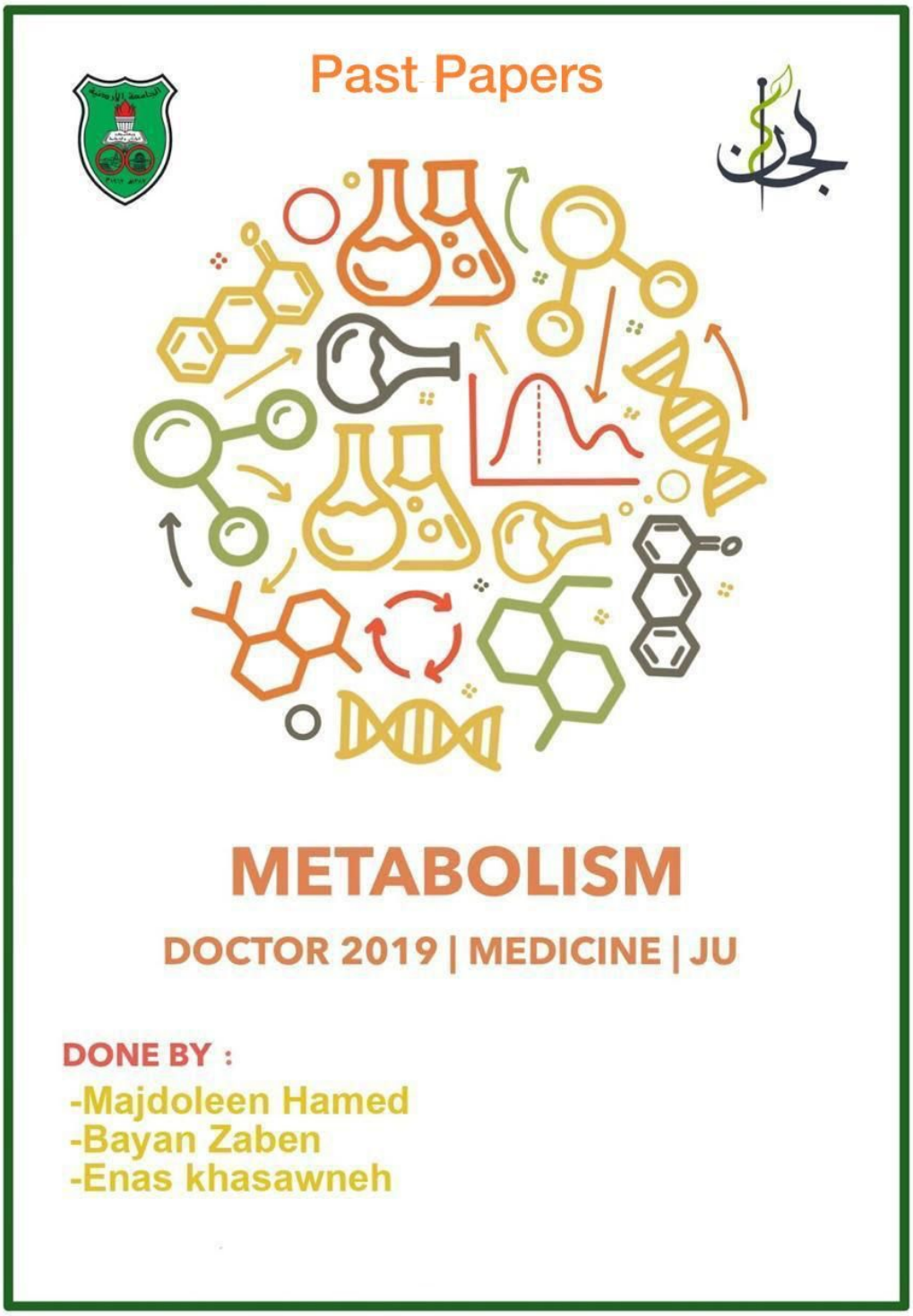
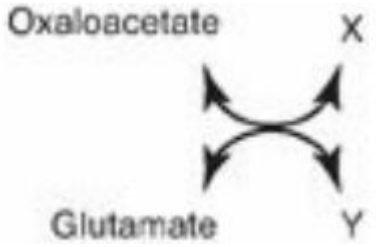


Lippincott Q. For Dr.Nafeth Material:

1-In the transamination reaction shown to the right, which of the following are the products X and Y?

