...HEMISTRY
...PROF. MUHAMMAD MUSLIM KHAN

Total Marks: 20
Obtain Marks: _____
Roll No: _____
Time Allowed: 15 Min:

...the most suitable answer. (1 × 20 = 20)

...ion of saliva is by
a. Energy dependent active process
b. By simple diffusion
c. Osmosis
d. All of the above

2. Bile salts secreted into intestine are
a. Excreted in stool
b. 95% efficiently reabsorbed
c. 50% are efficiently absorbed
d. Reabsorbed whenever it is required

3. Salivary Hormone Gustin plays a role in
a. Secretion of salivary amylase
b. Secretion of lingual lipase
c. Development of taste buds
d. Secretion of phosphatase

4. Bile salts undergo enterohepatic circulation
a. 6-8 times a day
b. 2-4 times a day
c. Only when it is required
d. More than 10 times a day

5. Among the inorganic constituents, saliva is saturated with
a. Na^+
b. K^+
c. Ca^{++}
d. Mg^{++}

6. Salivary α-amylase acts briefly on
a. Both starch and glycogen
b. In the presence of Cl^-
c. At PH (6.6-6.8)
d. All of the above are true

7. 75% of the gastric secretion is secreted by
a. Cardiac end
b. Pyloric end
c. Surface epithelium
d. None of the above

8. Disaccharidases and oligosacchridases are present in
a. Pancreatic juice
b. Gastric juice
c. Mucosal lining of upper Jejunum
d. Mucosal lining of ileum

9. PH of the gastric juice ranges from
a. 1.5 -3.0
b. 0-1.0
c. 5-7
d. It is always above 7

10. Five major pancreatic proteases are activated by
a. Chymotrypsin
b. Elastase
c. Trypsin
d. Carboxypeptidase A and B

11. Which one is the function of gastric juice HCL
a. It converts Pepsinogen to pepsin
b. It converts ferric into ferrous from
c. It stimulates the release of secretin
d. All of the above

12. Steatorrhea is caused by lack of
a. Gastric juice
b. Bile
c. Pancreatic enzyme
d. All of the above

13. Gastric lipase enzyme is inactivated by
a. HCL
b. Pepsin
c. Trypsin
d. Lactic acid

14. The dietary lipids consists of 90% of
a. Cholesterol
b. Phospholipids
c. Triacylglycerol
d. Cholesterylesters

15. Intrinsic factor is
a. A polypeptide
b. It's an enzyme
c. It's a glycoprotein
d. Is a phospholipid

16. Emulsification of dietary lipids occur in
a. Stomach
b. Duodenum
c. Jejunum
d. Ileum

17. In the formation of bile acids, hydrocarbon chain of cholesterol is shortened by
a. 5 carbons
b. 4 carbons
c. 3 carbons
d. 6 carbons

18. In bile salts glycine or taurine is attached with cholesterol through
a. Ionic bond
b. Covalent bond
c. Vander waals forces
d. None of the above

19. Among the bile acids which one is the triol
a. Cholic acid
b. Chenodeoxy cholic acid
c. Glycochenodeoxycholic acid
d. Taurocheno deoxycholic acid

20. Diagnostic test for acute pancreatitis is
a. Phospholipase
b. Serum amylase
c. Trypsin
d. Elastase

[redacted]

: 30
: 15 Minutes

Azra Naheed Medical College, Lahore.

Roll # [redacted]

Test on Carbohydrates Metabolism (2nd YEAR MBBS)

mptoms of Diabetes Mellitus are:
a) Gastrointestinal disorders
b) Edema in the limbs
c) Polydipsia,polphagia 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 muscles is finally broken down to produce:
a) Glucose
b) Glucose-Po4
c) Glucose -6PO4
d) Lactic acid

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

13: Which of the following energy related activities does not occur in 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 take 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 to the absence of:
a) Hexokinase
b) Glucokinase
c) Phosphorylase
d) Glucose 6- phosphatase

18: Which of the following statement about insulin is incorrect:
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 suscinyl-s-coA
b) Succinyl-s-coA changes to succinate
c) Succinate changes to fumarate
d) Fumarate changes to Malate

20: Stress trauma, sever exercise and 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

AZRA NAHEED MEDICAL COLLEGE
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 uracil
(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) UDP-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

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Roll No: _____

CLASS TEST ON NUCLEOTIDES
MBBS PART I – MCQs

Total marks: 20
Time Allowed: 20 minutes

Instructions

1. All MCQs are to be attempted on the paper and returned to the invigilator within given time.
2. Any cutting or overwriting will not be accepted and no marks will be given even if the answer is correct.
3. Write your roll no. only on the perforated portion of the title page.
4. Do not write your name or discuss your identity in any way

1 Pseudouridine arm of tRNA has base sequence
- (a) GGU
- (b) CCC
- (c) TΨC
- (d) AGG

2 Non coding region of DNA is called
- (a) Exon
- (b) Intron
- (c) Codon
- (d) Neutron

3 Stop codon is
- (a) AUG
- (b) CCU
- (c) UAA
- (d) AAG

4 Initiation codon is
- (a) GAG
- (b) GAC
- (c) AGG
- (d) AUG

5 7 methyl guanosine triphosphate cap is present on
- (a) Transfer RNA
- (b) Messenger RNA
- (c) Ribosomal RNA
- (d) Small nuclear RNA

6 Variable arm is present on
- (a) Ribosomal RNA
- (b) Small nuclear RNA
- (c) Heterogenous nuclear RNA
- (d) Transfer RNA

7 Longer arm of transfer RNA (3'end) has terminal base sequence
- (a) GGU
- (b) GGC
- (c) CCA
- (d) CCG

8 In posttranscriptional modifications, tRNA loses from its 5'end
- (a) 13 bases
- (b) 18 bases
- (c) 15 bases
- (d) 16 bases

9 Poly A tail is present on
- (a) 5' end of tRNA
- (b) 3' end of tRNA
- (c) 5' end of messenger RNA
- (d) 3' end of messenger RNA

10 Which of the following has maximum number of minor bases
- (a) tRNA
- (b) rRNA
- (c) mRNA
- (d) Small nuclear RNA

11 Anticodon arm is present on
- (a) Messenger RNA
- (b) Ribosomal RNA
- (c) Transfer RNA
- (d) Heterogenous nuclear RNA

12 Which of the following base pairs will have 3 hydrogen bonds?
- (a) A – T
- (b) A – U
- (c) G – T
- (d) G – C

13 When ATP changes to ADP
- (a) 14.3 K.Cal are released
- (b) 7.3 K.Cal are released
- (c) No energy is released
- (d) 5 K.Cal energy is gained

14 Pyrimidine nucleotide is
- (a) ADP
- (b) GMP
- (c) IMP
- (d) CMP

Total marks: 30
Time allowed 20 min.

...ing will not be accepted and no marks will be given even if the answer is correct.

