activate trypsinogen into trypsin
(d) Activate pepsinogen into pepsin

3 **The Gall bladder:**
(a) Synthesizes bile
(b) Stores bile
(c) Is stimulated to contract by the hormone CCK
(d) B and C

4 **Which is the inhibitor of gastric juice secretion?**
(a) Corticosteroids
(b) Caffeine
(c) Histamine
(d) Secretin

5 **1-6 glycosidic bonds is cleaved by which of the following enzyme?**
(a) Maltase
(b) Isomaltase
(c) Amylase
(d) Lactase

6 **Proteolytic enzymes are produced by**
(a) Stomach
(b) Small intestine
(c) Pancreas
(d) All of above

7 **Endopeptidases include all of following, except**
(a) Trypsin
(b) Carboxypeptidase
(c) Chymotrypsin
(d) Pepsin

8 **Which of the following regarding Pepsin is correct?**
(a) Secreted by oxyntic cells
(b) Converted to pepsin by Trypsin
(c) It converts proteins to proteoses and peptones
(d) Pepsin is an exopeptidase

9 **Regulation of saliva is by:**
(a) Unconditioned reflex
(b) Conditional Reflex
(c) Spontaneous secretion
(d) All of the above

10 **Regarding saliva which of the following is incorrect:**
(a) Contains amylase and lipase
(b) Contains salivary proteolytic enzymes
(c) Contains secretory IgA and lysozymes
(d) Contains peroxidases

11 **Gastric juice contains all of the following except**
(a) HCl
(b) Pepsin
(c) Intrinsic factor
(d) Vitamin B 12

12 **Chyluria is the**
(a) Excretion of milky urine
(b) Obstruction in transportation phase of lipid digestion in lacteals
(c) An abnormal connection between urinary tract and lymphatic drainage
(d) All of above

13 **Activation of fatty acids inside the intestinal mucosa cells is by**
(a) Apo-B48
(b) Pepsin
(c) Thiokinase
(d) Lipase

14 **Calcium ions facilitate action of lipase by**
(a) Facilitating the binding of the enzyme to the fats
(b) Inhibition of emulsification
(c) Micelle formation
(d) True solution formation

AZRA NAHEED MEDICAL COLLEGE

DEPARTMENT OF BIOCHEMISTRY

Bioenergetics

BIOENERGETICS 2017

15 **Steatorrhea is** (a) Excretion of cholesterol in feces (b) Excretion of chylomicrons in feces (c) Excretion of large amount of fats in feces (d) Excretion of bile salts in urine	**16** **Ubiquinone is:** (a) Present in complex III (b) Present in complex II (c) Is a part of complex V (d) Is a mobile electron carrier
17 **2,4 DNP is:** (a) An inhibitor of ETC (b) An uncoupler of ETC (c) An antidote of cyanide poisoning (d) An antidote of CO poisoning	**18** **Rotenone is:** (a) An inhibitor of complex I in ETC (b) An uncoupler of complex I in ETC (c) Is an inhibitor of ATP synthase in ETC (d) Is an inhibitor of cytochrome oxidase in ETC
19 **The reduced equivalents of tertiary metabolism that enter into the ETC are:** (a) NADPH & FAD (b) NAD & FAD (c) NADH & $FADH_2$ (d) O_2 & H_2O	**20** **In ETC cytochrome c is:** (a) Complex IV (b) Complex III (c) A mobile electron carrier (d) It pumps protons out of mitochondrial matrix
21 **Complex IV in ETC:** (a) Pumps out 4 protons out of the matrix (b) Pumps in 4 proteins into the matrix (c) Pumps out 2 protons out of the matrix (d) Synthesizes ATP	**22** **ATPs are synthesized in ETC by:** (a) Complex IV (b) Succinate dehydrogenase complex (c) Pyruvate dehydrogenase complex (d) Complex V
23 **In ETC an uncoupler:** (a) Stops the flow of electrons (b) Stops the pumping of protons (c) Uncouples the mobile carriers from ETC (d) Uncouples the oxidation from phosphorylation	**24** **Thermogenin is:** (a) A natural inhibitor found in infants (b) A natural uncoupler (c) Only found in infants among humans (d) Both (b) & (c) are correct
25 **When energy from a high energy compound is directly transferred to nucleoside diphosphate to form a triphosphate without the help of electron transport chain it is called:** (a) Redox potential (b) Redox couple (c) ATP synthase complex (d) Substrate level phosphorylation	**26** **Which of the following complexes in Electron Transport chain does not liberate enough energy to pump protons out of the mitochondrial matrix?** (a) Complex I (b) Complex II (c) Complex III (d) Complex IV
27 **Electron transport chain in located:** (a) In the cytoplasm (b) On the outer side of outer mitochondrial membrane (c) On the inner side of outer mitochondrial membrane (d) On the inner mitochondrial membrane	**28** **Citric acid cycle (Krebs' cycle) takes place:** (a) In the cytoplasm of cell (b) In the cytoplasm of mitochondria (c) In the intermembranous space of mitochondria (d) In the matrix of mitochondria
29 **Inner mitochondrial membrane is:** (a) Highly selective in permeability (b) Permeable only to H^+ ions (c) Impermeable (d) Freely permeable	**30** **Cyanide combines with:** (a) Iron in Fe^{+2} state in complex IV (b) Iron in Fe^{+3} state in complex V (c) Iron in Fe^{+3} state in complex IV (d) CuA & CuB in complex IV

Marks: 40
Time: 30 Minutes

Azra Naheed Medical College, Lahore.

Roll # _____

Send up Examination (2nd YEAR MBBS 2013)

1. Cyanide is inhibitor of
   a. Complex I
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   c. Complex III
   d. Complex IV
   e. None of the above

2. Bile
   a. is produced in gallbladder
   b. is highly acidic in nature
   c. contains α-amylase
   d. is endopeptidase
   e. is the secretion and excretion of liver

3. The physiologically active bile acids are conjugated with
   a. Glucuronic acid
   b. Glycine & taurine
   c. Phenyl alanine
   d. Tryptophan
   e. None of the above

4. Most important function of bile salts is
   a. digestion of protein
   b. lowering of surface tension and fat emulsification
   c. starch hydrolysis
   d. energy production
   e. None of the above

5. Bile pigments are
   a. break down products of hemoglobin
   b. cholic acids
   c. tauro cholic acid
   d. important for protein digestion
   e. conjugates of glycine

6. Secondary bile acids are
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   c. litho cholic acid and deoxy cholic acid
   d. Lecithins
   e. cephalins

7: Which one of the following does not take part in gluconeogenesis:
   a. Glycerol
   b. Propionyl-SCoA
   c. Acetyl-SCoA
   d. Alanine
   e. Lactate

8: In muscles glucose 6-PO_4 is not converted to glucose due to absence of:
   a. Hexokinase
   b. Glucokinase
   c. Phosphorylase
   d. Glycogen synthase
   e. Glucose 6- phosphatase

9: Which one of the following enzymes does not take part in glycolysis:
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   a. Fructose 1-6 bisphosphate into dihydroxy acetone phosphate and glyceraldehydes 3-phosphate
   b. 3- Phosphoglyceraldehyde into 1,3bisphosphoglycerate
   c. Phosphoenol pyruvate to pyruvate
   d. Fructose 6 phosphate to fructose 1-6 bisphosphate
   e. Fructose 1 phosphate to dihydroxy acetone phosphate and glyceraldehydes

11: Phospho Fructokinase -2 converts:
   a. Fructose to fructose 1,6 bisphosphate
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   d. rough endoplasmic reticulum
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19: All prostaglandins have OH group at C_{15} except:
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   b. PGB
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20: Which of the following enzyme is inhibited by Aspirin:
   a. 15-lipoxygenase
   b. 5-lipoxygenase
   c. 12-lipoxygenase
   d. Cycloxygenase

P.T.O

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: _____

Roll No. : _____

Marks obtained: _____

CLASS TEST ON G.I.T. - 2018
MBBS PART II– MCQs

Total marks: 30 **Time Allowed:** 20 minutes

Select one best answer

1 Which of the following regarding digestion and absorption of carbohydrates is true?
- (a) Carbohydrate digestion begins in the mouth
- (b) Polysaccharides are broken down to monosaccharides by amylase
- (c) Disaccharides are actively transported across the epithelium of the small intestine
- (d) All of the above

2 Which of the following statements regarding lipid digestion and absorption is true?
- (a) Pancreatic lipase emulsifies lipids
- (b) The products of lipid digestion are resynthesized into triacylglycerols in intestinal epithelial cells.
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- (d) The products of lipid digestion are absorbed by active transport

3 The function of enzyme enterokinase is to
- (a) Cause bicarbonate secretion by the pancreas
- (b) Stimulate secretion of gastrin by the stomach
- (c) Activate trypsinogen into trypsin
- (d) Activate pepsinogen into pepsin

4 Emulsification of fats
- (a) Results in the formation of small fat droplets
- (b) Depends upon the amphipathic structure of bile salts
- (c) Result in the formation of micelles
- (d) A and B

5 The Gall bladder:
- (a) Synthesizes bile
- (b) Stores bile
- (c) Is stimulated to contract by the hormone CCK
- (d) B and C

6 Which of the following substances is transported across the intestinal epithelial cells by means of a special protein called the 'intrinsic factor'?
- (a) Amino acids
- (b) Sodium
- (c) Glucose
- (d) Vitamin B_{12}

7 Which is the inhibitor of gastric juice secretion?
- (a) Corticosteroids
- (b) Caffeine
- (c) Histamine
- (d) Secretin

8 Which statement is true regarding salivary amylase?
- (a) It requires Na^+ ions for its activation
- (b) Hydrolyzes β 1-4 linkages
- (c) Optimum pH is 3
- (d) Produces maltose & maltotriose from polysaccharides

9 1-6 glycosidic bonds is cleaved by which of the following enzyme?
- (a) Maltase
- (b) Isomaltase
- (c) Amylase
- (d) Lactase

10 Which of the following monosaccharides has the fastest rate of absorption?
- (a) Galactose 110
- (b) Glucose 100 } active absorption
- (c) Fructose
- (d) Mannose 43 } Facilitated Transport 19

11 Glucose uptake in most of the cells of the body including brain and RBCs is by:
- (a) GluT 2
- (b) GluT 3
- (c) GluT 1
- (d) GluT 4

12 Proteolytic enzymes are produced by
- (a) Stomach
- (b) Small intestine
- (c) Pancreas
- (d) All of above

13 Endopeptidases include all of following, except
- (a) Trypsin
- (b) Carboxypeptidase
- (c) Chymotrypsin
- (d) Pepsin

14 Which of the following regarding Pepsin is correct?
- (a) Secreted by oxyntic cells
- (b) Converted to pepsin by Trypsin
- (c) It converts proteins to proteoses and peptones
- (d) Pepsin is an exopeptidase

Marks: 40
Time: 30 Minutes

Azra Naheed Medical College, Lahore.