A. Alanine, α-ketoglutarate

B. Asparate, α-ketoglutarate
C. Glutamate, alanine
D. Pyruvate, aspartate



2-Which one of the following statements about amino acids and their metabolism is correct?
A. Free amino acids are taken into the enterocytes by a proton-linked .transport system
B. In healthy, fed individuals, the input to the amino acid pool exceeds .the output
.C. Liver uses ammonia to buffer protons
D. Muscle-derived glutamine is metabolized in liver and kidney tissue to .ammonia plus a gluconeogenic precursor
E. The first step in the catabolism of most amino acids is their oxidative .deamination
F. The toxic ammonia generated from the amide nitrogen of amino acids is transported through blood as arginine

3-A female neonate did well until approximately age 24 hours, when she became lethargic. A sepsis workup proved negative. At 56 hours, she started showing focal seizure activity. The plasma ammonia level was found to be 887 μmol/l (normal 5–35 μmol/l). Quantitative plasma amino acid levels revealed a marked elevation of citrulline but not argininosuccinate.
19.3 Which one of the following enzymic activities is most likely to be deficient in this patient?
A. Arginase
B. Argininosuccinate lyase
C. Argininosuccinate synthetase
D. Carbamoyl phosphate synthetase I
E. Ornithine transcarbamoylase

4-Which one of the following would also be elevated in the blood of this patient?
A. Asparagine
B. Glutamine
C. Lysine
D. Urea

For Questions 5,6,7 match the deficient enzyme with the associated clinical sign or laboratory finding in urine.
A. Black pigmentation of cartilage
B. Cabbage-like odor of fluids
C. Cystine crystals in urine
D. White hair, red eye color
E. Increased branched-chain amino acids F. Increased homocysteine
G. Increased methionine
H. Increased phenylalanine

5-Cystathionine β-synthase
6-Homogentisic acid oxidase
7-Tyrosinase

8-A 1-week-old infant, who was born at home in a rural area, has undetected classic phenylketonuria. Which statement about this baby and/or her treatment is correct?
A. A diet devoid of phenylalanine should be initiated immediately.
B. Dietary treatment will be recommended to be discontinued in adulthood.
C. Supplementation with vitamin B6 is required.
D. Tyrosine is an essential amino acid.

9-Which one of the following statements concerning amino acids is correct?
A. Alanine is ketogenic.
B. Amino acids that are catabolized to acetyl coenzyme A are glucogenic.
C. Branched-chain amino acids are catabolized primarily in liver.

D. Cysteine is essential for individuals consuming a diet severely limited in methionine.

10-δ-Aminolevulinic acid synthase activity:
A. catalyzes the committed step in porphyrin biosynthesis.
B. is decreased by iron in erythrocytes.
C. is decreased in liver in individuals treated with certain drugs such as the barbiturate phenobarbital.
D. occurs in the cytosol.
E. requires biotin as a coenzyme.

11-A 50-year-old man presented with painful blisters on the backs of his hands. He was a golf instructor and indicated that the blisters had erupted shortly after the golfing season began. He did not have recent exposure to common skin irritants. He had partial complex seizure disorder that had begun about 3 years earlier after a head injury. The patient had been taking phenytoin (his only medication) since the onset of the seizure disorder. He admitted to an average weekly ethanol intake of about 18 12-oz cans of beer. The patient's urine was reddish orange. Cultures obtained from skin lesions failed to grow organisms. A 24-hour urine collection showed elevated uroporphyrin (1,000 mg; normal, <27mg). The most likely diagnosis is:
A. acute intermittent porphyria.
B. congenital erythropoietic porphyria.
C. erythropoietic protoporphyria.
D. hereditary coproporphyria.
E. porphyria cutanea tarda.

12-A patient presents with jaundice, abdominal pain, and nausea. Clinical laboratory studies give the following results:

Serum bilirubin	Urine urobilinogen	Urinary bilirubin
Increase in conjugated bilirubin	Not present	Present

What is the most likely cause of the jaundice?
A. Decreased hepatic conjugation of bilirubin
B. Decreased hepatic uptake of bilirubin
C. Decreased secretion of bile into the intestine

D. Increased hemolysis

13-A 2-year-old child was brought to his pediatrician for evaluation of gastrointestinal problems. The parents report that the boy has been listless for the last few weeks. Lab tests reveal a microcytic, hypochromic anemia. Blood lead levels are elevated. Which of the enzymes listed below is most likely to have higher-than-normal activity in the liver of this child?

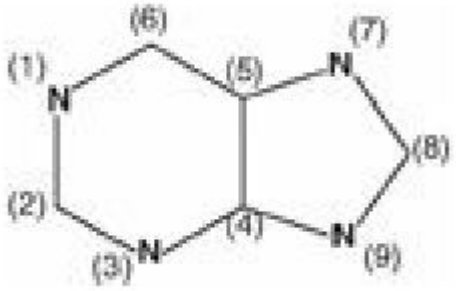
A. δ-Aminolevulinic acid synthase

B. Bilirubiun UDP-glucuronosyltransferase C. Ferrochelatase

D. Heme oxygenase

E. Porphobilinogen synthase

14-Azaserine, a drug with research applications, inhibits glutamine-dependent enzymes. Incorporation of which of the ring nitrogens (N) in the generic purine structure shown would most likely be affected by azaserine?



A. 1

B. 3

C. 7

D. 9

15-A 42-year-old male patient undergoing radiation therapy for prostate cancer develops severe pain in the metatarsal phalangeal joint of his right big toe. Monosodium urate crystals are detected by polarized light microscopy in fluid obtained from this joint by arthrocentesis. This patient's pain is directly caused by the overproduction of the end product of which of the following metabolic pathways?