1 ...enzyme of Cholesterol biosynthesis is
- ...-SCoA reductase
- ...-SCoA synthase
- ...-SCoA isomerase
- ...-SCoA decarboxylase

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

3 ...ol is synthesized in
- ...) Liver
- ...) Kidneys
- ...) Spleen
- ...) 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) Phosphatidyl 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

DEPARTMENT OF BIOCHEMISTRY

CLASS TEST NUCLEOTIDE METABOLISM

2ND Year MBBS PART II- SEQs

Date: 06 August 2019

Time Allowed: 35 minutes | Total Marks: 50

Question no 1. (10)

a. Mention the origin of carbon and nitrogen atoms in purine ring. 5
b. How is de novo purine synthesis different from pyrimidine synthesis? 3
c. Discuss the regulation of purine nucleotide biosynthesis. 2

Question no 2. (10)

a. What is the precursor of AMP and GMP in de novo purine synthesis? 1
b. Write a brief note on purine salvage pathway. 4
c. Mention the cause and the features of Lesch–Nyhan syndrome. 5

Question no 3. (10)

a. Write down the steps of purine degradation pathway. 5
b. What is the normal serum uric acid levels in males and females? 2
c. What are the soluble products produced in purine degradation in other animal species? 3

Question no 4. (10)

a. Draw a structure of pyrimidine ring to show its sources of carbon and nitrogen. 2.5
b. What are the regulated steps of pyrimidine synthesis? 2.5
c. Write down the differences between CPS I and CPS II. 5

Question no 5. (10)

A 46 years old man presented to the emergency department with complain of severe right toe pain. On examination, his right toe was swollen, red, warm and tender. His serum uric acid level was 14.6 mg/dL.

a. What is your most likely diagnosis? 1
b. What is hyperuricemia? Mention the causes of hyperuricemia 4
c. Name the enzyme defect in this condition. How will you treat this condition? 5

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
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- (c) It converts proteins to proteoses and peptones
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9 Regulation of saliva is by:
- (a) Unconditioned reflex
- (b) Conditional Reflex
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10 Regarding saliva which of the following is incorrect:
- (a) Contains amylase and lipase
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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
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14 Calcium ions facilitate action of lipase by
- (a) Facilitating the binding of the enzyme to the fats
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Revision Test GIT

BIOCHEMISTRY

PROF. MUHAMMAD MUSLIM KHAN

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Obtain Marks: _____

Roll No: _____

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Roll No. :

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

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20 minutes
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15 Minutes

Azra Naheed Medical College, Lahore.

Test on Carbohydrates Metabolism (2nd YEAR MBBS)

Roll #

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b) Edema in the limbs
c) Polydipsia,polphagia and polyuria
d) Watery mouth

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b) Fructose 6-Po4
c) Fructose 1-6-bisphosphate
d) Glucose 1-Po4

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a) Glyceraldehydes 3-Po4
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c) Hexokinase
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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 muscles is finally broken down to produce:
a) Glucose
b) Glucose-Po4
c) Glucose -6PO4
d) Lactic acid

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

13: Which of the following energy related activities does not occur in 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 take 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 to the absence of:
a) Hexokinase
b) Glucokinase
c) Phosphorylase
d) Glucose 6- phosphatase

18: Which of the following statement about insulin is incorrect:
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 suscinyl-s-coA
b) Succinyl-s-coA changes to succinate
c) Succinate changes to fumarate
d) Fumarate changes to Malate

20: Stress trauma, sever exercise and 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

15 **Leash 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 rRNA
(d) Non coding region on tRNA

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) Hexoseaminidase
(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

Subject: BIOCHEMISTRY

Revision Test GIT

Name: PROF. MUHAMMAD MUSLIM KHAN

Total Marks: 20

Obtain Marks: _____

Roll No: _____

Time Allowed: 15 Min:

Encircle the most suitable answer. (1 × 20 = 20)

1. Secretion of saliva is by
   a. Energy dependent active process
   b. By simple diffusion
   c. Osmosis
   d. All of the above

2. Bile salts secreted into intestine are
   a. Excreted in stool
   b. 95% efficiently reabsorbed
   c. 50% are efficiently absorbed
   d. Reabsorbed whenever it is required

3. Salivary Hormone Gustin plays a role in
   a. Secretion of salivary amylase
   b. Secretion of lingual lipase
   c. Development of taste buds
   d. Secretion of phosphatase

4. Bile salts undergo enterohepatic circulation
   a. 6-8 times a day
   b. 2-4 times a day
   c. Only when it is required
   d. More than 10 times a day

5. Among the inorganic constituents, saliva is saturated with
   a. Na^+
   b. K^+
   c. Ca^{++}
   d. Mg^{++}

6. Salivary α-amylase acts briefly on
   a. Both starch and glycogen
   b. In the presence of Cl^-
   c. At PH (6.6-6.8)
   d. All of the above are true

7. 75% of the gastric secretion is secreted by
   a. Cardiac end
   b. Pyloric end
   c. Surface epithelium
   d. None of the above

8. Disaccharidases and oligosacchridases are present in
   a. Pancreatic juice
   b. Gastric juice
   c. Mucosal lining of upper Jejunum
   d. Mucosal lining of ileum

9. PH of the gastric juice ranges from
   a. 1.5 -3.0
   b. 0-1.0
   c. 5-7
   d. It is always above 7

10. Five major pancreatic proteases are activated by
    a. Chymotrypsin
    b. Elastase
    c. Trypsin
    d. Carboxypeptidase A and B

11. Which one is the function of gastric juice HCL
    a. It converts Pepsinogen to pepsin
    b. It converts ferric into ferrous from
    c. It stimulates the release of secretin
    d. All of the above

12. Steatorrhea is caused by lack of
    a. Gastric juice
    b. Bile
    c. Pancreatic enzyme
    d. All of the above

13. Gastric lipase enzyme is inactivated by
    a. HCL
    b. Pepsin
    c. Trypsin
    d. Lactic acid

14. The dietary lipids consists of 90% of
    a. Cholesterol
    b. Phospholipids
    c. Triacylglycerol
    d. Cholesterylesters

15. Intrinsic factor is
    a. A polypeptide
    b. It's an enzyme
    c. It's a glycoprotein
    d. Is a phospholipid

16. Emulsification of dietary lipids occur in
    a. Stomach
    b. Duodenum
    c. Jejunum
    d. Ileum

17. In the formation of bile acids, hydrocarbon chain of cholesterol is shortened by
    a. 5 carbons
    b. 4 carbons
    c. 3 carbons
    d. 6 carbons

18. In bile salts glycine or taurine is attached with cholesterol through
    a. Ionic bond
    b. Covalent bond
    c. Vander waals forces
    d. None of the above

19. Among the bile acids which one is the triol
    a. Cholic acid
    b. Chenodeoxy cholic acid
    c. Glycochenodeoxycholic acid
    d. Taurocheno deoxycholic acid

20. Diagnostic test for acute pancreatitis is
    a. Phospholipase
    b. Serum amylase
    c. Trypsin
    d. Elastases

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: _____

Roll No: _____

Marks obtained: _____

NUCLEOTIDE METABOLISM - 2019
2ND YEAR MBBS – MCQs

Total marks: 30
Time allowed: 25 min.

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

1. Which of the following is a purine base?

a. Adenine
b. Cytosine
c. Thymine
d. Uracil

2. The activated sugar in purine and pyrimidine synthesis is

a. Glucose 6- phosphate
b. Ribosyl phosphate
c. 5 phosphoribosyl 1 pyrophospahte
d. Deoxy ribosyl pyrophosphate

3. The amino acids which donate amine groups for the purine biosynthesis are:

a. Glycine, glutamine, aspartate
b. Glycine, Phenylalanine, Glutamate
c. Lysine, glutamine, aspartate
d. Glycine, Threonine, aspartate

4. The first purine nucleotide that is fully formed in the de novo synthesis pathway is:

a. AMP
b. GMP
c. CMP
d. IMP

5. Which of the following serves as the cofactor for the de novo synthesis of purine metabolism?

a. Thiamine
b. Biotin
c. Folate
d. Flavin

6. What is an activator of the enzyme "Glutamine: Phosphoribosylpyrophosphate amidotransferase" a committed step of de novo biosynthesis of purines?

a. Adenosine Monophosphate
b. Guanosine Monophosphate
c. Inosine Monophosphate
d. Phosphoribosyl Pyrophosphate

7. Which of the following contribute nitrogen atoms to both purine and pyrimidine rings

a. Aspartate
b. Carbamoyl phosphate
c. Carbon dioxide
d. Glutamate

8. A patient presented with cognitive disorders, behavioral disturbances and an urge to bite his lips. Which of the following disorders he must be suffering from

a. Hurler syndrome
b. Gouty arthritis
c. Lesch- Nyhan syndrome
d. Down syndrome

9. The enzyme xanthine oxidase is inhibited by

a. Allopurinol
b. Corticosteroids
c. Ibuprofen
d. Colchicine

10. The end product of purine degradation in humans is

a. Urea
b. Allantoin
c. Xanthine
d. Uric acid

11. The enzyme associated with hyperuricemia is

a. Glucose 6 phosphate
b. HGPRTase
c. PRPP synthetase
d. All of the above

12. The enzyme defect with Lysch Nyhan syndrome is

a. PRPP synthetase
b. HGPRTase
c. Xanthine oxidase
d. 5 phosphoribosyl amidotransferase