Roll # _____

Send up Examination (2nd YEAR MBBS 2013)

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P.T.O

Class Test (2nd YEAR MBBS 2013)

Roll 120

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a. 15-lipoxygenase
b. 5-lipoxygenase
c. 12-lipoxygenase
d. Cyclooxygenase
e. None of the above is true

3: Activity of 7 hydroxylase for the synthesis of bile acids is inhibited by:
a. Deficiency of Ca^{++}
b. Deficiency of Biotin
c. Deficiency of vitamin C
d. All of the above are true
e. None of the above is true

4: Carnitine is formed from:
a. Glutalnic acid, Glycine
b. Glycine & Cystine
c. Lysine & Methionine
d. All of the above are true
e. None of the above is true

5: Phosphatidic is the precursor for the biosynthesis of:
a. Cholesterol
b. Terpenes
c. Lecithin
d. All of the above are true
e. None of the above is true

6: Energy generated by the β-oxidation of stearic acid & oleic acids
a. is equal
b. stearic acid gives less energy than oleic acid
c. stearic acid gives more energy than oleic acid
d. All of the above are true
e. None of the above is true

7: Biosynthesis of sphingosine requires:
a. Palmityl-SCoA, Cysteine
b. Myristyl-SCoA, Tyrosine
c. Palmityl-SCoA, Arginine
d. Stearyl-SCoA, Lysine
e. Palmityl-SCoA, Serine

8: Which of the following has highest concentration of cholesterol:
a. HDL
b. LDL
c. VLDL
d. Chylomicron
e. None of the above

9: Uptake of low dose of Aspirin regularly reduces the probability of heart attack & stroke by decreasing the synthesis of:
a. Lipoxins
b. Thromboxanes
c. Lenkotriens
d. All of the above are true
e. None of the above is true

10: Lipoxins are:
a. 20 carbon open chain compound
b. They have 3 OH group at 5,6 & 15
c. They have four alternate double bonds at 7,9,11 & 13
d. All of the above are true
e. None of the above is true

11: Which statement about chylomicron is true:
a. These are the largest of the lipoproteins and least dense
b. They are mainly composed of cholesterol & phospholipid
c. These are synthesized in kidneys
d. All of the above are true
e. None of the above is true

12: APO B_{48} is the component of:
a. HDL
b. LDL
c. VLDL
d. Chylomicron
e. None of the above is true

13: ω-oxidation of fatty acids will yield:
a. dicarboxylic acids
b. glycerol- $3PO_4$
c. Succinyl SCoA
d. Aspartate
e. Malate

14: Lipoprotein lipase hydrolyzes
a. Triacylglycerol present in VLDL
b. Methyl Malonyl SCoA to succinyl SCoA
c. PGH_2 to PGI_2
d. All of the above are true
e. None of the above is true

15: Plasma free fatty acid level in starvation:
a. is decreased to significant amount
b. there is no change in its level
c. greatly increased
d. All of the above are true
e. None of the above is true

16: About Lithocholic acid:
a. it is least soluble of bile acids
b. it has one OH group at 3 position
c. it has COOH group at 24 position
d. All of the above are true
e. None of the above is true

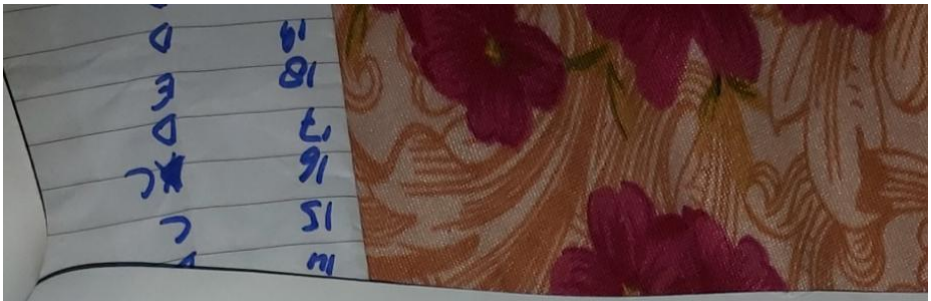
17: Which of the following is glycerophospholipid:
a. gangliosides
b. cerebrosides
c. lipoxin
d. triacylglycerol
e. Plasmalogen

18: Which of the following is not formed from cholesterol:
a. bile pigments
b. bile acids
c. mineralocorticoids
d. Vitamin D
e. glucocorticoids

19: Which of the following is a sphingoglycolipid:
a. Lecithin
b. Cephalin
c. Sphingomyelin
d. Ganglioside
e. Cholesterol

20: Ceramide is formed by:
a. linkage of glycerol with fatty acid
b. linkage of glycerol with phosphate group
c. linkage of sphingosine with fatty acid
d. linkage of sphingosine with phosphate group
e. linkage of cholesterol with fatty acid

Solved By: Sana Ullah
Roll No. 29



: 30
e: 15 Minutes

Azra Naheed Medical College, Lahore.

Roll # 13195

Test on Proteins Metabolism (2nd YEAR MBBS 2014)

Roll 120

1. Cystine is reduced to cysteine by
   a. Cystine reductase ✔
   b. Cystine oxidase
   c. Cysteine reducatse
   d. Cysteine oxidase

2. Which of the following amino acids participates in the synthesis of coenzyme A
   a. Phenyl Alanine
   b. Tyrosine
   c. Histidine
   d. Cysteine

3. First six reactions of Lysine catabolism performed in
   a. Liver
   b. Kidney
   c. Lungs
   d. Muscles

4. First step of urea cycle occurs in::
   a. mitochondria
   b. Cytosol
   c. smooth endoplasmic reticulum
   d. rough endoplasmic reticulum

5. Tyrosine is synthesized by the hydroxylation of:
   a. Histidine
   b. Phenylalanine
   c. Arginine
   d. Lysine

6. Amino acids without genetic code
   a. Hydroxyproline
   b. Hydroxylysine
   c. Selenocysteine
   d. All of the above ✔

7. During trans amination by Alanine amino transferases which of the following Ketoacids can act as recipient:
   a. Oxaloacelate
   b. α - Ketoglutarate
   c. Pyruvate ✔
   d. All of the above

8. Which of the following is true regarding ammonia metabolism
   a. Hyperammonemia can lead to coma & death
   b. Its normal blood level is 40 – 70 µg/dl
   c. It is detoxified to urea
   d. All of the above are true

9. Selenocysteine is present at the active site of
   a. Thioredoxin reductase
   b. Glutathione peroxidase
   c. Deiodonase
   d. All of the above

10. Metabolic disorders of branched-chain amino acid catabolism is
    a. Maple syrup urine disease
    b. Intermittent branched –chain ketnuria
    c. Isovaleric acidemia
    d. All of the above ✔

11. Protein turnover of total body protein in muscle protein per day is
    a. 1-2%
    b. 2-3%
    c. 3-4%
    d. 4-5%

12. Spermine and Spermidine are the end product of
    a. Methionine
    b. Ornithine
    c. Putrescine ✔
    d. All of the above

13. Histamine is formed from the decarboxylation of
    a. Histidine ✔
    b. Phenyl alanine
    c. Tyrosine
    d. None of the above

14. The compound interlinking TCA and urea cycle is:
    a. Fumarate
    b. Citrate
    c. Succinate
    d. Pyruvate

15. Dopa and dopamine are formed from
    a. Tyrosine
    b. Tryptophan
    c. Phenyl alanine
    d. None of the Above

16. Urea synthesis takes place in
    a. Lungs
    b. Kidneys
    c. Both lungs and kidneys
    d. Liver

17. Citrulline is formed from carbamoyl phosphate and
    a. Ornithine
    b. Arginine
    c. Argininosuccinate
    d. Aspartate

18. Norepinephrine and epinephrine are formed from
    a. Tyrosine ✔
    b. Tryptophan
    c. Phenyl alanine
    d. None of the Above

19. Nitrogen atom of first NH_2 of urea comes from:
    a. Glycine
    b. Serine
    c. Alanine
    d. Ammonia

20. Carbamoyl phosphate is formed from
    a. CO_2 and NH_4^+
    b. CO_2, NH_4^+ and water
    c. CO_2 and NH_4^+ and Mg
    d. CO_2, NH_4^+, Mg and ATP

Solved By :- Sana Ullah
Roll No = 29

...MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Roll

Name:

Roll No. :

Marks obtained: _____

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CLASS TEST ON G.I.T. - 2018
MBBS PART II– MCQs

Total marks: 30 Time Allowed: 20 minutes

Select one best answer

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(c) Disaccharides are actively transported across the epithelium of the small intestine
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(a) Pancreatic lipase emulsifies lipids
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9 **1-6 glycosidic bonds is cleaved by which of the following enzyme?**
(a) Maltase
(b) Isomaltase
(c) Amylase
(d) Lactase

10 **Which of the following monosaccharides has the fastest rate of absorption?**
(a) Galactose (110) } active absorption
(b) Glucose (100) }
(c) Fructose (43) } Facilitated Transport
(d) Mannose (19) }

11 **Glucose uptake in most of the cells of the body including brain and RBCs is by:**
(a) GluT 2
(b) GluT 3
(c) GluT 1
(d) GluT 4

12 **Proteolytic enzymes are produced by**
(a) Stomach
(b) Small intestine
(c) Pancreas
(d) All of above

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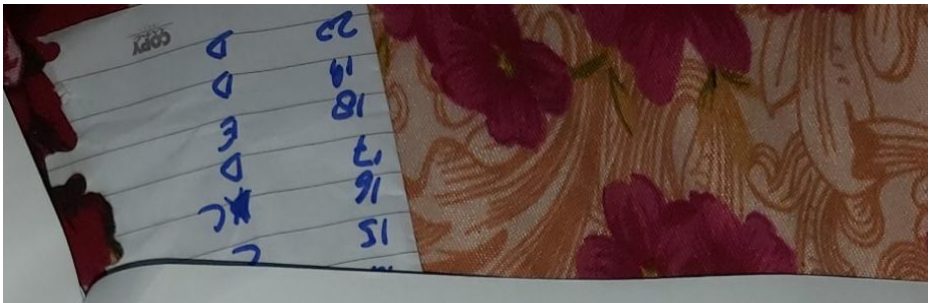

...e: 15 minutes ...College, Lahore.

Class Test on Hormones (2nd YEAR MBBS 2013)

Ritual Signed 120

1: All of the followings are hormones of anterior pituitary except:
- a. Oxytocin ✓
- b. Growth Hormone
- c. Adreno Cortico Tropic hormone (ACTH)
- d. Thyroid Stimulating hormone (TSH)
- e. Prolactin

2: Somatotrops secrete:
- a. ACTH
- b. TSH
- c. prolactin
- d. Growth Hormone ✓
- e. None of the above is true

3: Growth hormone is a polypeptide, it has:
- a. 90 amino acids
- b. 85 amino acids
- c. 200 amino acids
- d. 195 amino acids
- e. 191 amino acids ✓

4: Acromegally is caused by:
- a. Hyper secretion of glucagon before puberty
- b. Hypo secretion of glucagon on post puberty
- c. Hyper secretion of thyroid gland
- d. Hyper secretion of growth hormone on post puberty ✓
- e. None of the above is true

5: Follicle stimulating hormone is secreted by:
- a. Posterior pituitary
- b. Adrenal medulla
- c. Adrenal cortex
- d. Thyroid gland
- e. None of the above is true ✓

anterior Pituitary gland.