A. De novo pyrimidine biosynthesis

B. Pyrimidine degradation

C. De novo purine biosynthesis

D. Purine salvage
E. Purine degradation

16-Which one of the following enzymes of nucleotide metabolism is correctly paired with its pharmacologic inhibitor?
A. Dihydrofolate reductase—methotrexate B. Inosine monophosphate dehydrogenase—hydroxyurea
C. Ribonucleotide reductase—5-fluorouracil
D. Thymidylate synthase—allopurinol
E. Xanthine oxidase—probenecid

17-A 1-year-old female patient is lethargic, weak, and anemic. Her height and weight are low for her age. Her urine contains an elevated level of orotic acid. Activity of uridine monophosphate synthase is low. Administration of which of the following is most likely to alleviate her symptoms?
A. Adenine
B. Guanine
C. Hypoxanthine
D. Thymidine
E. Uridine

Answers:

1-B
2-D
3-C
4-B
5-F
6-A
7-D
8-D
9-D
10-A
11-E
12-C
13-A
14-D

15-E
16-A
17-E

Lippocott Q. For Dr.Faisal Material:

1-When oleic acid, 18:1(9), is desaturated at carbon 6 and then elongated, what is the product?
A. 19:2(7,9)
B. 20:2 (n-6)
C. 20:2(6,9)
D. 20:2(8,11)

2-A 4-month-old child is being evaluated for fasting hypoglycemia. Laboratory tests at admission reveal low levels of ketone bodies, free carnitine, and acylcarnitines in the blood. Free fatty acid levels in the blood were elevated. Deficiency of which of the following would best explain these findings?
A. Adipose triglyceride lipase
B. Carnitine transporter
C. Carnitine palmitoyltransferase I
D. Long-chain fatty acid dehydrogenase

3-A teenager, concerned about his weight, attempts to maintain a fat-free diet for aperiod of several weeks. If his ability to synthesize various lipids were examined, he
would be found to be most deficient in his ability to synthesize:
A. cholesterol.
B. glycolipids.
C. phospholipids.
D. prostaglandins.
E. triacylglycerol.

4-In preparation for a trip to an area of India where chloroquine-resistant malaria is endemic, a young man is given primaquine prophylactically. Soon thereafter, he

develops a hemolytic condition due to a deficiency in glucose 6-phosphate dehydrogenase. A less-than-normal level of which of the following is a consequence of the enzyme deficiency and the underlying cause of the hemolysis?

A. Glucose 6-phosphate
B. Oxidized form of nicotinamide adenine dinucleotide
C. Reduced form of glutathione
D. Ribose 5-phosphate

5-Septic shock, a state of acute circulatory failure characterized by persistent arterial hypotension (low blood pressure) and inadequate organ perfusion refractory to fluid
resuscitation, results from a severe inflammatory response to bacterial infection. It has a high mortality rate and is associated with changes in the level of nitric oxide.
Which statement concerning septic shock is most likely correct?

A. Activation of endothelial nitric oxide synthase causes an increase in nitric oxide.
B. High mortality is the result of the long half-life of nitric oxide.
C. Lysine, the nitrogen source for nitric oxide synthesis, is deaminated by bacteria.
D. Overproduction of nitric oxide by a calcium-independent enzyme is the cause of the hypotension.

6-An individual who has recently been prescribed a drug (atorvastatin) to lower cholesterol levels is advised to limit consumption of grapefruit juice, because high intake of the juice reportedly results in an increased level of the drug in the blood, increasing the risk of side effects. Atorvastatin is a substrate for the cytochrome P450 enzyme CYP3A4, and grapefruit juice inhibits the enzyme. Which statement concerning P450 enzymes is most likely correct?

A. They accept electrons from reduced nicotinamide adenine dinucleotide (NADH).
B. They catalyze the hydroxylation of hydrophobic molecules.
C. They differ from nitric oxide synthase in that they contain heme.
D. They function in association with an oxidase.

7-In male patients who are hemizygous for X-linked glucose 6-phosphate dehydrogenase deficiency, pathophysiologic consequences are more apparent in red blood cells (RBC) than in other cells such as in the liver. Which one of the following provides the most reasonable explanation for this different response?

A. Excess glucose 6-phosphate in the liver, but not in RBC, can be channeled to glycogen, thereby averting cellular damage.

B. Liver cells, in contrast to RBC, have alternative mechanisms for supplying the reduced nicotinamide adenine dinucleotide phosphate required for maintaining cell integrity.

C. Because RBC do not have mitochondria, production of ATP required to maintain cell integrity depends exclusively on the shunting of glucose 6-phosphate to the pentose phosphate pathway.

D. In RBC, in contrast to liver cells, glucose 6-phosphatase activity decreases the level of glucose 6-phosphate, resulting in cell damage

8-Which one of the following statements about the digestion of lipids is correct?

A. Large lipid droplets are emulsified (have their surface area increased) in the mouth through the act of chewing (mastication).

B. The enzyme colipase facilitates the binding of bile salts to mixed micelles, maximizing the activity of pancreatic lipase.