13. The enzyme xanthine oxidase catalyze the conversion of

a. Inosine to hypoxanthine
b. Guanosine to guanine
c. Xanthine to uric acid
d. Inosine monophosphate to inosine

14. Which of the following is the primary cause of gout

a. Deficiency of Xanthine oxidase
b. Lactic acidosis
c. Lead toxicity
d. Chemotherapy

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

16 Deficiency of which of the following will lead to RDS?
(a) Phosphatidyl inositol
(b) Cephlains
(c) Phosphatidyl serine
(d) Dipalmityl lecithin

17 The most significant source of stored energy is
(a) Liver glycogen
(b) Muscle protein
(c) Liver proteins
(d) Adipose tissue

18 Regulatory enzyme of Cholesterol biosynthesis is
(a) HMG-SCoA reductase
(b) HMG-SCoA synthase
(c) HMG-SCoA isomerase
(d) HMG-SCoA decarboxylase

19 By decreased activity of lipoprotein lipase which change would you expect?
(a) Elevation of HDL
(b) Elevation of LDL
(c) Elevation of chylomicrons & VLDL
(d) Elevation of chylomicrons only

20 The metabolic function of LDL includes
(a) To synthesize Apo-B48
(b) To transport cholesterol from liver to extrahepatic tissues
(c) To catabolize cholesterol
(d) To synthesize bile acids

21 The 14 carbon chain fatty acid undergoes complete B-oxidation. How many B-oxidation cycles will be completed and how many acetyl SCoA molecules will be liberated?
(a) 7 cycles and 8 acetyl SCoA
(b) 6 cycles and 7 acetyl SCoA
(c) 5 cycles and 9 acetyl SCoA
(d) 4 cycles and 5 acetyl SCoA

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

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

24 Steatorrhea is
(a) Absence of glucokinase
(b) Malabsorption of carbohydrates
(c) Malabsorption of proteins
(d) Malabsorption of fats

25 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

26 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

27 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

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

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

30 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

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 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

2 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

3 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

4 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

5 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

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

7 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

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

9 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

10 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

11 "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

12 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

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

14 2-MAG is converted to 1-MAG by enzyme
- (a) Lipase
- (b) Isomerase
- (c) Cholesterol esterase
- (d) Phospholipase A2

PROTEINS & LIPID METABOLISM - 2019
SECOND YEAR MBBS - MCQs

Marks obtained: _____

Total marks: 30
Time allowed 20 min.

...e one best answer.
...ming or overwriting will not be accepted and no marks will be given even if the answer is correct.

1 α-oxidation of fatty acids occurs mainly in
- (a) Brain
- (b) Muscles
- (c) Liver
- (d) Adipose tissue

2 Activation of fatty acids requires all of the following except:
- (a) ATP
- (b) Coenzyme A
- (c) Thiokinase
- (d) Carnitine

3 Lovastatin, a cholesterol lowering drug is a
- (a) Competitive inhibitor of acetyl-SCoA carboxylase
- (b) Competitive inhibitor of acetyl-SCoA dehydrogenase
- (c) Competitive inhibitor of HMG-SCoA synthetase
- (d) Competitive inhibitor of HMG-SCoA reductase

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

5 As for the density of lipoproteins is considered, which one is the correct order from lowest to highest density?
- (a) LDL, VLDL, HDL, Chylomicrons
- (b) VLDL, LDL, IDL, HDL
- (c) Chylomicrons, VLDL, LDL, HDL
- (d) Chylomicrons, LDL, VLDL, HDL

6 Most of the reducing equivalents (NADPH+H+) utilized for the synthesis of fatty acids are generated from
- (a) Glycolysis
- (b) HMP shunt
- (c) Gluconeogenesis
- (d) Citric acid cycle

7 Hepatic lipogenesis is stimulated by
- (a) Epinephrine
- (b) Glucagon
- (c) Insulin
- (d) cAMP

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 β 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 As regards salivary lipase
- (a) It converts fat into monoacylglycerol & 2 fatty acids
- (b) Diacylglyceerol and a fatty acid
- (c) Glycerol and three fatty acids
- (d) It has no effect on fat

13 Phosphatidic acid is precursor for the biosynthesis of
- (a) Cephalin
- (b) Cholesterol
- (c) Lipoxin
- (d) Leukotriene

14 Oxidation of fatty acids will yield
- (a) Palmityl-SCoA
- (b) Succinyl-SCoA
- (c) Dicarboxylic acids
- (d) Lecithin

15 Codons are present of

(a) DNA
(b) tRNA
(c) rRNA
(d) mRNA

16 In Guanosine content of DNA 20% of total DNA adenine content will be

(a) 30%
(b) 40%
(c) 60%
(d) 80%

17 The structure of tRNA appears like

(a) Hair pin
(b) Helical
(c) Clover leaf
(d) Coiled

18 In DNA pentose is deoxyribose, which loses oxygen from

(a) Carbon No. 1
(b) Carbon No. 2
(c) Carbon No. 3
(d) Carbon No. 5

19 Type II transfer RNA will have

(a) 2 bases on variable arm
(b) 3 bases on variable arm
(c) 4 bases on variable arm
(d) 11 bases on variable arm

20 In posttranscriptional changes in tRNA anticodon side loses

(a) 16 introns
(b) 18 introns
(c) 14 introns
(d) 20 introns

30
15 Minutes

Marks obtained: _____

CLASS TEST ON LIPIDS – 2018
FIRST YEAR MBBS PART I – MCQs

Total marks: 30
Time Allowed: 20 minutes

Select one best answer

1 Ceramide is composed of
(a) Fatty acid and glycerol
(b) Fatty acid, glycerol and phosphate
(c) Fatty acid and sphingosine
(d) Fatty acid and cholesterol

2 Which of the following has the lowest density?
(a) Very low density lipoproteins (VLDL)
(b) Low density lipoproteins (LDL)
(c) Chylomicrons
(d) High density lipoproteins (HDL)

3 Aceto acetic acid is
(a) Bile acid
(b) Bile salt
(c) Bile pigment
(d) Ketone body

4 Maximum energy is obtained by the oxidation of
(a) Carbohydrates
(b) Proteins
(c) Fats
(d) Both (a) & (b) are correct

5 Chylomicrons are rich in
(a) Proteins
(b) Phospholipids
(c) Cholesterol
(d) Triacylglycerol

6 Increased level of ketone bodies is observed in
(a) Hypertension
(b) Diabetes mellitus
(c) Hypoglycemia
(d) Nephrotic syndrome

7 As regards ergosterol which of the following is untrue?
(a) It is a steroid present in plants
(b) It has more double bonds than cholesterol
(c) It is not present in animals
(d) It has 27 carbon atoms

8 Which of the following nitrogenous alcohol is present in cephalin?
(a) Choline
(b) Serine
(c) Threonine
(d) Ethanolamine

9 PGE_2 will be derived from
(a) Eicosatreinoic acid
(b) Eicosatetranoic acid
(c) Eicosapentanoic acid
(d) Both (a) & (b) are correct

10 Leukotriene has
(a) Three double bonds
(b) Four double bonds
(c) Two double bonds
(d) No double bond

11 Cholesterol is
(a) Soluble in water
(b) Insoluble in organic solvents
(c) Soluble in both water and organic solvents
(d) Soluble in organic solvents

12 Which of the following is not an essential fatty acid?
(a) Linoleic acid
(b) Oleic acid
(c) Linolinic acid
(d) Arachidonic acid

13 Linoleic acid is
(a) Eighteen carbon with three double bonds
(b) Eighteen carbon with four double bonds
(c) Twenty carbon with four double bonds
(d) Eighteen carbon with two double bonds