6: Cortico tropic release factor (CRF) is secreted from:
- a. Anterior pituitary
- b. Posterior pituitary
- c. Hypothalamus ✓
- d. Thyroid gland
- e. Para thyroid gland

N.A

insulin (51 A.A)
A chain = 21 A.A
B chain = 30A.A

7: Which of the following statement about pancreatic hormones is correct:
- a. Somatostatin is secreted by delta cells of islet of Langerhans
- b. Glucagon is secreted by Alfa cells of islet of Langerhans
- c. Insulin is secreted by Beta cells of islet of Langerhans
- d. All of the above are true ✓
- e. None of the above is true

8: Insulin is formed from proinsulin, which has:
- a. 86 amino acids ✓
- b. 186 amino acids
- c. 50 amino acids
- d. 40 amino acids
- e. None of the above

9: Stress, Trauma, Severe exercise & secretion of epinephrine will:
- a. Increase the secretion of insulin
- b. Decrease the secretion of insulin ✓
- c. Will have no effect on insulin secretion
- d. All of the above are true
- e. None of the above is true

N.A

10: Which of the following statements about insulin is correct:
- a. Insulin increases glycolysis ✓
- b. It stimulates gluconeogenesis
- c. It stimulates glycogenolysis
- d. It inhibits glycogenesis
- e. None of the above is true

11: Which of the following statements about Pancreatic hormones is true:
- a. Insulin increases lipogenesis
- b. Glucagon increases lipolysis
- c. Glucagon increases proteins catabolism
- d. All of the above are true ✓
- e. None of the above is true

12: Epinephrine is formed from Nor-Epinephrine by
- a. Oxidation
- b. Reduction
- c. Hydroxylation
- d. Acetylation
- e. Methylation ✓

13: Chromogranin is a protein which is involved in the storage of:
- a. Thyroid hormone
- b. Glucorticoids
- c. Mineralocorticoids
- d. Catecholamines ✓
- e. Androgens

14: Tyrosine is the precursor of:
- a. Thyroid hormone
- b. Epinephrine
- c. Both Thyroid hormone & epinephrine ✓
- d. Testosterone
- e. Both testosterone and Estrone

N.A

15: Regarding hyperthyroidism which of the following statements is true:
- a. There will be increased blood glucose level
- b. There will be decreased cholesterol level
- c. Based metabolism rate (BMR) will be high
- d. All of the above are true ✓
- e. None of the above is true

16: ACE inhibitors tend to:
- a. Increase the blood pressure ✗
- b. Decrease the blood pressure ✓
- c. Has no effect on blood pressure
- d. All of the above is true
- e. None of the above is true

17: Diabetes insipidus is caused by:
- a. Decreased secretion of oxytocin
- b. Increased secretion of prolactin
- c. Decreased secretion of ADH
- d. Increased secretion of ADH
- e. Increased secretion of MSH

18: Which of the following statements about hormones is correct:
- a. Gluco corticoids and Minerals Corticoids are 21 carbon compounds
- b. Progesterone is 21 carbon compound
- c. Testosterone is 19 carbon compound
- d. Estrone is 18 carbon compound
- e. ~~None of the above is true~~

All of above True.

19: Cortisol is formed in
- a. Adrenal Zona Glomerulosa
- b. Adrenal Zona Fasciculata ✓
- c. Adrenal Zona Reticularis
- d. All of the above are true
- e. None of the above is true

20: Hyper secretion of Aldosteron will cause:
- a. Increased excretion of sodium
- b. Increased retention of Potassium
- c. Dehydration
- d. Acidosis
- e. Increase retention HCO_3 and Cl ✓

Solved By:- Sana Ullah
Roll No - 29

Roll No. : _____

TEST ON CARBOHYDRATE METABOLISM

Marks obtained: _____

MBBS PART II – MCQs

Total marks: 30
Time Allowed: 20 minutes

February 06, 2018

Select one best answer

1 Which one of the following does not take part in gluconeogenesis?
(a) Glycerol
(b) Pyruvate
(c) Glucogenic amino acids
(d) Palmityl-SCoA

2 Glycolysis is inhibited by the increased level of
(a) ADP
(b) ATP
(c) Insulin
(d) PFK-2

3 HMP shunt and uronic acid pathway collectively provide
(a) 36 ATP
(b) 18 ATP
(c) 9 ATP
(d) Nil ATP

4 Increased level of sorbitol can lead to following complications except:
(a) Cataract
(b) Nauropathy
(c) Retinopathy
(d) Albinism

5 Three different enzymes and five coenzymes are found in
(a) Glucose-6-Phosphate dehydrogenase
(b) Galactose-1-Phosphate pyrophosphorylase
(c) Glycogen synthase
(d) Pyruvate dehydrogenase complex

6 One statement about hormones is incorrect
(a) Insulin stimulates entry of glucose into the cell
(b) Glucagon stimulates gluconeogenesis
(c) Epinephrine is hyperglycemic hormone
(d) Thyroid hormone is hypoglycemic

7 Which one of the following enzymes has no role in HMP shunt
(a) Transketolase
(b) Glucose-6-phosphatase
(c) Transaldolase
(d) Glucose-6-phosphate dehydrogenase

8 Regulatory enzymes of citric acid cycle are
(a) Fumarase and citrate synthase
(b) Thiokinase and malate dehydrogenase
(c) α ketoglutarate dehydrogenase complex & aconitase
(d) Citrate synthase and alpha ketoglutarate dehydrogenase complex

9 Citric acid cycle is activated by
(a) Increased level of PFK-1
(b) Increased level of citrate
(c) Increased level of ATP
(d) Increased level of NADH + H^+

10 Which is the most appropriate statement about TCA cycle?
(a) In TCA cycle 10 ATP are formed
(b) In TCA cycle 6 ATP are formed
(c) In Citric acid cycle 14 ATP are formed
(d) In Citric acid cycle No ATP are formed

11 2,3 bisphosphoglycerate is formed in
(a) Rapaport Leubering cycle
(b) Cori's lactic acid cycle
(c) Glucose-Alanine cycle
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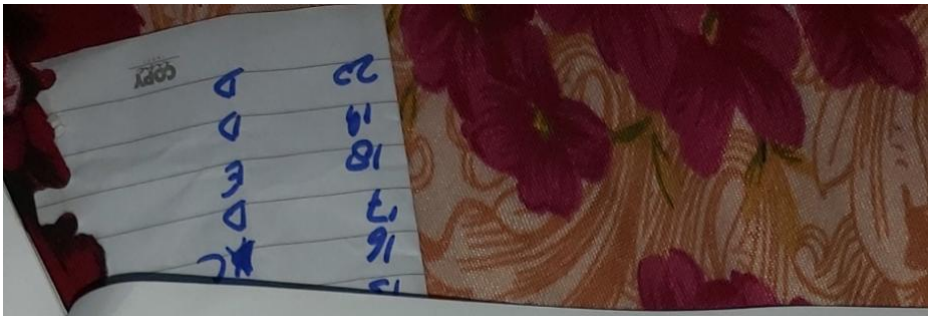
12 Gluconeogenesis takes place in
(a) Liver
(b) Kidneys
(c) Muscles
(d) Both (a) & (b) are correct

13 Substrate level ATP formation occurs in glycolysis when
(a) Fructose1,6 bisphosphate is converted to glyceraldehyde 3- PO_4 & Dihydroxyacetone PO_4
(b) 3 phosphoglycerate is converted to 2-phosphoglycerate
(c) Fructose 6-PO_4 is converted to Fructose1,6 bisphosphate
(d) Phosphoenol pyruvate is converted to pyruvate

14 If cytosolic NADH + H+ sends its hydrogen ions into mitochondria through aspartate malate shuttle the ATP production will be
(a) 2.5
(b) 1.5
(c) 2.0
(d) 3.5



15 All of the following is true about Rennin except:
- (a) It is involved in curdling of milk
- (b) Also called as chymosin
- (c) It is not present in adults
- (d) It converts calcium paracaseinate to casein

16 Which of the following statement is incorrect
- (a) Gastric juice is neutralized by pancreatic $NaHCO_3$
- (b) Trypsin, chymotrypsin and elastase are active at neutral pH
- (c) Amino acid serine is present in the active center of trypsin only
- (d) Procarboxypeptidase is activated by trypsin

17 Which of the following is incorrect regarding absorption of amino acids
- (a) The transport of L-amino acids occurs by an active process
- (b) D-amino acids absorb by simple diffusion
- (c) D-Amino acids are more rapidly absorbed than L-amino acids
- (d) D and L amino acids absorption is at ileum and distal jejunum

18 Regarding absorption of proteins all is false except:
- (a) Infants cannot absorb intact proteins right after birth
- (b) Uptake of proteins is by special process endocytosis or pinocytosis in adults
- (c) Macromolecular absorption in adults cannot cause food allergies
- (d) Intact proteins absorption in infants is crucial for immunoglobulin transfer

19 Choose the correct statement about Hartnup's disease
- (a) Tryptophan absorption is the most effected
- (b) Tyrosine absorption is the most effected
- (c) Phenylalanine absorption is the most effected
- (d) Vitamin B12 is inadequate

20 Regulation of saliva is by:
- (a) Unconditioned reflex
- (b) Conditional Reflex
- (c) Spontaneous secretion
- (d) All of the above

21 Regarding saliva which of the following is incorrect:
- (a) Contains amylase and lipase
- (b) Contains salivary proteolytic enzymes
- (c) Contains secretory IgA and lysozymes
- (d) Contains peroxidases

22 Gastric juice contains all of the following except
- (a) HCl
- (b) Pepsin
- (c) Intrinsic factor
- (d) Vitamin B 12

23 Chyluria is the
- (a) Excretion of milky urine
- (b) Obstruction in transportation phase of lipid digestion in lacteals
- (c) An abnormal connection between urinary tract and lymphatic drainage
- (d) All of above

24 Most Dietary TAG is absorbed from intestinal lumen after hydrolysis as
- (a) Glycerol-P and FA
- (b) Acyl CoA
- (c) Acyl CoA and glycerol
- (d) FA and 2 MAG

25 "Micelles" formed in intestine
- (a) Contain mostly TAG
- (b) Are secreted by intestinal epithelial cells
- (c) Are mainly absorbed in stomach wall
- (d) Are smaller than droplets of emulsified fats

26 Lipase in presence of bile salts for its optimal activity combines with a protein co-enzyme called
- (a) Amylase
- (b) Kinin
- (c) Pepsin
- (d) Colipase

27 Activation of fatty acids inside the intestinal mucosa cells is by
- (a) Apo-B48
- (b) Pepsin
- (c) Thiokinase
- (d) Lipase

28 2-MAG is converted to 1-MAG by enzyme
- (a) Lipase
- (b) Isomerase
- (c) Cholesterol esterase
- (d) Phospholipase A2

29 Calcium ions facilitate action of lipase by
- (a) Facilitating the binding of the enzyme to the fats
- (b) Inhibition of emulsification
- (c) Micelle formation
- (d) True solution formation

30 Steatorrhea is
- (a) Excretion of cholesterol in feces
- (b) Excretion of chylomicrons in feces
- (c) Excretion of large amount of fats in feces
- (d) Excretion of bile salts in urine

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DEPARTMENT OF BIOCHEMISTRY

Name: [redacted]
Roll No: [redacted]
Marks obtained: _____

20

SEND UP EXAMINATION - 2018
SECOND YEAR MBBS PART II – MCQs

Total marks: 30
Time Allowed: 25 minutes

Select one best answer

1 Coenzyme Q
(a) Oxidizes glucose
(b) Reduces glucose
(c) Transfers electrons
(d) Transfer phosphates

2 Accidental ingestion of 2,4 Dinitrophenol will result in
(a) More ATP synthesis
(b) Thermogenesis
(c) Increased synthesis of urea
(d) Reduced reduction of NADH

3 Steatorrhea is caused by
(a) Malabsorption of fats
(b) Malabsorption of proteins
(c) Lactose intolerance
(d) Malabsorption of carbohydrates

4 Secondary bile acids are synthesized in
(a) Stomach
(b) Liver
(c) Pancreas
(d) Intestine

5 For glycogenesis, glucose should be first converted to
(a) ODP glucose
(b) Sorbitol
(c) Lactic acid
(d) Pyruvic acid

6 For the continuity of citric acid cycle, which of the following compounds should be regenerated?
(a) Malate
(b) Oxaloacetate
(c) Fumarate
(d) Succinate