C. The peptide hormone secretin causes the gallbladder to contract and release bile.

D. Patients with cystic fibrosis have difficulties with digestion because their thickened pancreatic secretions are less able to reach the small intestine, the primary site of lipid digestion.

E. Formation of triacylglycerol-rich chylomicrons is independent of protein synthesis in the intestinal mucosa.

9-Which one of the following statements about the absorption of lipids from the intestine is correct?

A. Dietary triacylglycerol must be completely hydrolyzed to free fatty acids and glycerol before absorption.

B. The triacylglycerol carried by chylomicrons is degraded by lipoprotein lipase to fatty acids that are taken up by muscle and adipose tissues and glycerol that is taken up by the liver.

C. Fatty acids that contain fewer than 12 carbon atoms are absorbed and enter the circulation primarily via the lymphatic system.
D. Deficiencies in the ability to absorb fat result in excessive amounts of chylomicrons in the blood.

10-Mice were genetically engineered to contain hydroxymethylglutaryl coenzyme A reductase in which serine 871, a phosphorylation site, was replaced by alanine.
Which of the following statements concerning the modified form of the enzyme is most likely to be correct?
A. The enzyme is nonresponsive to adenosine triphosphate depletion.
B. The enzyme is nonresponsive to statin drugs.
C. The enzyme is nonresponsive to the sterol response element–sterol response element–binding protein system.
D. The enzyme is unable to be degraded by the ubiquitin–proteasome system

11-Calculate the amount of cholesterol in the low-density lipoproteins in an individual whose fasting blood gave the following lipid-panel test results: total cholesterol =
300 mg/dl, high-density lipoprotein cholesterol = 25 mg/dl, triglycerides = 150 mg/dl.
A. 55 mg/dl
B. 95 mg/dl
C. 125 mg/dl
D. 245 mg/dl

For Questions 12 and13:
A young girl with a history of severe abdominal pain was taken to her local hospital at 5 a.m. in severe distress. Blood was drawn, and the plasma appeared milky, with the
triacylglycerol level in excess of 2,000 mg/dl (normal = 4–150 mg/dl). The patient was placed on a diet extremely limited in fat but supplemented with medium-chain triglycerides.

12-Which of the following lipoprotein particles are most likely responsible for the appearance of the patient’s plasma?

A. Chylomicrons
B. High-density lipoproteins
C. Intermediate-density lipoproteins
D. Low-density lipoproteins
E. Very-low-density lipoproteins

13-Which one of the following proteins is most likely to be deficient in this patient?
A. Apo A-I
B. Apo B-48
C. Apo C-II
D. Cholesteryl ester transfer protein
E. Microsomal triglyceride transfer protein

Answers:

1-D
2-B
3-D
4-C
5-D
6-B
7-B
8-D
9-B
10-A
11-D
12-A
13-C

Past papers:

2018:

1-Which substrate is common for purines,heme and creatine synthesis?
a. Glycine
b. Succinate

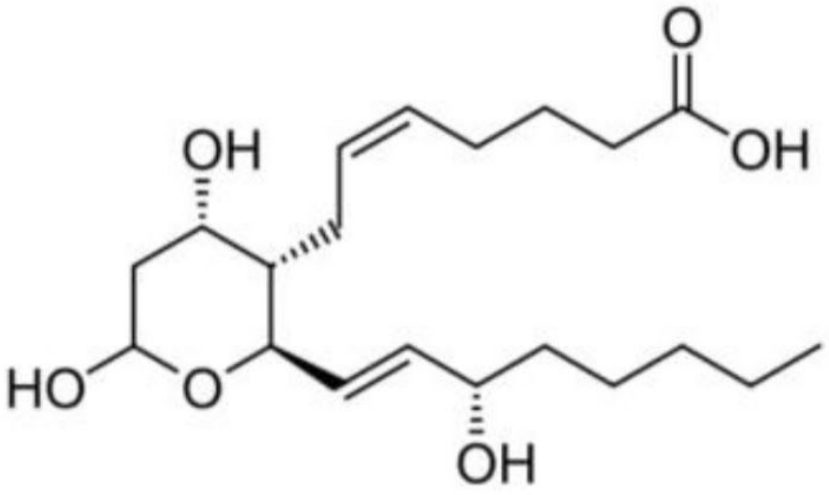
c. Arginine
d. Aspartate

Ans: A

2-A defective glucorodyl transferase is associated with all of the following except? a. gilbert syndrome
b. criggler najjjar
c. liver cirrhosis
d. dubin Johnson syndrome

Ans:D

3- The following figure represents the structure of?
a. Prostaglandin I3
b. Prostaglandin G2
c. Thromboxane B2
d. Leukotriene B4



Ans:C

5-McArdle syndrome involves a deficiency in muscle glycogen phosphorylase, which of the following products will not be produced?
a. Glucose-1 phosphate
b. Glucose-6 phosphate
c. UDP-Glucose
d. Galactose-1 phosphate

Ans:A

7-True about hormone sensitive lipases:
a. Inhibited by phosphorylation
b. Activated by phosphatases
c. Phosphodiesterase inhibitors maintain the active form
d. They are released by the pancreas

Ans:C

8-Statin is a drug used for losing weight, it inhibits the step that produces which of the following products?
a. HMG CoA
b. Mevalonate
c. Acetyl CoA
d. Propionyl CoA

Ans:B

9- A female neonate did well until approximately 24 hours of age when she became lethargic. A sepsis workup proved negative. At 56 hours, she started showing focal seizure activity. The plasma ammonia level was found to be 1,100 μmol/L (normal 5– 35 μmol/L). Quantitative plasma amino acid levels revealed a marked elevation of argininosuccinate. Which one of the following would also be elevated in the blood of this patient?
a. Asparagine.
b. Glutamine.
c. Lysine.
d. Urea.