14 Which of the following lipoproteins has highest cholesterol content?
(a) HDL
(b) VLDL
(c) LDL
(d) Chylomicrons

15 **Codons are present of** (a) DNA (b) tRNA (c) rRNA (d) mRNA	**16** **In Guanosine content of DNA 20% of total DNA then adenine content will be** (a) 30% (b) 40% (c) 60% (d) 80%
17 **The structure of tRNA appears like** (a) Hair pin (b) Helical (c) Clover leaf (d) Coiled	**18** **In DNA pentose is deoxyribose, which loses oxygen from** (a) Carbon No. 1 (b) Carbon No. 2 (c) Carbon No. 3 (d) Carbon No. 5
19 **Type II transfer RNA will have** (a) 2 bases on variable arm (b) 3 bases on variable arm (c) 4 bases on variable arm (d) 11 bases on variable arm	**20** **In posttranscriptional changes in tRNA anticodon side loses** (a) 16 introns (b) 18 introns (c) 14 introns (d) 20 introns

Roll No: _____

AZRA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

CLASS TEST ON NUCLEOTIDES
MBBS PART I – MCQs

Total marks: 20
Time Allowed: 20 minutes

Instructions

1. All MCQs are to be attempted on the paper and returned to the invigilator within given time.
2. Any cutting or overwriting will not be accepted and no marks will be given even if the answer is correct.
3. Write your roll no. only on the perforated portion of the title page.
4. Do not write your name or discuss your identity in any way

1 Pseudouridine arm of tRNA has base sequence
- (a) GGU
- (b) CCC
- (c) TΨC
- (d) AGG

2 Non coding region of DNA is called
- (a) Exon
- (b) Intron
- (c) Codon
- (d) Neutron

3 Stop codon is
- (a) AUG
- (b) CCU
- (c) UAA
- (d) AAG

4 Initiation codon is
- (a) GAG
- (b) GAC
- (c) AGG
- (d) AUG

5 7 methyl guanosine triphosphate cap is present on
- (a) Transfer RNA
- (b) Messenger RNA
- (c) Ribosomal RNA
- (d) Small nuclear RNA

6 Variable arm is present on
- (a) Ribosomal RNA
- (b) Small nuclear RNA
- (c) Heterogenous nuclear RNA
- (d) Transfer RNA

7 Longer arm of transfer RNA (3'end) has terminal base sequence
- (a) GGU
- (b) GGC
- (c) CCA
- (d) CCG

8 In posttranscriptional modifications, tRNA loses from its 5'end
- (a) 13 bases
- (b) 18 bases
- (c) 15 bases
- (d) 16 bases

9 Poly A tail is present on
- (a) 5' end of tRNA
- (b) 3' end of tRNA
- (c) 5' end of messenger RNA
- (d) 3' end of messenger RNA

10 Which of the following has maximum number of minor bases
- (a) tRNA
- (b) rRNA
- (c) mRNA
- (d) Small nuclear RNA

11 Anticodon arm is present on
- (a) Messenger RNA
- (b) Ribosomal RNA
- (c) Transfer RNA
- (d) Heterogenous nuclear RNA

12 Which of the following base pairs will have 3 hydrogen bonds?
- (a) A – T
- (b) A – U
- (c) G – T
- (d) G – C

13 When ATP changes to ADP
- (a) 14.3 K.Cal are released
- (b) 7.3 K.Cal are released
- (c) No energy is released
- (d) 5 K.Cal energy is gained

14 Pyrimidine nucleotide is
- (a) ADP
- (b) GMP
- (c) IMP
- (d) CMP

PTO

PROTEINS METABOLISM - 2019
SECOND YEAR MBBS – MCQs

Roll No: _____

Marks obtained: _____

Total marks: 30

Time allowed 20 min.

Only one answer will 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 Nitric 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

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
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(a) A natural inhibitor found in infants
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(a) Redox potential
(b) Redox couple
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(a) Complex I
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27 **Electron transport chain in located:**

(a) In the cytoplasm
(b) On the outer side of outer mitochondrial membrane
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(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

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Marks obtained: _____

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 uracil
- (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) UDP-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

TEST ON CARBOHYDRATE METABOLISM
MBBS PART II – MCQs

Marks obtained: _____

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

15 Glucose-6-phosphate dehydrogenase is the enzyme of
(a) Glycogenesis
(b) Glycolysis
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16 In hereditary fructose intolerance there
(a) PFK-1
(b) PFK-2
(c) Pyruvate carboxylase
(d) Aldolase-B

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

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

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

25 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⁺

26 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

27 2,3 bisphosphoglycerate is formed in
(a) Rapaport Leubering cycle
(b) Cori's lactic acid cycle
(c) Glucose-Alanine cycle
(d) Lactose intolerance

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

29 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

30 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 **Leash 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 pyrimidi... 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 rRNA
(d) Non coding region on tRNA

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 **Niemenn-Pick disease results from the deficiency of**

(a) Ceramidase
(b) Hexosearninidase
(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

DEPARTMENT OF BIOCHEMISTRY

Roll No. : _____

Marks obtained: _____

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

al marks: 30
me 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

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(a) Highly selective in permeability
(b) Permeable only to H^+ ions
(c) Impermeable
(d) Freely permeable

30 **Cyanide combines with:**
(a) Iron in Fe^{+3} 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

15 Increased level of glucagon will stimulate
(a) Glycogenesis
(b) Glycolysis
(c) Lipogenesis
(d) Gluconeogenesis
(e) Both (a) and (b) are correct

16 End product of Odd chain fatty a...
(a) Malonyl-SCoA
(b) Methyl Malonyl-SCoA
(c) Propionyl-SCoA
(d) Succinyl-SCoA
(e) Acetyl-SCoA

17 Regulatory step in cholesterol biosynthesis is
(a) HMG-SCoA reductase
(b) HMG-SCoA synthase
(c) HMG-SCoA synthetase
(d) Thiolase
(e) Phosphorylase

18 Which of the following compounds is com... intermediate in ketogenesis & cholesterol b...
(a) Succinyl-SCoA
(b) Citric acid
(c) α – ketoglutarate
(d) Acetoacetyl-SCoA
(e) Palmityl-SCoA

19 All of the following statements about ketone bodies are correct except
(a) Synthesis of ketone bodies is increased in diabetes mellitus
(b) These are synthesized in mitochondria
(c) Increased level of ketone bodies can deplete alkali reserve
(d) Synthesis of ketone bodies is deceased in starvation
(e) Liver cannot use ketone bodies for energy purpose

20 All of the following statements about eicosanoids are correct except
(a) Eicosanoids are twenty carbon compounds
(b) Lipoxygenase is inhibited by aspirin
(c) All prostaglandins have OH group at 15 position except PGG
(d) Leukotrienes have three double bonds
(e) Lipoxins have four alternate double bonds

21 Energy liberated from palmitic acid & palmito-oleic acid will be
(a) Equal
(b) Palmito-oleic acid will give more energy than palmitic acid
(c) Palmitic acid will give more energy than Palmito-oleic acid
(d) Unsaturated fatty acids give more energy than saturated fatty acids
(e) Both (a) and (b) are correct

22 In Nie Mann Pick disease there is deficiency of
(a) Ceramidase
(b) Gangliosidase
(c) Arylsulfatase
(d) Spingomyelinase
(e) Lipoxygenase

23 Apo-B48 is the protein present in
(a) Chylomicrons
(b) HDL
(c) LDL
(d) Gangliosides
(e) Cerebrosides

24 Apo C, Apo E, Apo A, and Apo D are present in
(a) VLDL
(b) HDL
(c) LDL
(d) IDL
(e) Chylomicrons

25 During starvation the first nutrient depleted is
(a) Triacylglycerol
(b) Glycogen
(c) Protein
(d) Cholesterol
(e) Phospholipids

26 All of the following statements about urea are correct except
(a) Urea is synthesized in liver
(b) Its daily excretion in urine is 20-40 grams
(c) Its blood level is 20-40 mg%
(d) First three reaction take place in mitochondria
(e) It is synthesized from CO_2 & ammonia