7 During starvation, the first reserve nutrient to be depleted is
(a) Triacylglycerol
(b) Glycogen
(c) Proteins
(d) Cholesterol

8 All of the following statements about albinism are correct except
(a) Tyrosinase is deficient in melanocytes
(b) Skin is hypo pigmented
(c) Eyes are hypo pigmented
(d) It results in mental retardation

9 Diabetes insipidus is caused by the deficient secretion of
(a) Insulin
(b) Glucagon
(c) Oxytocin
(d) Vasopressin

10 Irritability, tremors, intolerance to heat and high blood glucose level are indications of
(a) Hypothyroidism
(b) Cushing's syndrome
(c) Addison's disease
(d) Hyperthyroidism

11 Secretion of epinephrine will
(a) Stimulate glycolysis
(b) Inhibit gluconeogenesis
(c) Stimulate glycogenesis
(d) Stimulate glycogenolysis

12 Allopurinol, which is used for the treatment of gout, is a competitive inhibitor of
(a) Glycogen synthase
(b) Catalase
(c) Xanthine oxidase
(d) Alkaline phosphatase

13 Okazaki fragments are related to
(a) DNA synthesis
(b) Protein synthesis
(c) mRNA synthesis
(d) tRNA synthesis

14 In the biosynthesis of pyrimidines
(a) Tyrosine and serine are added up to form pyrimidine
(b) Glycine & methionine are added up to form pyrimidine
(c) Aspartic acid is incorporated as a whole
(d) Arginine & proline are added up form pyrimidine

PGG

e. None of the above is true

21: Carnitine is formed from:
a. Glulainic acid, Glycine
b. Glycine & Cystine
c. Lysine & Metnionine
d. All of the above are true
e. None of the above is true

22: Energy generated by the β-oxidation of stearic acid & oleic acids
a. is equal
b. stearic acid gives less energy than oleic acid
c. stearic acid gives more energy than oleic acid
d. All of the above are true
e. None of the above is true

23: Lipoxins are:
a. 20 carbon oreen chain compound
b. They have 3 OH group at 5,6 & 15
c. They have four alternate double bonds at 7,9,11 & 13
d. All of the above are true
e. None of the above is true

24: Which of the following is not formed from cholesterol:
a. bile pigments
b. bile acids
c. mineralocorticoids
d. Vitamin D
e. glucocorticoids

25: Which of the following does not take part in purine synthesis:
a. Glutamine
b. CO_2
c. Tyrosine
d. Aspartate
e. Glycine

26: The DNA strand from which RNA is copied is called:
a. Coding strand
b. Template Strand
c. Lagging Strand
d. All of the above are true
e. None of the above is true

27: Non coding region on DNA is called:
a. Introns
b. Exons
c. Poly A tail
d. Methyl Cap
e. None of the above is true

28: Anticodon region is present on:
a. mRNA
b. rRNA
c. sn RNA
d. tRNA
e. None of the above is true

29: Out of 64 codons in total, how many code for 20 amino acids?
a. 60
b. 61
c. 62
d. 63
e. None of the above is true

30: Which enzyme cuts double strand DNA at specific recognition sequenc
a. Restriction endonucleases
b. Topoisomerase
c. DNA helicase
d. DNA polymerase I
e. None of the above is true

31: The mutation in which changed base codes for the same amino acid is called:
a. Silent
b. Missense
c. Nonsense
d. Frame shift
e. None of the above is true

32: Growth hormone is a polypeptide, it has:
a. 90 amino acids
b. 85 amino acids
c. 200 amino acids
d. 195 amino acids
e. 191 amino acids

33: Cortico tropic release factor (CRF) is secreted from:
a. Anterior pituitary
b. Posterior pituitary
c. Hypothalamus
d. Thyroid gland
e. Para thyroid gland

34: Stress, Trauma, Severe exercise & secretion of epinephrine will:
a. Increase the secretion of insulin
b. Decrease the secretion of insulin
c. Will have no effect on insulin secretion
d. All of the above are true
e. None of the above is true

35: Which of the following statements about Pancreatic hormones is true:
a. Insulin increases lipogenesis
b. Glucagon increases lipolysis
c. Glucagon increases proteins catabolism
d. All of the above are true
e. None of the above is true

36: Hyper secretion of Aldosteron will cause:
a. Increased excretion of sodium
b. Increased retention of Potassium
c. Dehydration
d. Acidosis
e. Increase retention HCO_3 and Cl^-

37: Which of the following is the feature of hypothyroidism:
a. Intolerance to heat
b. Bradycardia
c. Tremors
d. Irritability
e. None of the above is true

38: The target cells for ADH are:
a. Hepatocytes
b. Smooth muscle cells
c. Myocardial cells
d. Collecting ducts of kidneys
e. None of the above is true

39: Major dietary lipid is:
a. Cholesterol
b. Phospholipid
c. Triacylglycerol
d. Eicosanoids
e. None of the above is true

40: Hydrolysis of starch by amylase will yield:
a. Glycogen
b. Glucose
c. Fructose
d. Galactose
e. Maltose

15 **Glucose-6-phosphate dehydrogenase is the enzyme of** (a) Glycogenesis (b) Glycolysis (c) Uronic acid pathway (d) Hexose monophosphate shunt	16 **In hereditary fructose intolerance there is deficiency of** (a) PFK-1 (b) PFK-2 (c) Pyruvate carboxylase (d) Aldolase-B
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19 **HMP shunt and uronic acid pathway collectively provide** (a) 36 ATP (b) 18 ATP (c) 9 ATP (d) Nil ATP	20 **Increased level of sorbitol can lead to following complications except:** (a) Cataract (b) Neuropathy (c) Retinopathy (d) Albinism
21 **Three different enzymes and five coenzymes are found in** (a) Glucose-6-Phosphate dehydrogenase (b) Galactose-1-Phosphate pyrophosphorylase (c) Glycogen synthase (d) Pyruvate dehydrogenase complex	22 **One statement about hormones is incorrect** (a) Insulin stimulates entry of glucose into the cell (b) Glucagon stimulates gluconeogenesis (c) Epinephrine is hyperglycemic hormone (d) Thyroid hormone is hypoglycemic
23 **Which one of the following enzymes has no role in HMP shunt** (a) Transketolase (b) Glucose-6-phosphatase (c) Transaldolase (d) Glucose-6-phosphate dehydrogenase	24 **Regulatory enzymes of citric acid cycle are** (a) Fumarase and citrate synthase (b) Thiokinase and malate dehydrogenase (c) α ketoglutarate dehydrogenase complex & aconitase (d) Citrate synthase and alpha ketoglutarate dehydrogenase complex
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AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: Sana Ullah
Roll No.: 29
Marks obtained: _____

TEST ON CARBOHYDRATE METABOLISM
MBBS PART II – MCQs

Total marks: 30
Time Allowed: 20 minutes
February 06, 2018

Select one best answer

1 **Deficiency of which of the following enzyme can cause classic galactosemia?**
(a) Galactose-1-PO_4 uridyl transferase
(b) Galactose-1-PO_4 phosphorylase
(c) Malate dehydrogenase
(d) Lactate dehydrogenase

2 **Which of the following step of TCA cycle will liberate CO_2?**
(a) Citrate → cis-aconitate
(b) Succinyl SCoA → succinate
(c) Malate → oxaloacetate
(d) α-ketoglutarate → Succinyl SCoA

3 **In gluconeogenesis, for the conversion of pyruvate to phosphoenol pyruvate enzymes required are**
(a) Hexokinase and glucokinase
(b) PFK-1 and PFK-2
(c) Pyruvate dehydrogenase and pyruvate carboxylase
(d) Pyruvate carboxylase & PEP carboxykinase

4 **In TCA cycle reversible steps are**
(a) 2 and 3
(b) 7 and 8
(c) 1 and 6
(d) 5 and 6

5 **Gluconeogenesis takes place in**
(a) Mitochondria of hepatic cells
(b) Cytosol of hepatic cells
(c) In muscles
(d) Both in mitochondria & cytosol of liver

6 **Glycogen synthesis will be activated when**
(a) Glycogen synthase is phosphorylated
(b) Glycogen synthase is dephosphorylated
(c) Phosphorylase is phosphorylated
(d) Debranching enzyme is activated

7 **Which of the following statements about Von Gierke's disease is untrue**
(a) There will be hypoglycemia
(b) There will be hyperglycemia
(c) There will be hyperlipidemia
(d) There will be hepatomegaly

8 **Fructose 1,6 bisphosphatase is the enzyme of**
(a) Glycolysis
(b) Glycogenolysis
(c) Glycogenesis
(d) Gluconeogenesis

9 **Transaldolase transfers**
(a) Two carbons from ketosugar to aldosugar
(b) Three carbons from aldosugar to ketosugar
(c) Two carbons from aldosugar to ketosugar
(d) Three carbons from ketosugar to aldosugar

10 **Aldolase-B converts**
(a) Fructose 1,6 bisphosphate to glyceraldehyde-3- PO_4 & Dihydroxyacetone phosphate
(b) Glucose to Glucose-1-PO_4
(c) Fructose-1-phosphate to glyceraldehyde & Dihydroxyacetone phosphate
(d) Fructose-1-phosphate to glyceraldehyde-3-PO_4 & Dihydroxyacetone phosphate

11 **As regards citric acid cycle which of the statements is untrue?**
(a) Three NADH + H^+ are formed
(b) One FAD^+ is formed
(c) One GTP is formed
(d) One NADPH + H^+ is formed

12 **As regards Glucagon which of the following statements is untrue?**
(a) Glucagon stimulates gluconeogenesis
(b) Glucagon stimulatas glycogenolysis
(c) Glucagon inhibits glycogenesis
(d) Glucagon stimulates glycolysis

13 **Conversion of Glucose-6-phosphate to Glucose-1-phosphate requires**
(a) Isomerase
(b) Epimerase
(c) Mutase
(d) Hydratase

14 **Which of the following statements about insulin is true**
(a) Stimulate glycogenesis
(b) Stimulate glycogenolysis
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Marks obtained: _____

TEST ON CARBOHYDRATE METABOLISM
MBBS PART II – MCQs

Total marks: 30
Time Allowed: 20 minutes

Solved By:- Sana Ullah

February 06, 2018

Roll No = 29

Select one best answer

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(a) Fructose1,6 bisphosphate is converted to glyceraldehyde 3- PO_4 & Dihydroxyacetone PO_4
(b) 3 phosphoglycerate is converted to 2-phosphoglycerate
(c) Fructose 6-PO_4 is converted to Fructose1,6 bisphosphate
(d) Phosphoenol pyruvate is converted to pyruvate

14 If cytosolic NADH + H+ sends its hydrogen ions into mitochondria through aspartate malate shuttle the ATP production will be
(a) 2.5
(b) 1.5
(c) 2.0
(d) 3.5

Marks obtained: _____

TEST ON CARBOHYDRATE METABOLISM
MBBS PART II – MCQs

Total marks: 30
Time Allowed: 20 minutes
Solved By: Sana Ullah
February 06, 2018

Select one best answer
Roll No = 29

1 In hereditary fructose intolerance there is deficiency of
(a) PFK-1
(b) PFK-2
(c) Pyruvate carboxylase
(d) Aldolase-B

2 Glycolysis is inhibited by the increased level of
(a) ADP
(b) ATP
(c) Insulin
(d) PFK-2

3 Which one of the following does not take part in gluconeogenesis?
(a) Glycerol
(b) Pyruvate
(c) Glucogenic amino acids
(d) Palmityl-SCoA