Ans:B

10-Which one of the following statements concerning amino acids is correct?
a. An increase in gluconeogenesis from amino acids results in a decrease in urea formation.
b. All essential amino acids are glycogenic.
c. Ornithine and citrulline are found in tissue proteins.
d. Cysteine is an essential amino acid in individuals consuming a diet severely limited in methionine.

Ans:D

11-During the last hours of a 48hour fast, which of the following is used as a source of energy?

a. Amino acids
b. Glycogen
c. Lactate
d. Nucleotides

Ans: A

12-Regarding the product in the following figure, which of the following will be used in the next reaction?

a. CoA
b. H2O
c. FAD
d. NAD+

Ans:B

13-Which of the following is used in the oxidation of very long fatty acid and not in long or short chain fatty acids?

a. NAD+
b. FAD
c. H2O
d. O2

Ans:D

15-Relative or absolute lack of insulin in humans would result in which one of the following reactions in the liver?

a. Decreased activity of hormone-sensitive lipase
b. Decreased gluconeogenesis from lactate
c. Decreased glycogenolysis
d. Increased formation of 3-hydroxybutyrate

Ans:D

16-Which one of the following protein activates lipoprotein lipase?

a. Apolipoprotein A-I
b. Apolipoprotein B-48
c. Apolipoprotein C-II
d. Cholesteryl ester transfer protein

Ans:C

17-Which one of the following enzymes of nucleotide metabolism is correctly paired with its pharmacologic inhibitor?
a. Dihydrofolate reductase-methotrexate
b. Inosine monophosphate dehydrogenase-hydroxyurea
c. Ribonucleotide reductase-5-fluorouracil
d. Thymidylate synthase -allopurinol

Ans:A

18-A 42-year-old male patient undergoing radiation therapy for prostate cancer develops severe pain in the metatarsal phalangeal joint of his right big toe. Monosodium urate crystals are detected by polarized light microscopy in fluid obtained from this joint by arthrocentesis. This patient's pain is directly caused by the overproduction of the end product of which of the following metabolic pathways?
a. De novo pyrimidine biosynthesis
b. Pyrimidine degradation
c. De novo purine biosynthesis
d. Purine degradation

Ans:D

20-A coenzyme derived from Vitamin B12 is needed for?
a. Synthesis of D-Methylmalonyl CoA
b. Formation of Guanidinoacetate
c. Decarboxylation of Uroporphyrinogen III
d. Proprionyl CoA metabolism

Ans:D

22-The only AA that will not enter krebs cycle as Succinyl CoA?
A. Methionine
b. Histidine
c. Threonine

d. Valine

Ans:B

23-One of the following increases ketone bodies synthesis:
a. High free fatty acids concentration in the blood
b. Low blood levels of Glucagon
c. Inhibition of beta oxidation
d. Inhibitions of hormone sensitive lipases

Ans:A

24-Carabomoyl phosphate synthetase synthesized in hepatic cytosol is used for: a. Pyrimidine synthesis
b. Urea cycle activator
c. Purine synthesis
d. Activator of IMP formation

Ans:A

26-The main acceptor of NH3 in deamination reactions:
a. Glutamate
b. a-ketoglutarate
c. Glutamine
d. Alanine

Ans:B

27-True about using acetoacetate as a source of energy:
a. Utilizes succinly CoA
b. Occurs in the cytosol
c. Occurs when oxaloacetate is depleted
d. Occurs in the liver and in red blood cells

Ans:A

28-To synthesize a 6 carbon fatty acid
a. 1 malonyl CoA ,4 NADPH ,2 acetyl CoA
b. 1 malonyl CoA ,2 NADPH ,2 acetyl CoA
c. 2 malonyl CoA ,3 NADPH ,1 acetyl CoA
d. 2 malonyl CoA ,4 NADPH ,1 acetyl CoA

Ans:D

30-Aspirin inhibits the production of?

a. prostaglandins

b. thromboxanes

c. Leukotrienes

d. A+B

e. A + C

Ans:D

31- Which of the following can be used to lose weight?

a. Inhibition of pancreatic lipases

b. Activation of pyruvate dehydrogenase

c. Inhibition of HMG-CoA reductase

d. Increasing absorption of fat

Ans:A

32- Needed to synthesize sphingomyelin from ceramide?

a. Phosphocholine

b. UDP-choline

c. Phosphatidylinositol

d. lecithin

Ans:D

34- What inhibits carnitine shuttle?