27 Nitrogen atom of second amino group of urea comes from
(a) Pyruvate
(b) Histidine
(c) Arginine
(d) Malate
(e) Aspartate

28 Which of the following statements about ammonia metabolism is true?
(a) It is detoxified to urea
(b) Hyperammonemia can lead to coma and death
(c) Its normal blood level is 40-70 µg/dl
(d) All of the above is true
(e) None of the above is true

29 Deficiency of dopamine is brain may lead to
(a) Parkinsonism
(b) Phenylketonuria
(c) Alkaptonuria
(d) Diabetes mellitus
(e) Gout

30 Which of the following amino acid takes part in the synthesis of Coenzyme-A?
(a) Serine
(b) Alanine
(c) Glycine
(d) Glutamic acid
(e) Cysteine

Marks:
Allowed:
30
20 min
Select one best answ...
1 The vitamin... chain is...

l marks:	**30**
me Allowed:	**20 minutes**

Select one best answer

1 **The vitamin acting as the component of respiratory chain is :** (a) Tocopherol (b) Ascorbic acid (c) Niacin (d) Folic acid	**2** **In oxidative phosphorylation, oxidation of one molecule of FAD yields:** (a) 3 ATP (b) 2 ATP (c) 5 ATP (d) 7 ATP
3 **Which of the following is the inhibitor of complex IV of electron transport chain** (a) Rotenone (b) Carbon monoxide (c) Barbiturates (d) Penicillin	**4** **Maltose and isomaltose are** (a) Salivary enzymes (b) Gastric enzymes (c) Pancreatic enzymes (d) Intestinal enzymes
5 **By the action of alpha amylase, starch is converted to:** (a) Maltose (b) Glucose (c) Sucrose (d) Lactose	**6** **In which of the following organs glucose-6-phosphatase is absent** (a) Liver (b) Kidneys (c) Both (a) & (b) (d) Muscles

19 **HDL (High Density Lipoprotein) is rich in**

(a) Cholesterol
(b) Triacylglycerol
(c) Cholesterol ester
(d) Protein

20 **Which of the following is an essential fatty acid?**

(a) Palmitoleic acid
(b) Oleic acid
(c) Linolinic acid
(d) Stearic acid

21 **By the action of lipoxygenase on Arachidonic acid, which of the following compounds will be formed?**

(a) Lecithin & cephalin
(b) Prostacyclins & thromboxanes
(c) Leukotrienes & lipoxins
(d) Bile acids & bile pigments

22 **When one fatty acid from 2 position of lecithin is removed by phospholipase A_2, the remaining part is known as:**

(a) Ethanolamine
(b) Phosphoinositol
(c) Plasmalogen
(d) Lysolecithin

23 **Which of the following is derived lipid?**

(a) Isoprenoid
(b) Plasmalogen
(c) Phosphoinositol
(d) Phosphotidyl serine

24 **Rancidity of fat can be prevented by addition of**

(a) Lead
(b) Copper
(c) Iron
(d) Vitamin E

25 **Which of the following is a water soluble fatty acid?**

(a) Arachidonic acid
(b) Linoleic acid
(c) Stearic acid
(d) Butyric acid

26 **Gangliosides and cerebrosides are**

(a) Glycerophospholipids
(b) Glycosphingolipids
(c) Eicosanoids
(d) Steroids

27 **Waxes are**

(a) Esters of fatty acids with glycerol
(b) Esters of fatty acids with sphingosine
(c) Esters of fatty acids with high molecular weight alcohol
(d) Esters of fatty acids with methyl alcohol

28 **Which of the following are secondary bile acids?**

(a) Cholic acid & Lithocholic acid
(b) Chenodeoxycholic acid & Lithocholic acid
(c) Cholic acid & Chenodeoxycholic acid
(d) Deoxycholic acid & Lithocholic acid

elect 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 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

elect one best answer

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(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

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 increa
(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 hyperglycaemic 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 8 ATP are formed
(c) In Citric acid cycle 14 ATP are formed
(d) In Citric acid cycle No ATP are formed

26 2,3 biphosphoglycerate is formed in
(a) Rapaport Luebering 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 phosphoglycerate
(c) Fructose 6-PO_4 is converted to 2-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) Galactokinase
(b) Galactose-1-PO_4 uridyl transferase
(c) Malate dehydrogenase
(d) Lactate dehydrogenase

ircle the best answer

1 **Cholelithiasis is**
(a) Formation of stones in kidneys
(b) Formation of stones in gall bladder
(c) Formation of stones in liver
(d) Absence of gall bladder
(e) Absence of bile secretion

2 **Steatorrhea is**
(a) Malabsorption of fat
(b) Malabsorption of cysteine
(c) Malabsorption of glucose
(d) Malabsorption of starch
(e) Malabsorption of nucleic acids

3 **Postprandial lipemia is due to**
(a) Malabsorption of fat
(b) Malabsorption of proteins
(c) Presence of chylomicrons in blood after meal
(d) Some abnormal condition
(e) Absence of phospholipase A_2

4 **Carboxypeptidase is**
(a) Needed is digestion of fat
(b) Needed is digestion of starch
(c) Endopeptidase
(d) Exopeptidases
(e) Present in bile

5 **Electron transport chain is present in**
(a) Liver only
(b) Lungs only
(c) In mitochondrial matrix
(d) In mitochondrial outer membrane
(e) In mitochondrial inner membrane

6 **NADP is derived from**
(a) Acetic acid
(b) Pantothenic acid
(c) Nicotinic acid
(d) Nitric oxide
(e) Riboflavin

7 **Which statement is true about bile?**
(a) Bile has glucokinase
(b) Bile has hexokinase
(c) Bile has necleotidase
(d) Bile has nucleosidase
(e) Bile has no enzyme

8 **Which of the following does not take part in gluconeogenesis?**
(a) Lactate
(b) Pyruvate
(c) Alanine
(d) Serine
(e) Acetyl-SCoA

9 **Phosphofructokinase-2 converts**
(a) Fructose to fructose 1,6 bisphosphate
(b) Pyruvate to Acetyl-SCoA
(c) Fructose to fructose 2,6 bisphosphate
(d) Fructose to glucose–6–phosphate
(e) Glucose–6–phosphate to glucose

10 **Aldolase – B converts**
(a) Fructose 1,6 bisphosphate to Glycerol-3-phosphate and Dihydroxyacetone phosphate
(b) Fructose -1- phosphate to Glycerol and Dihydroxyacetone phosphate
(c) Fructose- 6 -phosphate to fructose
(d) Fructose to Fructose 1,6 bisphosphate
(e) Fructose to Galactose-6-phosphate

11 **In muscles glucose-6-phosphate is not converted to glucose due to the absence of**
(a) Glycogen synthase
(b) Phosphorylase
(c) Glucokinase
(d) Glucose-6-phosphatase
(e) Phosphohexose mutase

12 **Regarding transketolase**
(a) It transfers one carbon from Ketosugar to Aldosugar
(b) It transfers one carbon from Aldosugar to Ketosugar
(c) It transfers 3 carbons from Aldosugar to Ketosugar
(d) It transfers 2 carbons from Aldosugar to Ketosugar
(e) It transfers 2 carbons from Ketosugar to Aldosugar

13 **Glycogen synthase is inactivated by**
(a) Dephosphorylation
(b) Phosphorylation
(c) Deamination
(d) Deamidation
(e) Acetylation

14 **Erythrocytes derive energy from**
(a) Citric acid cycle
(b) HMP shunt
(c) Uronic acid pathway
(d) Glycolysis
(e) Glycogenolysis

[redacted]

Roll # [redacted]

Azra Naheed Medical College, Lahore.