4 HMP shunt and uronic acid pathway collectively provide
(a) 36 ATP
(b) 18 ATP
(c) 9 ATP
(d) Nil ATP

5 Increased level of sorbitol can lead to following complications except:
(a) Cataract
(b) Neuropathy
(c) Retinopathy
(d) Albinism

6 Three different enzymes and five coenzymes are found in
(a) Glucose-6-Phosphate dehydrogenase
(b) Galactose-1-Phosphate pyrophosphorylase
(c) Glycogen synthase
(d) Pyruvate dehydrogenase complex

7 One statement about hormones is incorrect
(a) Insulin stimulates entry of glucose into the cell
(b) Glucagon stimulates gluconeogenesis
(c) Epinephrine is hyperglycemic hormone
(d) Thyroid hormone is hypoglycemic

8 Which one of the following enzymes has no role in HMP shunt
(a) Transketolase
(b) Glucose-6-phosphatase
(c) Transaldolase
(d) Glucose-6-phosphate dehydrogenase

9 Regulatory enzymes of citric acid cycle are
(a) Fumarase and citrate synthase
(b) Thiokinase and malate dehydrogenase
(c) α ketoglutarate dehydrogenase complex & aconitase
(d) Citrate synthase and alpha ketoglutarate dehydrogenase complex

10 Citric acid cycle is activated by
(a) Increased level of PFK-1
(b) Increased level of citrate
(c) Increased level of ATP
(d) Increased level of NADH + H⁺

11 Which is the most appropriate statement about TCA cycle?
(a) In TCA cycle 10 ATP are formed
(b) In TCA cycle 6 ATP are formed
(c) In Citric acid cycle 14 ATP are formed
(d) In Citric acid cycle No ATP are formed

12 2,3 bisphosphoglycerate is formed in
(a) Rapaport Leubering cycle
(b) Cori's lactic acid cycle
(c) Glucose-Alanine cycle
(d) Lactose intolerance

13 Substrate level ATP formation occurs in glycolysis when
(a) Fructose1,6 bisphosphate is converted to glyceraldehyde 3- PO_4 & Dihydroxyacetone PO_4
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14 If cytosolic NADH + H+ sends its hydrogen ions into mitochondria through aspartate malate shuttle the ATP production will be
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(d) 3.5

15 In hereditary fructose intolerance there is deficiency of (a) PFK-1 (b) PFK-2 (c) Pyruvate carboxylase (d) Aldolase-B	**16** Glycolysis is inhibited by the increased level of (a) ADP (b) ATP (c) Insulin (d) PFK-2
17 Which one of the following does not take part in gluconeogenesis? (a) Glycerol (b) Pyruvate (c) Glucogenic amino acids (d) Palmityl-SCoA	**18** HMP shunt and uronic acid pathway collectively provide (a) 36 ATP (b) 18 ATP (c) 9 ATP (d) Nil ATP
19 Increased level of sorbitol can lead to following complications except: (a) Cataract (b) Neuropathy (c) Retinopathy (d) Albinism	**20** Three different enzymes and five coenzymes are found in (a) Glucose-6-Phosphate dehydrogenase (b) Galactose-1-Phosphate pyrophosphorylase (c) Glycogen synthase (d) Pyruvate dehydrogenase complex
21 One statement about hormones is incorrect (a) Insulin stimulates entry of glucose into the cell (b) Glucagon stimulates gluconeogenesis (c) Epinephrine is hyperglycemic hormone (d) Thyroid hormone is hypoglycemic	**22** Which one of the following enzymes has no role in HMP shunt (a) Transketolase (b) Glucose-6-phosphatase (c) Transaldolase (d) Glucose-6-phosphate dehydrogenase
23 Regulatory enzymes of citric acid cycle are (a) Fumarase and citrate synthase (b) Thiokinase and malate dehydrogenase (c) α ketoglutarate dehydrogenase complex & aconitase (d) Citrate synthase and alpha ketoglutarate dehydrogenase complex	**24** Citric acid cycle is activated by (a) Increased level of PFK-1 (b) Increased level of citrate (c) Increased level of ATP (d) Increased level of NADH + H^+
25 Which is the most appropriate statement about TCA cycle? (a) In TCA cycle 10 ATP are formed (b) In TCA cycle 6 ATP are formed (c) In Citric acid cycle 14 ATP are formed (d) In Citric acid cycle No ATP are formed	**26** 2,3 bisphosphoglycerate is formed in (a) Rapaport Leubering cycle (b) Cori's lactic acid cycle (c) Glucose-Alanine cycle (d) Lactose intolerance
27 Substrate level ATP formation occurs in glycolysis when (a) Fructose1,6 bisphosphate is converted to glyceraldehyde 3- PO_4 & Dihydroxyacetone PO_4 (b) 3 phosphoglycerate is converted to 2-phosphoglycerate (c) Fructose 6-PO_4 is converted to Fructose1,6 bisphosphate (d) Phosphoenol pyruvate is converted to pyruvate	**28** If cytosolic NADH + H+ sends its hydrogen ions into mitochondria through aspartate malate shuttle the ATP production will be (a) 2.5 (b) 1.5 (c) 2.0 (d) 3.5
29 Gluconeogenesis takes place in (a) Liver (b) Kidneys (c) Muscles (d) Both (a) & (b) are correct	**30** Deficiency of which of the following enzyme can cause classic galactosemia? (a) Galactose-1-PO_4 uridyl transferase (b) Galactose-1-PO_4 phosphorylase (c) Malate dehydrogenase (d) Lactate dehydrogenase

Marks obtained: _____

TEST ON CARBOHYDRATE METABOLISM
MBBS PART II – MCQs

Total marks: 30
Time Allowed: 20 minutes
February 06, 2018

Solved by :- Sana Ullah
Roll No = 29

Select one best answer

1 Which of the following step of TCA cycle will liberate CO_2?
(a) Citrate → cis-aconitate
(b) Succinyl SCoA → succinate
(c) Malate → oxaloacetate
(d) α-ketoglutarate → Succinyl SCoA

2 In gluconeogenesis, for the conversion of pyruvate to phosphoenol pyruvate enzymes required are
(a) Hexokinase and glucokinase
(b) PFK-1 and PFK-2
(c) Pyruvate dehydrogenase and pyruvate carboxylase
(d) Pyruvate carboxylase & PEP carboxykinase

3 In TCA cycle reversible steps are
(a) 2 and 3
(b) 7 and 8
(c) 1 and 6
(d) 5 and 6

4 Gluconeogenesis takes place in
(a) Mitochondria of hepatic cells
(b) Cytosol of hepatic cells
(c) In muscles
(d) Both in mitochondria & cytosol of liver

5 Glycogen synthesis will be activated when
(a) Glycogen synthase is phosphorylated
(b) Glycogen synthase is dephosphorylated
(c) Phosphorylase is phosphorylated
(d) Debranching enzyme is activated

6 Which of the following statements about Von Gierke's disease is untrue?
(a) There will be hypoglycemia
(b) There will be hyperglycemia
(c) There will be hyperlipidemia
(d) There will be hepatomegaly

7 Fructose 1,6 bisphosphatase is the enzyme of
(a) Glycolysis
(b) Glycogenolysis
(c) Glycogenesis
(d) Gluconeogenesis

8 Transaldolase transfers
(a) Two carbons from ketosugar to aldosugar
(b) Three carbons from aldosugar to ketosugar
(c) Two carbons from aldosugar to ketosugar
(d) Three carbons from ketosugar to aldosugar

9 Aldolase-B converts
(a) Fructose 1,6 bisphosphate to glyceraldehyde-3-PO_4 & Dihydroxyacetone phosphate
(b) Glucose to Glucose-1-PO_4
(c) Fructose-1-phosphate to glyceraldehyde & Dihydroxyacetone phosphate
(d) Fructose-1-phosphate to glyceraldehyde-3-PO_4 & Dihydroxyacetone phosphate

10 As regards citric acid cycle which of the statements is untrue?
(a) Three NADH + H^+ are formed
(b) One FAD^+ is formed
(c) One GTP is formed
(d) One NADPH + H^+ is formed

11 As regards Glucagon which of the following statements is untrue?
(a) Glucagon stimulates gluconeogenesis
(b) Glucagon stimulates glycogenolysis
(c) Glucagon inhibits glycogenesis
(d) Glucagon stimulates glycolysis

12 Conversion of Glucose-6-phosphate to Glucose-1-phosphate requires
(a) Isomerase
(b) Epimerase
(c) Mutase
(d) Hydratase

13 Which of the following statements about insulin is true?
(a) Stimulate glycogenesis
(b) Stimulate glycogenolysis
(c) Inhibits glycolysis
(d) Stimulates gluconeogenesis

14 Glucose-6-phosphate dehydrogenase is the enzyme of
(a) Glycogenesis
(b) Glycolysis
(c) Uronic acid pathway
(d) Hexose monophosphate shunt

15 C
16 A
17 D

(e) PGG

21: Carnitine is formed from:
a. Glulainic acid, Glycine
b. Glycine & Cystine
(c) Lysine & Methionine
d. All of the above are true
e. None of the above is true

in liver and kidney.

22: Energy generated by the β-oxidation of stearic acid & oleic acids
a. is equal
b. stearic acid gives less energy than oleic acid
(c) stearic acid gives more energy than oleic acid
d. All of the above are true
e. None of the above is true

23: Lipoxins are:
a. 20 carbon open chain compound
b. They have 3 OH group at 5,6 & 15
c. They have four alternate double bonds at 7,9,11 & 13
(d) All of the above are true
e. None of the above is true

24: Which of the following is not formed from cholesterol:
(a) bile pigments
b. bile acids
c. mineralocorticoids
d. Vitamin D
e. glucocorticoids

25: Which of the following does not take part in purine synthesis:
a. Glutamine
b. CO_2
(c) Tyrosine
d. Aspartate
e. Glycine

26: The DNA strand from which RNA is copied is called:
a. Coding strand
(b) Template Strand
c. Lagging Strand
d. All of the above are true
e. None of the above is true

27: Non coding region on DNA is called:
(a) Introus introns
b. Exons
c. Poly A tail
d. Methyl Cap
e. None of the above is true

28: Anticodon region is present on:
a. mRNA
b. rRNA
c. sn RNA
(d) tRNA
e. None of the above is true

29: Out of 64 codons in total, how many code for 20 amino acids?
a. 60
(b) 61
c. 62
d. 63
e. None of the above is true

30: Which enzyme cuts double strand DNA at specific recognition sequence
(a) Restriction endonucleases
b. Topoisomerase
c. DNA helicase
d. DNA polymerase I
e. None of the above is true

31: The mutation in which changed base codes for the same amino acid is called:
(a) Silent
b. Missense
c. Nonsense
d. Frame shift
e. None of the above is true

32: Growth hormone is a polypeptide, it has:
a. 90 amino acids
b. 85 amino acids
c. 200 amino acids
d. 195 amino acids
(e) 191 amino acids

33: Cortico tropic release factor (CRF) is secreted from:
a. Anterior pituitary
b. Posterior pituitary
(c) Hypathalamus
d. Thyroid gland
e. Para thyroid gland

34: Stress, Trauma, Severe exercise & secretion of epinephrine will:
a. Increase the secretion of insulin
(b) Decrease the secretion of insulin
c. Will have no effect on insulin secretion
d. All of the above are true
e. None of the above is true

35: Which of the following statements about Pancreatic hormones is true:
a. Insulin increases lipogenesis
b. Glucagon increases lipolysis
c. Glucagon increases proteins catabolism
(d) All of the above are true
e. None of the above is true

36: Hyper secretion of Aldosteron will cause:
a. Increased excretion of sodium
b. Increased retention of Potassium
c. Dehydration
d. Acidosis
(e) Increase retention HCO_3 and Cl^-

37: Which of the following is the feature of hypothyroidism:
a. Intolerance to heat
(b) Bradycardia
c. Tremors
d. Irritability
e. None of the above is true

38: The target cells for ADH are:
a. Hepatocytes
b. Smooth muscle cells
c. Myocardial cells
(d) Collecting ducts of kidneys
e. None of the above is true

39: Major dietary lipid is:
a. Cholesterol
b. Phospholipid
(c) Triacylglycerol
d. Eicosanoids
e. None of the above is true

40: Hydrolysis of starch by amylase will yield:
a. Glycogen
b. Glucose
c. Fructose
d. Galactose
(e) Maltose

Marks: 40
Time: 30 Minutes

Azra Naheed Medical College, Lahore.