a. Malonyl coA

b. Acyl CoA

c. Acetyl CoA

d. Acetoacetate

Ans:A

35- Glycerol after TAG hydrolysis?

a. is used in the liver and muscle for glycolysis

b. used to resynthesize fat in the liver

c. is used in the liver for gluconeogenesis

d. is metabolized in the kidney and excreted in the urine

Ans:C

37- Decrease the activity of TCA cycle?
a. High ADP/ATP ratio
b. Low NAD+/NADH ratio
c. High NADP/NADPH ratio
d. High Ca+2 concentration

Ans:B
38- Goal of pentose phosphate pathway:
a. Synthesize TAG from glycerol
b. Generate high amount of ATP
c. Generate NADPH and pentoses
d. Degrade glucose to generate NADH

Ans:C
39- What's the common thing between galactose and fructose?
a. Their transport is insulin independent
b. Phosphorylated by the same enzyme
c. Are used to form lactose
d. Both are epimers of glucose

Ans:A
40- Second substrate for thiolase :
a. ATP
b. H_2O
c. O_2
d. Coenzyme A

Ans:D
41-Tay sach's disease leads to the accumulation of:
a. Gangliosides
b. Lecithin
c. Sphingomyelin
d. Cerebrosides

Ans:A
42- Fructose 2,6 bisphosphate is?
a. Inhibitor of TCA cycle

b. Activator of pyruvate kinase
c. Substituent for Fructose 1,6 bisphosphate in glycolysis
d. Activator of phosphofructokinase

Ans:D

43- A 1-week-old infant, who was born at home in a rural, medically-underserved area, has undetected classic phenylketonuria. Which statement about this baby and/or her treatment is correct?
a. A diet devoid of phenylalanine should be initiated immediately.
b. Phenylpyruvate is found in the urine.
c. Supplementation with vitamin B6 is required.
d. Tyrosine is a nonessential amino acid

Ans:B

44- A patient with an inherited disorder has blue speckled discoloration of skin, was found to have kidney stones and has black urine, this disorder involves the accumulation of?
a. Homogentisic acid
b. Phenylalanine
c. Homocysteine
d. Cystathionine

Ans:A

45- Familiar hypercholesterolemia involves a deficiency in:
a. HMG-CoA reductase
b. Uptake of HDL by the liver
c. Synthesis of cholesterol
d. LDL endocytosis

Ans:D

46- Which of the following statements about glucagon is correct?
a. High levels of blood glucose increase the release of glucagon from the α cells of the pancreas
b. Glucagon levels decrease following ingestion of a protein-rich meal
c. Glucagon increases the intracellular levels of cAMP in liver cells, causing an increase in glycogenolysis
d. Glucagon is the only hormone important in combating hypoglycaemia

e. Glucagon depresses the formation of ketone bodies by the liver

Ans:C

47- Which of the following is not synthesized by tyrosine?

a. Melatonin

b. Dopamine

c. Melanin

d. Epinephrine

Ans:A

48- Which of the following is used in the step that introduces double bond in the fatty acid during B-oxidation?

a. NAD+

b. NADP

c. H_2O

d. FAD

Ans:D

50- Which of the following enzymes catalyzes the production of NADPH used in the synthesis of fatty acids?

a. Aconitase

b. Cytosolic malate dehydrogenase

c. Citrate synthase

d. Pyruvate dehydrogenase

Ans:B

18- 3 moles of glucose enter the PPP. What is the net product?

a-3 moles of pentoses. 6 moles of NADPH. 3 moles of CO_2

b-3 moles of pentoses. 6 moles of NADPH. 6 moles of CO_2

c-6 moles of pentoses. 12 moles of NADPH. 6 moles of CO_2

d-5 moles of pentoses. 6 moles of NADPH. 3 moles of CO_2

Ans:A

19- A glucose molecule ends up as X acetyl CoA. They produce after entering TCA Y NADH, Z GTP and P $FADH_2$.

a-X = 2. Y= 3. Z= 1. P=1.

b-X = 3. Y= 6. Z= 3. P=3

c-X = 1. Y= 6. Z= 2. P=2
d-X = 2. Y= 6. Z= 2. P=2

Ans:D
25- The goal of Pentose Phosphate Pathway is: a-Generation of NADPH + pentose
b-Generation of ATP
c-Generation of NADH
d-Generation of new glucose

Ans:A
26- Which of the following is considered an inhibitor for both isocitrate dehydrogenase and α-ketoglutarate dehydrogenase?
a-ATP
b-NADH
c-ADP
d-A+B

Ans:D

Mid 019:

12-Which of the following is TRUE considering TCA cycle?
a. If citrate is very high in concentration, TCA cycle will run less effectively
b. When oxidation occurs, an accompanying decarboxylation takes place
c. The overall ΔG is considered zero at physiological conditions
d. ADP is an allosteric activator for 2 of the three dehydrogenases included
e. All enzymes are allocated within the mitochondrial matrix