Test on Carbohydrates Metabolism (2nd YEAR MBBS)

: 30
: 15 Minutes

mptoms of Diabetes Mellitus are:
a) Gastrointestinal disorders
b) Edema in the limbs
c) Polydipsia,polphagia 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 glycolitic 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 muscles is finally broken down to produce:
a) Glucose
b) Glucose-Po4
c) Glucose -6PO4
d) Lactic acid

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

13: Which of the following energy related activities does not occur in 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 take 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 to the absence of:
a) Hexokinase
b) Glucokinase
c) Phosphorylase
d) Glucose 6- phosphatase

18: Which of the following statement about insulin is incorrect:
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 suscinyl-s-coA
b) Succinyl-s-coA changes to succinate
c) Succinate changes to fumarate
d) Fumarate changes to Malate

20: Stress trauma, sever exercise and 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

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 uracil
(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) UDP-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**

14 **In the biosynthesis of**

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

26 **Niemenn-Pick disease results from the deficiency of**

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

28 **Which of the following pathways is amphibolic in nature?**

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

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

...RA NAHEED MEDICAL COLLEGE
DEPARTMENT OF BIOCHEMISTRY

Name: _____
Roll No: _____
Marks obtained: _____

PROTEINS & LIPID METABOLISM - 2019
SECOND YEAR MBBS - MCQs

Total marks: 30
Time allowed 20 min.

...e one best answer.
...ting or overwriting will not be accepted and no marks will be given even if the answer is correct.

1 α-oxidation of fatty acids occurs mainly in
(a) Brain
(b) Muscles
(c) Liver
(d) Adipose tissue

2 Activation of fatty acids requires all of the following except:
(a) ATP
(b) Coenzyme A
(c) Thiokinase
(d) Carnitine

3 Lovastatin, a cholesterol lowering drug is a
(a) Competitive inhibitor of acetyl-SCoA carboxylase
(b) Competitive inhibitor of acetyl-SCoA dehydrogenase
(c) Competitive inhibitor of HMG-SCoA synthetase
(d) Competitive inhibitor of HMG-SCoA reductase

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

5 As for the density of lipoproteins is considered, which one is the correct order from lowest to highest density?
(a) LDL, VLDL, HDL, Chylomicrons
(b) VLDL, LDL, IDL, HDL
(c) Chylomicrons, VLDL, LDL, HDL
(d) Chylomicrons, LDL, VLDL, HDL

6 Most of the reducing equivalents (NADPH•H•) utilized for the synthesis of fatty acids are generated from
(a) Glycolysis
(b) HMP shunt
(c) Gluconeogenesis
(d) Citric acid cycle

7 Hepatic lipogenesis is stimulated by
(a) Epinephrine
(b) Glucagon
(c) Insulin
(d) cAMP

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 β 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 As regards salivary lipase
(a) It converts fat into monoacylglycerol & 2 fatty acids
(b) Diacylglyceerol and a fatty acid
(c) Glycerol and three fatty acids
(d) It has no effect on fat

13 Phosphatidic acid is precursor for the biosynthesis of
(a) Cephalin
(b) Cholesterol
(c) Lipoxin
(d) Leukotriene

14 Oxidation of fatty acids will yield
(a) Palmityl-SCoA
(b) Succinyl-SCoA
(c) Dicarboxylic acids
(d) Lecithin

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 uracil
(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) UDP-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) Oxalacetate
(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

7. 75% of the gastric secretion is secreted by
   a. Cardiac end
   b. Pyloric end
   c. Surface epithelium
   d. None of the above

8. Disaccharidases and oligosaccharidases are present in
   a. Pancreatic juice
   b. Gastric juice
   c. Mucosal lining of upper Jejunum
   d. Mucosal lining of Ileum

9. PH of the gastric juice ranges from
   a. 1.5 -3.0
   b. 0-1.0
   c. 5-7
   d. It is always above 7

10. Five major pancreatic proteases are activated by
   a. Chymotrypsin
   b. Elastase
   c. Trypsin
   d. Carboxypeptidase A and B

11. Which one is the function of gastric juice HCL
   a. It converts Pepsinogen to pepsin
   b. It converts ferric into ferrous from
   c. It stimulates the release of secretin
   d. All of the above

12. Steatorrhea is caused by lack of
   a. Gastric juice
   b. Bile
   c. Pancreatic enzyme
   d. All of the above

13. Gastric lipase enzyme is inactivated by
   a. HCL
   b. Pepsin
   c. Trypsin
   d. Lactic acid

14. The dietary lipids consists of 90% of
   a. Cholesterol
   b. Phospholipids
   c. Triacylglycerol
   d. Cholesterylesters

15. Intrinsic factor is
   a. A polypeptide
   b. It's an enzyme
   c. It's a glycoprotein
   d. Is a phospholipid

16. Emulsification of dietary lipids occur in
   a. Stomach
   b. Duodenum
   c. Jejunum
   d. Ileum

17. In the formation of bile acids, hydrocarbon chain of cholesterol is shortened by
   a. 5 carbons
   b. 4 carbons
   c. 3 carbons
   d. 6 carbons

18. In bile salts glycine or taurine is attached with cholesterol through
   a. Ionic bond
   b. Covalent bond
   c. Vander waals forces
   d. None of the above

5. Among the inorganic constituents, saliva is saturated with
   a. Na^+
   b. K^+
   c. Ca^{++}
   d. Mg^{++}

6. Salivary α-amylase acts briefly on
   a. Both starch and glycogen
   b. In the presence of cl^-
   c. At PH (6.6-6.8)
   d. All of the above are true

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a. Na+
b. K+
c. Ca++
d. Mg++

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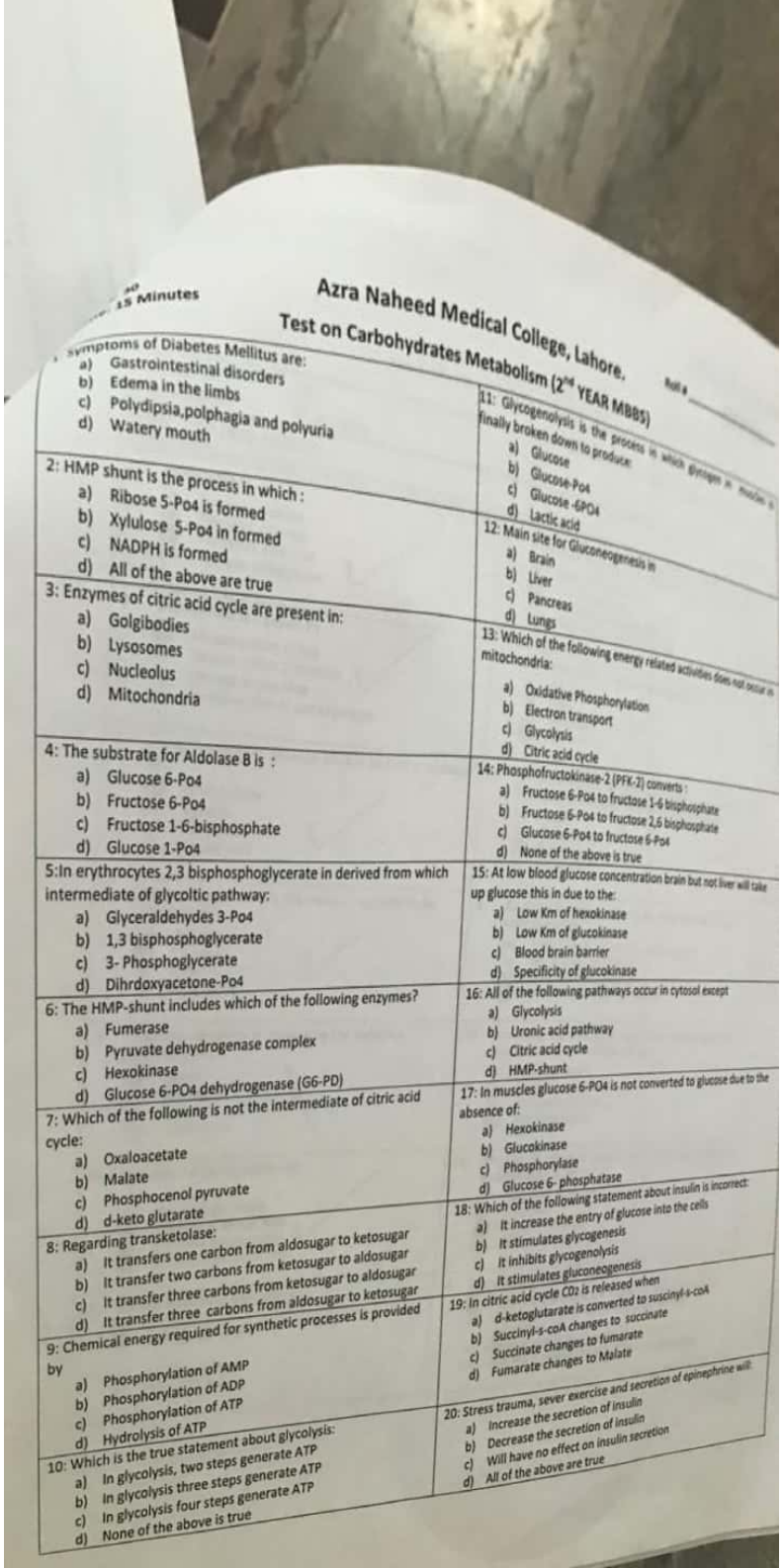