Roll # _____

Send up Examination (2nd YEAR MBBS 2013)

1. Cyanide is inhibitor of
   a. Complex I
   b. Complex II
   c. Complex III
   (d) Complex IV
   e. None of the above

2. Bile
   a. Is produced in gallbladder
   b. Is highly acidic in nature
   c. contains α-amylase
   d. is endopeptidase
   (e) is the secretion and excretion of liver

3. The physiologically active bile acids are conjugated with
   a. Glucuronic acid
   (b) Glycine & taurine
   c. Phenyl alanine
   d. Tryptophan
   e. None of the above

4. Most important function of bile salts is
   a. digestion of protein
   (b) lowering of surface tension and fat emulsification
   c. starch hydrolysis
   d. energy production
   e. None of the above

5. Bile pigments are
   (a) break down products of hemoglobin
   b. cholic acids
   c. tauro cholic acid
   d. important for protein digestion
   e. conjugates of glycine

6. Secondary bile acids are
   a. Cholic acids
   b. chenodeoxy cholic acids
   (c) litho cholic acid and deoxy cholic acid
   d. Lecithins
   e. cephalins

7: Which one of the following does not take part in gluconeogenesis:
   a. Glycerol
   b. Propionyl-SCoA
   (c) Acetyl-SCoA
   d. Alanine
   e. Lactate

8: In muscles glucose 6-PO_4 is not converted to glucose due to absence of:
   a. Hexokinase
   b. Glucokinase
   c. Phosphorylase
   d. Glycogen synthase
   (e) Glucose 6- phosphatase

9: Which one of the following enzymes does not take part in glycolysis:
   a. Hexokinase
   b. Glucokinase
   (c) Glucose 6- phosphatase
   d. Pyruvate Kinase
   e. Phospho fructo Kinase

10: Aldolase B converts:
   a. Fructose 1-6 bisphosphate into dihydroxy acetone phosphate and glyceraldehydes 3-phosphate
   b. 3- Phosphoglyceraldehyde into 1,3bisphosphoglycerate
   c. Phosphoenol pyruvate to pyruvate
   d. Fructose 6 phosphate to fructose 1-6 bisphosohate
   (e) Fructose 1 phosphate to dihydroxy acetone phosphate and glyceraldehydes

11: Phospho Fructokinase -2 converts:
   a. Fructose to fructose 1,6 bisphosphate
   b. Glucose 6-Phosphate to glucose
   (c) Fructose 6 phosphate to fructose 2,6 bisphosphate
   d. Malate to oxaloacetate
   e. Pyruvate to acetyl S-CoA

12: Which one of the following statements is incorrect about insulin:
   a. It increases the entry of glucose into the cells
   b. It is secreted by the β cells of Langerharns
   c. It enhances glycogenesis
   d. It inhibits glycogenolysis
   (e) It stimulatess gluconeogenesis

13: Which of the following enzymes is not involved in HMP-Shunt
   (a) Glyceraldehyde 3-phosphate dehydrogenase
   b. Glucose 6 PO_4 dehydrogenase
   c. Trannsketolase
   d. Phosphogluconate dehydrogenasse
   e. Transaldolase

14: which of the following amino acids is incorporated into purine molecule & becomes atom no. 4,5 and 7 of purine:
   a. Alanine
   b. Serine
   c. Lysine
   d. Leucine
   (e) Glycine

15: Tyrosine is synthesized by the hydroxylation of:
   a. Histidine
   (b) Phenylalanine
   c. Arginine
   d. Lysine
   e. None of the above

16: Which of the following statement is true regarding ammonia metabolism:
   a. It is detoxified to urea
   b. Hyperammonemia can lead to coma & death
   c. Its normal blood level is 40 – 70 µg/dl
   (d) All of the above are true
   e. none of the above is true

17: The compound interlinking TCA and urea cycle is:
   (a) Fumarate
   b. Citrate
   c. Succinate
   d. Pyruvate
   e. α – Ketoglutarate

18: First step of urea cycle occurs in:
   (a) mitochondria
   b. Cytosol
   c. smooth endoplasmic reticulum
   d. rough endoplasmic reticulum
   e. Lysosome

19: All prostaglandins have OH group at C_{15} except:
   a. PGA
   b. PGB
   c. PGE
   d. Prostacyclins

20. Which of the following enzyme is inhibited by Aspirin:
   b. 15-lipoxygenase
   b. 5-lipoxygenase
   c. 12-lipoxygenase
   (d) Cycloxygenase

P.T.O

Solved By:- Sana Ullah
Roll No= F16-029

Marks: 40
Time: 30

15 Oxidative deamination of amino acids primarily occurs in (a) Bones and spleen (b) Liver and kidney (c) GIT and pancreas (d) Liver and spleen (e) Bones and kidneys	**16** Number of ATP used in urea cycle are (a) 2 (b) 3 (c) 4 (d) None (e) One
17 Enzyme of the rate limiting step of urea cycle is (a) Carbamoyl Phosphate Synthetase –I (b) Carbamoyl Phosphate Synthase (c) Arginine succinate Synthetase (d) Arginase (e) Glutamate dehydrogenase	**18** N-acetylglutamato, the regulator of urea cycle is formed by (a) Acetate and Arginine (b) Glutamate and Acetyl Co A (c) Glutamate and Acetate (d) Glutamate and Arginine (e) Glutamine and Arginine
19 Normal blood ammonia concentration in µmol/L is (a) 100 – 200 (b) 50 – 100 (c) 5 – 50 (d) 200 – 500 (e) Should not be present Lippincott's 5-35 µmol/L	**20** Active form of methionine is (a) S Adenosyl homocysteine (b) S Adenosyl methionine (c) Homocysteine (d) Cystathionine (e) α – ketoglutarate
21 The enzyme required for conversion of tyrosine to DOPA is (a) Tyrosine transaminase (b) Tyrosine hydroxylase (c) DOPA hydroxylase (d) DOPA dehydrogenase (e) DOPA decarboxylase	**22** Final products of tyrosine degradation are (a) Acetoacetate and fumarate (b) Acetoacetate and homogentisate (c) Fumarate and dopamine (d) Epinephrine and norepinephrine (e) Epinephrine and melanin
23 In mammals, the largest amount of serotonin is synthesized in (a) Liver (b) Spleen (c) Bones (d) Intestinal cells (e) Blood	**24** Nitric Oxide (NO) is produced in our body by the metabolism of (a) Methionine (b) Glycine (c) Histidine (d) Glutamate (e) Arginine
25 Carrier compounds that transfer "one carbon units" to other compounds are (a) THF (b) Methionine (c) Glycine (d) Both a & b (e) Both a & c	**26** Most common inherited disease of amino acid metabolism is (a) Phenylketonuria (b) Albinism (c) Alkaptonuria (d) Homocysteinuria (e) Cystinuria
27 Phenylketonuria is caused by the deficiency of (a) Phenylalanine oxidase (b) Phenylalanine decarboxylase (c) Phenylalanine reductase (d) Phenylalanine hydroxylase (e) Phenylalanine synthase	**28** The system predominately affected in phenylketonuria is (a) Liver (b) Spleen (c) Intestine (d) Kidney (e) Brain
29 In Maple syrup urine disease, there is deficiency of (a) Aminotransferase (b) Alpha keto acid dehydrogenase (c) Thiamine (d) Decarboxylase (e) Lactate dehydrogenase	**30** Common reactions present in metabolism of branched chain amino acids are (a) First two (b) Last three (c) First three (d) Last two (e) None of the above

CLASS TEST 2nd YEAR

Roll No. _____

MCQs

Total marks: 30
Time Allowed: 20 minutes

Solved By :- Sana Ullah
Roll No: F16-029

Select one best answer

1 Which of the following groups of amino acids take part in the biosynthesis of purines

(a) Arginine, Serine, Methionine
(b) Phenylalanine, Glutamic acid, Histidine
(c) Glycine, Tyrosine, Aspartic acid
(d) Glycine, Aspartic acid, Alanine
(e) Aspartic acid, Glutamine, Glycine

2 Which of the following enzymes is needed for the biosynthesis of Pyrimidines?

(a) Carbamoyl Phosphate Synthetase - I (CPS – I)
(b) Xanthine Oxidase
(c) Nucleotidase
(d) Carbamoyl Phosphate Synthetase – II (CPS – II)
(e) Hypoxanthine guanine phosphoribosyl transferase (HGPRT)

3 Nitrogen atom no. 1 of Purine is donated by

(a) Glycine
(b) Glutamine
(c) Aspartate
(d) Alanine
(e) Serine

4 Nitrogen atoms no 3 and no. 9 of purines are donated by

(a) Glycine
(b) Glutamine
(c) Aspartic acid
(d) Histidine
(e) Glutamine

5 Which of the following is not a nucleoside?

(a) Uridine
(b) Pseudouridine
(c) Thymidine
(d) Guanine
(e) Cytidine

6 Purine biosynthesis does not take place in

(a) Liver and kidneys
(b) RBCs and brain
(c) Skeletal muscles and cardiac muscles
(d) Spleen and lungs
(e) Spleen and liver

7 In Lesch Nyhan syndrome deficient enzyme is

(a) Glycogen synthase
(b) CPS – I
(c) CPS – II
(d) HGPRTase
(e) Deaminase

8 Which of the following amino acids is incorporated into purine molecule and becomes atoms no. 4, 5, and 7 of purine?

(a) Glycine
(b) Alanine
(c) Arginine
(d) Histidine
(e) Aspartic acid

9 Hyperuricemia is associated specifically with

(a) Diabetes mellitus
(b) Diabetes insipidus
(c) Gout
(d) Uremia
(e) Hyperglycemia

10 β- alanine, NH_3, and CO_2 are catabolic end products of

(a) Urea
(b) Triacylglycerol
(c) Eicosanoids
(d) Purine
(e) Pyrimidine

11 Uridine and cytidine are used for the treatment of

(a) Gout
(b) Lesch Nyhan syndrome
(c) Orotic aciduria
(d) Uremia
(e) Hypoglycemia

12 Allopurinol, a uric acid lowering drug is competitive inhibitor of

(a) HGPRT
(b) Phosphoribosyl Amido transferase
(c) Xanthine oxidase
(d) Orotate Phosphoribosyl transferase
(e) Oridine – 5 Phospho decarboxylase

13 Tyrosine is synthesized from

(a) Dopamine
(b) Tryptophan
(c) Phenylalanine
(d) Glycine
(e) Cysteine

14 Coenzyme for all aminotransferases is

(a) Vitamin B6
(b) Co A
(c) Fe^{++}
(d) Biotin
(e) Folic acid

P.T.O

15 A compound serving a link between citric acid cycle and urea cycle is
(a) Malate
(b) Citrate
(c) Succinate
(d) Fumarate