Ans:A
13-The reactions in which succinate is converted to oxaloacetate are, in order:
a. three successive oxidation reactions
b. an oxidation, a hydration, and an oxidation

c. an oxidation, a dehydration, and an oxidation
d. an oxidative decarboxylation, a dehydration, and a condensation
e. a condensation, a dehydration, and an oxidative decarboxylation

Ans:B

14-Consider the TCA cycle reaction that produces oxaloacetate has a ΔGo = 0.1 kCal/mol. (0.001) M of each compound is mixed & the reaction is allowed to come to equilibrium. Accordingly, which statement is CORRECT about the resulting concentration of niacins at equilibrium?
a. [NAD+] ≥ [NADH]
b. [NAD+] > [NADH]
c. [NAD+] < [NADH]
d. [NAD+] = [NADH]
e. Cannot be determined from the information provided

Ans:B

18-During oxidative decarboxylation of a- ketogluterate, the following happens:
a. Oxidation of an acetate group
b. Addition of Coenzyme A to a 2-carbon fragment
c. Oxidation of NADH
d. Removal of 2 CO2 molecules
e. Oxidation of 2 thiol groups by FAD

Ans:E

2011-2017:

1) Which of the following products is not an intermediate of the pentose phosphate pathway ?

a. NADP

b. CO2

c. Ribose5-phosphate

d. NADH and ATP

e. Fructose 6-phosphate

2) Which of the following enzymes is the first enzyme unique to PPP ?

a. Glucose 6 phosphate dehydrogenase

b. 6-phosphogluconolactone dehydrogenase

c. Transaldolase

3) At the condensation step (malonyl CoA & acetyl CoA) in the fatty acid synthesis the following result is:

A- release of CO2

B-require CO2

C-Forming NADPH

D-produce hexoacyl-ACP

4)The step required to activate\start TAG synthesis?

A- activation of fatty acids by addition of CoA.

B-forming DHAP

5) True about characteristics of G6PD deficiency:

A-has low amount of NADPH.

B-RBCs most affected

C-Provide resistance to malaria

D- All of the above

6) True about TAG synthesis:

A-DHAP is reduced to glycerol phosphate in adipose tissue

B-Glycerol kinase play important role

C-It’s not a hormone sensitive process

D-Phosphatidate is not on the pathway of TAG synthesis

7) Right about the conversion from hydroxy acyl coA to ketoacyl coA:

A- Requires NAD+.

B-The enzyme that involved is enoyl-coA hydratase

C- It’s an hydration process

8)all of the following produces ROS except :-

a-CoQ in normal respiratory chain

b- oxidases

c- ionizing radiation

d- respiratory burst

e- lactic acid formation

9)something wrong about pentose phosphate pathway (PPP)

a- necessary for synthesis of steroid hormones in testis and ovaries

b- produce intermediates of glycolysis

c-NADPH inhibits it

d- produces NADPH in the reversal pathway

10)Glycerol phoshphate + X -----> Y + Z,, x+y+z represents respectively

a- FAD+DHAP+FADH2

c- NADP+DHAP+NADPH

b-NAD+ +glyceraldehyde3phosphate+NADH2

d-NAD+ +DHAP+NADH

11)butyric acid is formed by synthase by which of the following :-

a- oxidation of long fatty acid

b- condensation of malonyl and acetyl

12)in the final step of ketone body synthesis the products are acetoacetate and ?

a- DHAP

b- acetone

c- 3-hydroxybutyrate

d- acetyl CoA

13)ture about acetyl coA carboxylation

a- don’t require ATP

b- exergonic

c- require ATP

d- B+C

14)TAG is produced in adipose tissue, which is true ?

a- needs NADPH

b- needs glycerol kinase

c- needs active glycolysis

d- b+c

15)3 carbons are transferred from sedoheptulose to another molecule. Which sentence describes this correctly?

a-A three-carbon molecule is formed

b-The produced molecules are a fructose derivative and a tetrose

c-The enzyme used is a transketolase

d-The remaining molecule is Xylulose 5-p

16)methymalnoyl CoA to succinyl CoA requires

a- racemase

b- biotin

c-vit B12

d- TPP

17)The fatty acid that has NO double bonds :

a) Butyric acid.

b) Palmitic acid.

c) Capric acid.

d) All the above.

18)produces diacyl glycerol and inositol 3 phosphate from PIP2

a- phospholipase b

b- phospholipase d

c- phospholipase a

d- phospholipase c

20-something true about lipoproteins:

a-chylomicron has the lowest apolipoprotein percentage

b- chylomicron has the lowest TAG

C- HDL has the lowest apolipoprotein percentage

21-in HDL cholesterol is esterified from :-

a- acetyl CoA

b- phosphatidyl choline/lecithin

c- phosphartidylethanolamine

22-amide group in ceramide comes from:

a- serine

b- phosphatidyl choline c-sphingomylein

d- glutamine

e- glutamate

23- phosphatidyl serine is produced from phosphatidylethanolamine by:

a- carboxylation

b- decarboxylation

c- methylation

d- polar head exchange

e- more than one of the above

24-Fastest lipoprotein to reach anode: A-HDL

B-LDL

C-VLDL

D-IDL

25-Apo-B100 is found only by itself in:

A-LDL

B-HDL

C-IDL

D-chylomicrons

26-The excess dietary carbohydrates are converted to TAGs and transported to cells by?