15 Minutes

Azra Naheed Medical College, Lahore.

Test on Carbohydrates Metabolism (2nd YEAR MBBS)

Roll #

1: Symptoms of Diabetes Mellitus are:
a) Gastrointestinal disorders
b) Edema in the limbs
c) Polydipsia,polphagia 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 muscles is finally broken down to produce:
a) Glucose
b) Glucose-Po4
c) Glucose -6PO4
d) Lactic acid

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

13: Which of the following energy related activities does not occur in 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 take 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 to the absence of:
a) Hexokinase
b) Glucokinase
c) Phosphorylase
d) Glucose 6- phosphatase

18: Which of the following statement about insulin is incorrect:
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 suscinyl-s-coA
b) Succinyl-s-coA changes to succinate
c) Succinate changes to fumarate
d) Fumarate changes to Malate

20: Stress trauma, sever exercise and 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

15 Codons are present of

(a) DNA
(b) tRNA
(c) rRNA
(d) mRNA

16 In Guanosine content of DNA 20% of total DNA adenine content will be

(a) 30%
(b) 40%
(c) 60%
(d) 80%

17 The structure of tRNA appears like

(a) Hair pin
(b) Helical
(c) Clover leaf
(d) Coiled

18 In DNA pentose is deoxyribose, which loses oxygen from

(a) Carbon No. 1
(b) Carbon No. 2
(c) Carbon No. 3
(d) Carbon No. 5

19 Type II transfer RNA will have

(a) 2 bases on variable arm
(b) 3 bases on variable arm
(c) 4 bases on variable arm
(d) 11 bases on variable arm

20 In posttranscriptional changes in tRNA anticodon side loses

(a) 16 introns
(b) 18 introns
(c) 14 introns
(d) 20 introns

30
15 Minutes

AZRA NAHEED MEDICAL COLLEGE

DEPARTMENT OF BIOCHEMISTRY

CLASS TEST NUCLEOTIDE METABOLISM

2ND Year MBBS PART II- SEQs

Date: 06 August 2019

Time Allowed: 35 minutes | Total Marks: 50

Question no 1. (10)

a. Mention the origin of carbon and nitrogen atoms in purine ring. 5
b. How is de novo purine synthesis different from pyrimidine synthesis? 3
c. Discuss the regulation of purine nucleotide biosynthesis. 2

Question no 2. (10)

a. What is the precursor of AMP and GMP in de novo purine synthesis? 1
b. Write a brief note on purine salvage pathway. 4
c. Mention the cause and the features of Lesch–Nyhan syndrome. 5

Question no 3. (10)

a. Write down the steps of purine degradation pathway. 5
b. What is the normal serum uric acid levels in males and females? 2
c. What are the soluble products produced in purine degradation in other animal species? 3

Question no 4. (10)

a. Draw a structure of pyrimidine ring to show its sources of carbon and nitrogen. 2.5
b. What are the regulated steps of pyrimidine synthesis? 2.5
c. Write down the differences between CPS I and CPS II. 5

Question no 5. (10)

A 46 years old man presented to the emergency department with complain of severe right toe pain. On examination, his right toe was swollen, red, warm and tender. His serum uric acid level was 14.6 mg/dL.

a. What is your most likely diagnosis? 1
b. What is hyperuricemia? Mention the causes of hyperuricemia 4
c. Name the enzyme defect in this condition. How will you treat this condition? 5

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 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

2 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

3 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

4 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

5 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

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

7 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

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

9 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

10 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

11 "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

12 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

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

14 2-MAG is converted to 1-MAG by enzyme
(a) Lipase
(b) Isomerase
(c) Cholesterol esterase
(d) Phospholipase A2

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

19 By decreased activity of lipoprotein lipase which change would you expect?

(a) Elevation of HDL
(b) Elevation of LDL
(c) Elevation of chylomicrons & VLDL
(d) Elevation of chylomicrons only

21 The 14 carbon chain fatty acid undergoes complete B-oxidation. How many B-oxidation cycles will be completed and how many acetyl SCoA molecules will be liberated?

(a) 7 cycles and 8 acetyl SCoA
(b) 6 cycles and 7 acetyl SCoA
(c) 5 cycles and 9 acetyl SCoA
(d) 4 cycles and 5 acetyl SCoA

23 HDL is synthesized in

(a) Liver
(b) Kidneys
(c) Spleen
(d) Liver and intestine

4 **Initiation codon is**

(a) GAG
(b) GAC
(c) AGG
(d) AUG

6 **Variable arm is present on**

(a) Ribosomal RNA
(b) Small nuclear RNA
(c) Heterogenous nuclear RNA
(d) Transfer RNA

8 **In posttranscriptional modifications, tRNA loses from its 5'end**

(a) 13 bases
(b) 18 bases
(c) 15 bases
(d) 16 bases

10 **Which of the following has maximum number of minor bases**

(a) tRNA
(b) rRNA
(c) mRNA
(d) Small nuclear RNA

12 **Which of the following base pairs will have 3 hydrogen bonds?**

(a) A – T
(b) A – U
(c) G – T
(d) G – C

: 30
: 15 Minutes

Roll # [redacted]

Azra Naheed Medical College, Lahore.

Test on Carbohydrates Metabolism (2nd YEAR MBBS)

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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

6 **Proteolytic enzymes are produced by**

(a) Stomach
(b) Small intestine
(c) Pancreas
(d) All of above

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

10 **Regarding saliva which of the following is incorrect:**

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(b) Contains salivary proteolytic enzymes
(c) Contains secretory IgA and lysozymes
(d) Contains peroxidases