16 The 2 nitrogen atoms in urea are contributed by
(a) Ammonia and glutamate
(b) Glutamine and glutamate
(c) Ammonia and aspartate
(d) Ammonia and alanine

17 Tryptophan could be considered as precursor of :
(a) Melanotonin
(b) Thyroid hormones
(c) Melanin
(d) Epinephrine

18 The amino acids involved in the synthesis of creatin are
(a) Arginine, glycine, active methionine
(b) Arginine, alanine, glycine
(c) Glycine, lysine, methionine
(d) Arginine, lysine, methionine

19 Glycine can be synthesized from
(a) Serine
(b) Choline
(c) Betaine
(d) All of these

20 All of the following are required for synthesis of glutamine except :
(a) Glutamate
(b) Ammonia
(c) Pyridoxal phosphate
(d) ATP

21 A coenzyme required for the synthesis of glycine from serine is
(a) ATP
(b) Pyridoxal phosphate
(c) Tetrahydrofolate
(d) NAD

22 Cysteine can be synthesized from methionine and
(a) Serine
(b) Homoserine
(c) Homocysteine
(d) Threonine

23 Methionine is synthesized in human body from
(a) Cysteine and homoserine
(b) Homocysteine and serine
(c) Cysteine and serine
(d) None of these

24 Maple syrup urine diseases is an inborn error of metabolism of
(a) Sulphur-containing amino acids
(b) Aromatic amino acids
(c) Branched chain amino acids
(d) Dicarboxylic amino acids

25 Cystinuria results from inability to
(a) Metabolise cysteine
(b) Convertion of cystine into cysteine
(c) Incorporation of cysteine into proteins
(d) Reabsorbtion cystine in renal tubules

26 Ammonia is transported from muscles to liver mainly in the form of
(a) Ammonia is transported from muscles to liver mainly in the form
(b) Glutamine
(c) Asparagine
(d) Alanine

27 Histamine is formed from histidine by
(a) Deamination
(b) Dehydrogenation
(c) Decarboxylation
(d) Carboxylation

28 The following enzyme of urea cycle is present in cytosol :
(a) Argininosuccinic acid synthetase
(b) Argininosuccinase
(c) Arginase
(d) All of these

29 ATP is required in following reactions of urea cycle:
(a) Synthesis of carbamoyl phosphate and citrulline
(b) Synthesis of citrulline and argininosuccinate
(c) Synthesis of argininosuccinate and arginine
(d) Synthesis of carbamoyl phosphate and Argininosuccinate

30 Citrulline is an intermediate of
(a) TCA cycle
(b) Urea Cycle
(c) Pentose cycle
(d) Calvin cycle

Total marks: 30
Time Allowed: 20 minutes

Solved By: Sana Ullah
Roll No. 29

Select one best answer

1. Negative nitrogen balance is observed in
   (a) (A)Pregnancy
   (b) (B)Chronic fever ✔
   (c) (C) Growth period
   (d) (D) Covalescence

2. Transamination reactions :
   (a) Are inter conversions of amino and keto acids. ✔
   (b) Are the chief catabolic processes for amino acids.
   (c) Are occurred in liver end with the formation of Glutamic acid
   (d) Lead to deamination reactions

3. The most significant intermediate of Urea cycle is:
   (a) Citrullin.
   (b) .Fumaric acid.. ✔
   (c) Ornithine.
   (d) Arginine.
   (e) Argino succinate.

4. An important reaction for the synthesis of amino acid from carbohydrate intermediates is transamination which requires the cofactor
   (a) Thiamin
   (b) Riboflavin
   (c) Niacin
   (d) Pyridoxal phosphate

5. The main sites for oxidative deamination are :
   (a) Liver and kidney
   (b) Skin and pancreas
   (c) Intestine and mammary gland
   (d) Lung and spleen

6. A positive nitrogen balance occurs :
   (a) In growing infant ✔
   (b) Following surgery
   (c) In advanced cancer
   (d) In kwashiorkar

7. The main site of urea synthesis in mammals is :
   (a) Liver
   (b) Skin
   (c) Intestine
   (d) Intestine

8. The enzymes of urea synthesis are found in
   (a) Mitochondria only
   (b) Cytosol only
   (c) Both Cytosol & Mitochondria
   (d) Nucleus

9. The number of ATP required for urea synthesis is
   (a) (0)
   (b) (1)
   (c) (2)
   (d) (3)

10. Most of the ammonia released from L- amino acids reflects the coupled action of transaminase and
    (a) L-glutamate dehydrogenase ✔
    (b) L-amino acid oxidase
    (c) Histidase
    (d) Serine dehydratase

11. In urea synthesis, the amino acid functioning solely as an enzyme activator:
    (a) N-acetyl glutamate
    (b) Ornithine
    (c) Citrulline
    (d) Arginine

12. The enzyme carbamoyl phosphate synthetase requires
    (a) Mg++ ✔
    (b) Ca++
    (c) Na++
    (d) K+

13. Mechanism by which NH3 is removed from the kidneys is
    (a) Urea formation
    (b) Uric acid formation
    (c) Creatinine formation
    (d) None of these

14. Transfer of the carbamoyl moiety of carbamoyl phosphate to ornithine is catalysed by a liver mitochondrial enzyme:
    (a) Carbamoyl phosphate synthetase
    (b) Ornithine transcarbamoylase ✔
    (c) N-acetyl glutamate synthetase
    (d) N-acetyl glutamate hydrolase

32 amino acids

15 Calcitonin stimulates
(a) Tubular reabsorption of Ca^{++}
(b) Tubular reabsorption of inorganic phosphate
(c) Ca^{++} absorption from intestine
(d) Influx of PO_4 in bones

16 Which of the following is not needed for fatty acid synthesis?
(a) ATP
(b) $FADH_2$
(c) NADPH
(d) Vitamin B_{12}

17 Activity of cyclooxygenase is inhibited by aspirin which results in the decrease synthesis of
(a) Lipoxins only
(b) Leukotrienes only
(c) Both Lipoxins and Leukotrienes
(d) Prostaglandins

18 By beta oxidation which of the following fatty acid will yield maximum energy?
(a) Stearic acid (18 carbon saturated fatty acid)
(b) Oleic acid (18 carbon mono unsaturated fatty acid)
(c) Linolenic acid (18 carbon polyunsaturated fatty acid)
(d) Palmitic acid (16 carbon saturated fatty acid)

19 Sphingophospholipids have alcohol part "Sphingosine" which is synthesized from
(a) Palmityl-SCoA and serine
(b) Palmityl-SCoA and glycine
(c) Succinyl-SCoA and tyrosine
(d) Propionyl-SCoA and phenylalanine

20 Uptake of low dose of Aspirin daily decreases the chance of heart attack and stroke by decreasing the synthesis of
(a) Lipoxins
(b) Thromboxanes
(c) Leukotrienes
(d) Conjugated bile acids

21 Which of the following lipoproteins have highest concentration of cholesterol?
(a) HDL
(b) LDL
(c) VLDL
(d) Chylomicrons

22 Activation of fatty acid for β-oxidation requires all of the following except
(a) Carnitine
(b) ATP
(c) Thiokinase
(d) Coenzyme A

23 Levostatin, cholesterol lowering drug is a competitive inhibitor of
(a) HMG-SCoA synthase
(b) HMG-SCoA hydroxylase
(c) HMG-SCoA reductase
(d) HMG-SCoA isomerase

24 Alpha oxidation of fatty acid occurs mainly in
(a) Brain
(b) Kidneys
(c) Liver
(d) Muscles

25 Ketone bodies are synthesized in liver mitochondria but liver cannot use Ketone bodies for energy purpose due to the deficiency of
(a) Thiokinase
(b) Thiophorase
(c) Lipoprotein lipase
(d) Cholinesterase

26 Lipoprotein lipase is activated by
(a) Apoprotein-D
(b) Apoprotein-C II
(c) Apoprotein B-48
(d) Apoprotein B-100

27 For the synthesis of fatty acids most of the reducing equivalents ($NADPH+H^+$) are generated from
(a) Glycolysis
(b) Glycogenolysis
(c) Gluconeogenesis
(d) HMP shunt

28 Hepatic lipogenesis is stimulated by
(a) Insulin
(b) Glucagon
(c) Epinephrine
(d) Norepinephrine

29 Lithocholic acids are secondary bile acids which are synthesized in
(a) Liver
(b) Kidneys
(c) Intestines
(d) Muscles

30 HDL is said to be a good lipoprotein because
(a) It carries cholesterol from extrahepatic tissues to liver
(b) It carries cholesterol from liver to extrahepatic tissues
(c) It has largest size amongst the lipoproteins
(d) Both (b) and (c) are correct

se-6-phosphate dehydrogenase is the enzyme

(a) Glycogenesis
(b) Glycolysis
(c) Uronic acid pathway
(d) Hexose monophosphate shunt

17 Which one of the followin... gluconeogenesis?
(a) Glycerol
(b) Pyruvat...
(c) ...
(d) ...

TEST ON HORMONES & LIPID METABOLISM
SECOND YEAR MBBS PART II – 2018 – MCQs

Total marks: 30
Time Allowed: 20 minutes

Select one best answer

1 Growth hormone is protein in nature which has
(a) 51 amino acids
(b) 101 amino acids
(c) 191 amino acids
(d) 91 amino acids

2 Gigantism results due to
(a) Increased secretion of growth hormone after puberty
(b) Increased secretion of growth hormone before puberty
(c) Increased secretion of thyroid hormone before and after puberty
(d) Increase secretion of epinephrine before puberty

3 Insulin stimulates
(a) Hepatic glycogenolysis
(b) Entry of glucose into the cells
(c) Lipolysis
(d) Gluconeogenesis

4 Tumor of chromaffin cells of adrenal medulla may lead to
(a) Diabetes mellitus
(b) Systemic lupus erythematosus
(c) Pheochromocytomas
(d) Graves' disease

5 Diabetes insipidus is caused by deficiency of
(a) Growth hormone
(b) Cortisol
(c) Aldosterone
(d) Antidiuretic hormone (ADH)

6 Pygmies have
(a) Excess thyroid hormone secretion
(b) Low cortisol secretion
(c) Deficient growth hormone secretion
(d) Deficient insulin secretion

7 Stress, trauma severe exercise and secretion of epinephrine will
(a) Increase the secretion of insulin
(b) Decrease the secretion of insulin
(c) Both (a) and (b) are correct
(d) Have no effect on insulin secretion

8 Which of the following is not the anterior pituitary hormone?
(a) Growth hormone
(b) FSH
(c) TSH
(d) Somatostatin

9 Glucagon stimulates
(a) Entry of glucose into the cells
(b) Hepatic glycogenesis
(c) Gluconeogenesis
(d) Glycolysis

10 In starvation all of the following are elevated except
(a) Ketone bodies
(b) Glucagon
(c) Epinephrine
(d) Glycogen

11 Norepinephrine is converted to epinephrine by
(a) Decarboxylation
(b) Methylation
(c) Hydroxylation
(d) Deamidation

12 In hyperparathyroidism there will be
(a) Increased serum calcium level and decreased serum phosphorus level
(b) Low serum calcium level and increased serum phosphorus level
(c) Decreased serum calcium level
(d) Increased serum phosphorus level