A-VLDL

B-HDL

C-Chylomicrons

D-IDL

27-Regarding cholic acid synthesis:

A-The first step is hydroxylation at carbon 7

B-this process occurr in the liver

C-cholic acid act as inhibitor for the hydroxylase

D-All of the above

28-Phosphatidylcholine is formed from?

A- phosphatidylethanolamine+ 3 SAM.

B- CDP-DAG + cholin

C- CMP+ phosphocholin

29-The common intermediate for triacylglycerol and phospholipids synthesis is:

A-phosphatidic acid.

B-cholic acid

C-lysophosphotidic acid

D-archadionic acid

30-histamine is synthesized from histidine by :-

a-decarboxylation

b- amination

c- deamination

d- carboxylation

31- choose the wrong relation

a- ALT+ AST with liver disease b- ALT with myocardial infraction

32-Mismatch between the amino acid and its synthesis

a-PHE-Thr hydroxylation

b- Asn-Asp amidation

33-Something true about urea cycle

activated by rich protein diet

34-Something about CPS II if got inhibited

a- less pyrimidine de novo synthesis

b- less purine de novo synthesis

c- less pyrimidine savage

35-true sentence about amino acid digestion :-

a-mono peptides are absorbed by diffusion b- Di-Peptides are taken up by H+-Linked transport system

c- monopeptides enters the portal system by NA+ linked transport

36-What is true about gluconeogenesis?

A-enhanced by alcohol.

B-activated in prolonged fasting in the kidneys.

C-happens in mitochondria.

D- happens only during exercise.

37-Which of the following is the INCORRECT match? Amino acid Catabolic intermediate Glucogenic and/or ketogenic

A. Tyrosine Fumarate Glucogenic and ketogenic

B. Proline α-ketglutarate Glucogenic

C. Serine Glutamate Ketogenic

D. Arginine α-ketglutarate Glucogenic

E. Threonine Succinyl-CoA Glucogenic

38-A new born who refuses feeding has been diagnosed with cystathionine-β- synthase deficiency. What is the diagnosis of his condition?

A. Albinism

B. Homocystinuria

C. Maple syrup urine disease

D. Hyperammonemia

E. Alkapronyria

39-A patient who has a glutamine synthetase deficiency would have all of the following EXCEPT:

A. Glutamate amination to glutamine is compromised

B. Transport of ammonia from most tissues to liver is hindered

C. Toxic levels of ammonia may accumulate in the patient's tissues and/or blood

D. Transport of ammonia from muscle cells to the liver is not affected

E. Transamination of α–ketoglutarate to glutamate is downregulated

40-Mismatch pairs, each AA with its precursor:

A. Tyrosine - melanin

B. Tyrosine - norepinephrine

C. Threonine -serotonin

D.histidine –histamine

E. arginine and glycine, creatine

41-What is the true if glutamate undergo

transamination then by the enzyme glutamate dehydrogenase?

A- This require ATP

B- require NADPH

C- net product is alphaketoglutarate

D- Net product is ammonia

E- all of the above

42-Which of the following amino acids match with the corresponding catabolic product :

A- (gutamate,glutamine, alanine ,arginine) > pyruvate

B-(histidine,glutamate,arginine,proline)>alpha ketoglutarate

C- (isoleucine, valine , tryptophan) > succinyl CoA

D- (aspartate, phenylalanine, tyrosine) > OAA

43-Phenyl alanine enters TCA cycle as: Answer: Fumarate.

44-Main purpose of TCA cycle

Answer: Extraction of electrons

45-The FADH2 and NADH produced when we start from pyruvate and proceed to the end of the TCA result in the synthesis of about ___ ATPs.

a) 7

b) 11

c) 14

d) 9

e) 0

46-Which of the following statements about gluconeogenesis is correct?

a) Pyruvate is first converted to phosphoenolpyruvate by phosphoenolpyruvate carboxykinase

b) Fructose 1, 6-biphosphatase converts fructose 1, 6-bisphosphate into fructose 1-

phosphate

c) Glucose 6-phosphatase hydrolyzes glucose 6-phosphate to release glucose into the blood

d) Glucose 6-phosphatase hydrolyzes glucose 6-phosphate and is found in liver and muscle

ANSWERS:

1-D

2-A

3-A

4-A

5-D

6-A

7-A

8-E

9-D

10-D

11-B

12-D

13-D

14-C

15-B

16-C

17-D

18-D

20-A

21-B

22-A

23-D

24-A

25-A

26-A

27-D

28-A

29-A

30-A

31-B

32-A

34-A

35-B

36-B

37-C

38-B

39-E

40-C

41-B

42-B

45-C

46-C

هذه الأسابيع التي ستقضيها مُنعزلاً بغرفتك، تاركاً أقرانك، وهاجراً لأحبابك ساعياً وراء حلمك تأكد بأنها لن تضيع سُدى بل أنها ستبني مُستقبلك 🚬 ♥