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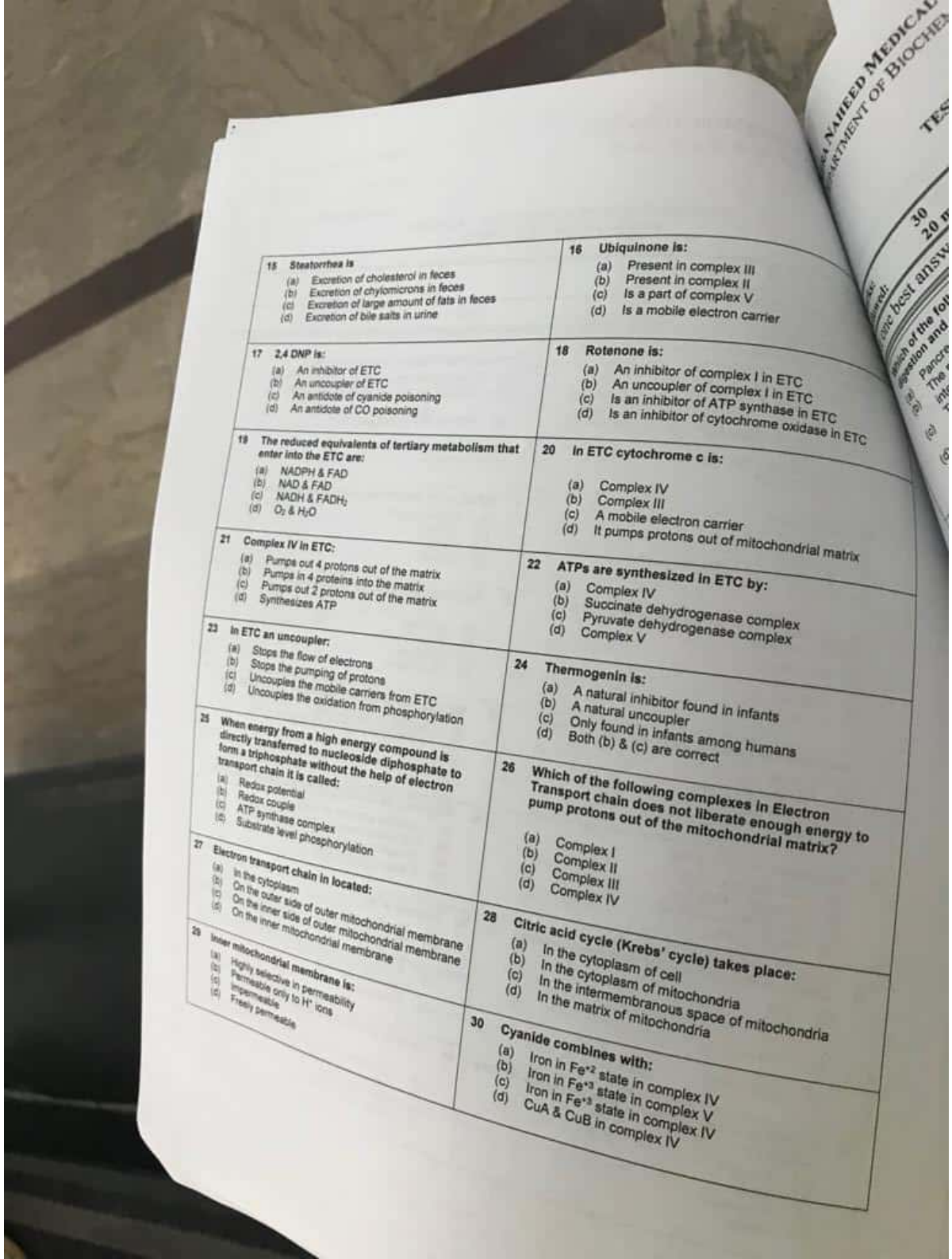
(a) Excretion of milky urine
(b) Obstruction in transportation phase of lipid digestion in lacteals
(c) An abnormal connection between urinary tract and lymphatic drainage
(d) All of above

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 **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

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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

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

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

13 Eicosanoids are synthesized from arachidonic acid which can be released from

(a) Dipalmityl lecithin
(b) Sphingosine
(c) Phosphotidyl inositol
(d) Cholesterol

19 **HMP shunt and uronic acid pathway collectively provide** (a) 38 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

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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 pyrimi... 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 rRNA
(d) Non coding region on tRNA

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 pancreastic 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?

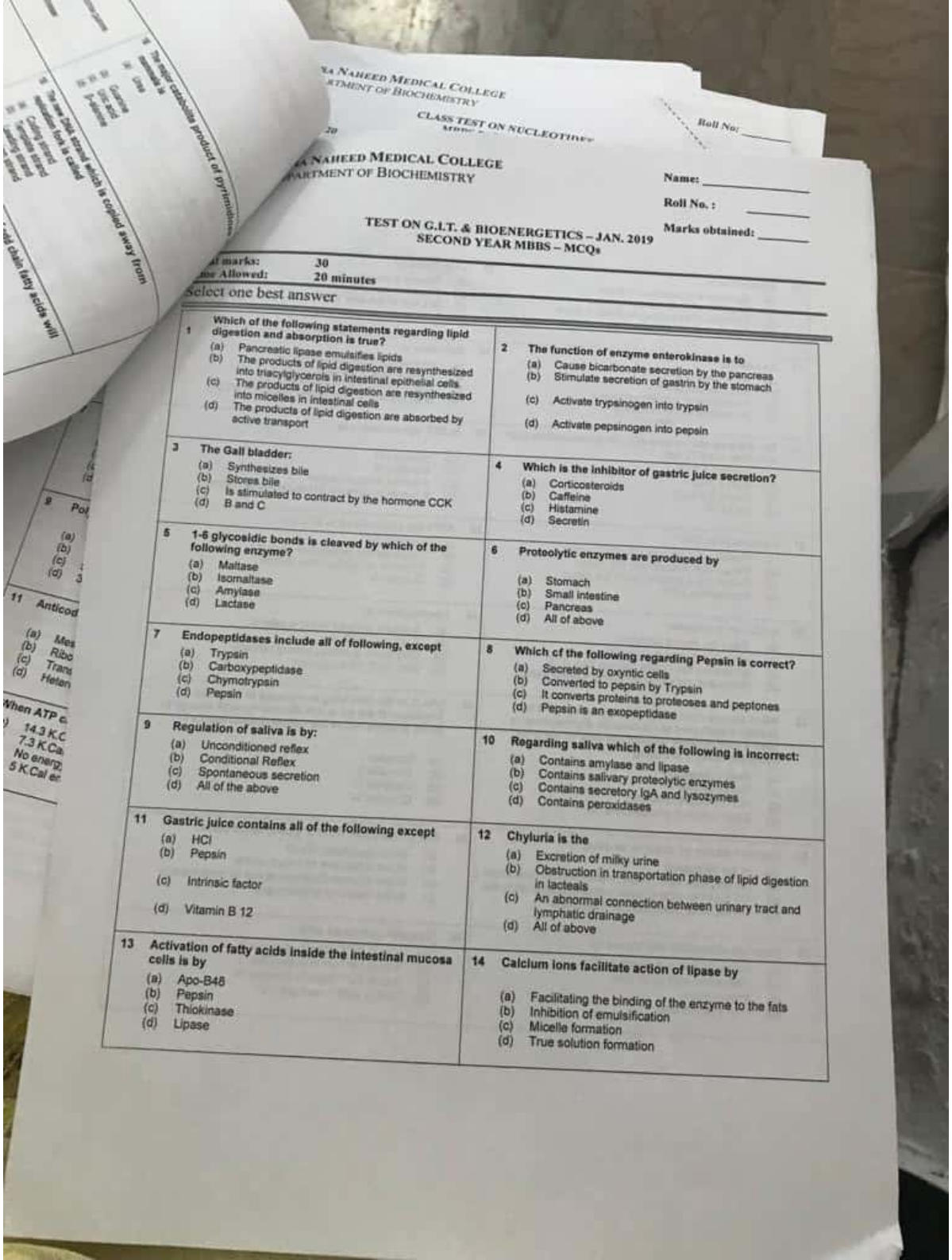
(a) Citric acid cycle
(b) Glycolysis
(c) Uronic acid pathway
(d) HMP shunt

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



A NAHEED MEDICAL COLLEGE
RTMENT OF BIOCHEMISTRY

CLASS TEST ON NUCLEOTIDES

Roll No: _____

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Marks obtained: _____

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

al marks: 30
me Allowed: 20 minutes

Select one best answer

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(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
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(c) Amylase
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6 **Proteolytic enzymes are produced by**
(a) Stomach
(b) Small intestine
(c) Pancreas
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7 **Endopeptidases include all of following, except**
(a) Trypsin
(b) Carboxypeptidase
(c) Chymotrypsin
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8 **Which cf the following regarding Pepsin is correct?**
(a) Secreted by oxyntic cells
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(c) It converts proteins to proteoses and peptones
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9 **Regulation of saliva is by:**
(a) Unconditioned reflex
(b) Conditional Reflex
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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
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