13 Secretion of epinephrine will inhibit
(a) Gluconeogenesis
(b) Glycogenolysis
(c) Glycolysis
(d) Lipolysis

14 Which of the following is not a steroid hormone
(a) Estrone
(b) Cortisol
(c) Aldosterone
(d) Angiotensin II

Solved By:- Sana Ullah
Roll No = 29

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(a) 2.5
(b) 1.5
(c) 2.0
(d) 3.5

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: _____

Roll No. : _____

Marks obtained: _____

TEST ON CARBOHYDRATE METABOLISM
MBBS PART II – MCQs

Total marks: 30
Time Allowed: 20 minutes

February 06, 2018

Select one best answer

1 **Deficiency of which of the following enzyme can cause classic galactosemia?**
(a) Galactose-1-PO_4 uridyl transferase
(b) Galactose-1-PO_4 phosphorylase
(c) Malate dehydrogenase
(d) Lactate dehydrogenase

2 **Which of the following step of TCA cycle will liberate CO_2?**
(a) Citrate → cis-aconitate
(b) Succinyl SCoA → succinate
(c) Malate → oxaloacetate
(d) α-ketoglutarate → Succinyl SCoA

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(a) Hexokinase and glucokinase
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(a) Mitochondria of hepatic cells
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(a) Glycogen synthase is phosphorylated
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(c) Phosphorylase is phosphorylated
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7 **Which of the following statements about Von Gierke's disease is untrue**
(a) There will be hypoglycemia
(b) There will be hyperglycemia
(c) There will be hyperlipidemia
(d) There will be hepatomegaly

8 **Fructose 1,6 bisphosphatase is the enzyme of**
(a) Glycolysis
(b) Glycogenolysis
(c) Glycogenesis
(d) Gluconeogenesis

9 **Transaldolase transfers**
(a) Two carbons from ketosugar to aldosugar
(b) Three carbons from aldosugar to ketosugar
(c) Two carbons from aldosugar to ketosugar
(d) Three carbons from ketosugar to aldosugar

10 **Aldolase-B converts**
(a) Fructose 1,6 bisphosphate to glyceraldehyde-3- PO_4 & Dihydroxyacetone phosphate
(b) Glucose to Glucose-1-PO_4
(c) Fructose-1-phosphate to glyceraldehyde & Dihydroxyacetone phosphate
(d) Fructose-1-phosphate to glyceraldehyde-3-PO_4 & Dihydroxyacetone phosphate

11 **As regards citric acid cycle which of the statements is untrue?**
(a) Three NADH + H^+ are formed
(b) One FAD^+ is formed
(c) One GTP is formed
(d) One NADPH + H^+ is formed

12 **As regards Glucagon which of the following statements is untrue?**
(a) Glucagon stimulates gluconeogenesis
(b) Glucagon stimulates glycogenolysis
(c) Glucagon inhibits glycogenesis
(d) Glucagon stimulates glycolysis

13 **Conversion of Glucose-6-phosphate to Glucose-1-phosphate requires**
(a) Isomerase
(b) Epimerase
(c) Mutase
(d) Hydratase

14 **Which of the following statements about insulin is true**
(a) Stimulate glycogenesis
(b) Stimulate glycogenolysis
(c) Inhibits glycolysis
(d) Stimulates gluconeogenesis

Marks: 30
Time: 15 Minutes

Roll #

Azra Naheed Medical College, Lahore.

Test on Carbohydrates Metabolism (2nd YEAR MBBS)

1: Symptoms of Diabetes Mellitus are:
a) Gastrointestinal disorders
b) Edema in the limbs
c) Polydipsia,polyphagia and polyuria
d) Watery mouth

2: HMP shunt is the process in which :
a) Ribose 5-Po4 is formed
b) Xylulose 5-Po4 in formed
c) NADPH is formed
d) All of the above are true

3: Enzymes of citric acid cycle are present in:
a) Golgibodies
b) Lysosomes
c) Nucleolus
d) Mitochondria

4: The substrate for Aldolase B is :
a) Glucose 6-Po4
b) Fructose 6-Po4
c) Fructose 1-6-bisphosphate
d) Glucose 1-Po4

5: In erythrocytes 2,3 bisphosphoglycerate in derived from which intermediate of glycoltic pathway:
a) Glyceraldehydes 3-Po4
b) 1,3 bisphosphoglycerate
c) 3- Phosphoglycerate
d) Dihrdoxyacetone-Po4

6: The HMP-shunt includes which of the following enzymes?
a) Fumerase
b) Pyruvate dehydrogenase complex
c) Hexokinase
d) Glucose 6-PO4 dehydrogenase (G6-PD)

7: Which of the following is not the intermediate of citric acid cycle:
a) Oxaloacetate
b) Malate
c) Phosphocenol pyruvate
d) d-keto glutarate

8: Regarding transketolase:
a) It transfers one carbon from aldosugar to ketosugar
b) It transfer two carbons from ketosugar to aldosugar
c) It transfer three carbons from ketosugar to aldosugar
d) It transfer three carbons from aldosugar to ketosugar

9: Chemical energy required for synthetic processes is provided by:
a) Phosphorylation of AMP
b) Phosphorylation of ADP
c) Phosphorylation of ATP
d) Hydrolysis of ATP

10: Which is the true statement about glycolysis:
a) In glycolysis, two steps generate ATP
b) In glycolysis three steps generate ATP
c) In glycolysis four steps generate ATP
d) None of the above is true

11: Glycogenolysis is the process in which glycogen in muscle finally broken down to produce:
a) Glucose
b) Glucose-Po4
c) Glucose -6PO4
d) Lactic acid

12: Main site for Gluconeogenesis is
a) Brain
b) Liver
c) Pancreas
d) Lungs

13: Which of the following energy related activities does not occ mitochondria:
a) Oxidative Phosphorylation
b) Electron transport
c) Glycolysis
d) Citric acid cycle

14: Phosphofructokinase-2 (PFK-2) converts :
a) Fructose 6-Po4 to fructose 1-6 bisphosphate
b) Fructose 6-Po4 to fructose 2,6 bisphosphate
c) Glucose 6-Po4 to fructose 6-Po4
d) None of the above is true

15: At low blood glucose concentration brain but not liver will up glucose this in due to the:
a) Low Km of hexokinase
b) Low Km of glucokinase
c) Blood brain barrier
d) Specificity of glucokinase

16: All of the following pathways occur in cytosol except:
a) Glycolysis
b) Uronic acid pathway
c) Citric acid cycle
d) HMP-shunt

17: In muscles glucose 6-PO4 is not converted to glucose due absence of:
a) Hexokinase
b) Glucokinase
c) Phosphorylase
d) Glucose 6- phosphatase

18: Which of the following statement about insulin is incor
a) It increase the entry of glucose into the cells
b) It stimulates glycogenesis
c) It inhibits glycogenolysis
d) It stimulates gluconeogenesis

19: In citric acid cycle CO_2 is released when:
a) d-ketoglutarate is converted to succinyl-s-co
b) Succinyl-s-coA changes to succinate
c) Succinate changes to fumarate
d) Fumarate changes to Malate

20: Stress trauma, sever exercise and secretion
a) Increase the secretion of insulin
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c) Will have no effect on insulin secret
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AZRA NAHEED MEDICAL COLLEGE
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27 Substrate level ATP formation occurs in glycolysis when
(a) Fructose1,6 bisphosphate is converted to glyceraldehyde 3- PO_4 & Dihydroxyacetone PO_4
(b) 3 phosphoglycerate is converted to 2-phosphoglycerate
(c) Fructose 6-PO_4 is converted to Fructose1,6 bisphosphate
(d) Phosphoenol pyruvate is converted to pyruvate

28 If cytosolic NADH + H+ sends its hydrogen ions into mitochondria through aspartate malate shuttle the ATP production will be
(a) 2.5
(b) 1.5
(c) 2.0
(d) 3.5

29 Gluconeogenesis takes place in
(a) Liver
(b) Kidneys
(c) Muscles
(d) Both (a) & (b) are correct

30 Deficiency of which of the following enzyme can cause classic galactosemia?
(a) Galactose-1-PO_4 uridyl transferase
(b) Galactose-1-PO_4 phosphorylase
(c) Malate dehydrogenase
(d) Lactate dehydrogenase

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: _____

Roll No. : _____

Marks obtained: _____

TEST ON CARBOHYDRATE METABOLISM
MBBS PART II – MCQs

Total marks: 30
Time Allowed: 20 minutes

February 06, 2018

Select one best answer

1 Which of the following step of TCA cycle will liberate CO_2?
- (a) Citrate → cis-aconitate
- (b) Succinyl SCoA → succinate
- (c) Malate → oxaloacetate
- (d) α-ketoglutarate → Succinyl SCoA

2 In gluconeogenesis, for the conversion of pyruvate to phosphoenol pyruvate enzymes required are
- (a) Hexokinase and glucokinase
- (b) PFK-1 and PFK-2
- (c) Pyruvate dehydrogenase and pyruvate carboxylase
- (d) Pyruvate carboxylase & PEP carboxykinase

3 In TCA cycle reversible steps are
- (a) 2 and 3
- (b) 7 and 8
- (c) 1 and 6
- (d) 5 and 6

4 Gluconeogenesis takes place in .
- (a) Mitochondria of hepatic cells
- (b) Cytosol of hepatic cells
- (c) In muscles
- (d) Both in mitochondria & cytosol of liver

5 Glycogen synthesis will be activated when
- (a) Glycogen synthase is phosphorylated
- (b) Glycogen synthase is dephosphorylated
- (c) Phosphorylase is phosphorylated
- (d) Debranching enzyme is activated

6 Which of the following statements about Von Gierke's disease is untrue?
- (a) There will be hypoglycemia
- (b) There will be hyperglycemia
- (c) There will be hyperlipidemia
- (d) There will be hepatomegaly

7 Fructose 1,6 bisphosphatase is the enzyme of
- (a) Glycolysis
- (b) Glycogenolysis
- (c) Glycogenesis
- (d) Gluconeogenesis

8 Transaldolase transfers
- (a) Two carbons from ketosugar to aldosugar
- (b) Three carbons from aldosugar to ketosugar
- (c) Two carbons from aldosugar to ketosugar
- (d) Three carbons from ketosugar to aldosugar

9 Aldolase-B converts
- (a) Fructose 1,6 bisphosphate to glyceraldehyde-3-PO_4 & Dihydroxyacetone phosphate
- (b) Glucose to Glucose-1-PO_4
- (c) Fructose-1-phosphate to glyceraldehyde & Dihydroxyacetone phosphate
- (d) Fructose-1-phosphate to glyceraldehyde-3-PO_4 & Dihydroxyacetone phosphate

10 As regards citric acid cycle which of the statements is untrue?
- (a) Three NADH + H^+ are formed
- (b) One FAD^+ is formed
- (c) One GTP is formed
- (d) One NADPH + H^+ is formed

11 As regards Glucagon which of the following statements is untrue?
- (a) Glucagon stimulates gluconeogenesis
- (b) Glucagon stimulates glycogenolysis
- (c) Glucagon inhibits glycogenesis
- (d) Glucagon stimulates glycolysis

12 Conversion of Glucose-6-phosphate to Glucose-1-phosphate requires
- (a) Isomerase
- (b) Epimerase
- (c) Mutase
- (d) Hydratase

13 Which of the following statements about insulin is true?
- (a) Stimulate glycogenesis
- (b) Stimulate glycogenolysis
- (c) Inhibits glycolysis
- (d) Stimulates gluconeogenesis

14 Glucose-6-phosphate dehydrogenase is the enzyme of
- (a) Glycogenesis
- (b) Glycolysis
- (c) Uronic acid pathway
- (d) Hexose monophosphate shunt

AMP