Question N1 Brain cells completely depend of anaerobic glycolysis

Answer:

0

Point: 0.25

Question N2 Reaction catalyzed by hexokinase is the only irreversible reaction in glycolysis

Answer:

0

Point: 0.25

Question N3 Which of the following cell use only anaerobic glycolysis?

Answer:

Red blood cells

Point: 0.4

Question N4 Which of the following enzymes catalyzes phosphorylation of the glucose in the cell?

Answer:

Hexokinase

Point: 0.4

Question N5 Which of the following enzymes catalyzes the irreversible step of glycolysis?

Answer:

Pyruvate kinase

Point: 0.4

Question N6 In anaerobic conditions pyruvate is transformed to:

Answer:

Lactate

Point: 0.4

Question N7 In which case do we have Glycolysis without forming ATP? explain your answer

Answer:

in anaerobic glycolysis if there is an inhibiton in glyceraldhyde 3 phosphate dehydrogenase or insufficient inorganic phosphate the reaction that converts glyceraldehyde 3 phosphate to 1,3 bisphosphoglycerate is blocked this prevent synthesis of high energy intermediates needed for the subsequent substrate level phosphorylation steps resulting in glycolysis without net ATP production

Point: 1

Question N8 Glycogenin is a dimer protein that inititates glycogen breakdown

Answer:

0

Point: 0.25

Question N9 Glycogen branching enzyme trasfers 7 glucose residues to make 1->6 glycosydic linkages

Answer:

1

Point: 0.25

Question N10 Which enzyme catalyzes the creation of glycosidic α (1->4) bonds?

Answer:

Glycogen synthase

Point: 0.4

Question N11 Phosphorylation:

Answer:

Inactivates glycogen synthase

Point: 0.4

Question N12 Which bonds are broken by glycogen phosphorylase?

Answer:

alpha 1->4 glycosydic bonds

Point: 0.4

Question N13 Which of the following cells have glucose-6-phosphatase activity?

Answer:

Liver

Point: 0.4

Question N14 Why cannot human use muscle glycogen to maintain blood glucose level?

Answer:

human muscle cells lack glucose 6 phosphatase which is the enzyme that converts glucose 6 phosphate to free glucose to be released into the bloodstream. instead glycogen is used for energy production within the muscle itself

Point: 1.5

Question N15 in gluconeogenesis pyruvate is transformed into oxaloacetate by pyruvate carboxilase

Answer:

1

Point: 0.25

Question N16 Pyruvate carboxylase is allosterically inhibited by acetyl coA

Answer:

0

Point: 0.25

Question N17 Which of the following enzymes catalyzes the reaction in gluconeogenesis when GTP is used as a phosphate donor?

Answer:

PEP carboxykinase

Point: 0.4

Question N18 How does fructose 2,6-bisphosphate affect the gluconeogenesis?

Answer:

It inhibits it

Point: 0.4

Question N19 Which of the following compounds is not glucogenic?

Answer:

Even chain fatty acids

Point: 0.4

Question N20 What is the major site of gluconeogenesis?

Answer:

Liver

Point: 0.4

Question N21 Why acetyl CoA can not be a precursos of Gluconeogenesis, Explain your answer

Answer:

because the two carbon acetyl groups immediately enter TCA cycle and are fully oxidized to CO2, also the reaction that convert pyruvate to acetyl COA is irreversible thus acetyl COA cannot contribute to gluconeogenesis

Point: 1.5

Question N22 Two molecules of ATP is synthesized during pentose phosphate pathway

Answer:

0

Point: 0.25

Question N23 In pentose phosphate pathway 5-phosphogluconolactone is aproduct of a reaction catalysed by glucose 6-phosphate dehydrogenase

Answer:

1

Point: 0.25

Question N24 Which of the following products of PPP is needed for normal glutathion antioxidant activity?

Answer:

NADPH

Point: 0.4

Question N25 Which of the following is a final product of oxidative phase of PPP?

Answer:

Ribulose 5-phosphate

Point: 0.4

Question N26 Which enzyme is a regulated site in PPP?

Answer:

Glucose 6-phosphate dehydrogenase

Point: 0.4

Question N27 Which phase is irreversible in PPP?

Answer:

Oxidative

Point: 0.4

Question N28 Write down the step of the oxidative phase in pentose phosphate pathway that results in production of pentose sugar phosphate

Answer:

glucose 6 phosphate is oxidised to 6 phosphogluconolactone by glucose 6 phosphate dehydrogenase NAD is reduced to NADH

6 phosphogluconolactone is hydrolyzed to 6 phosphogluconolactane by lactonase

6phosphogluconolactane undergoes oxidative decarboxylation to form ribulose 5 phosphate by 6phosphogluconolactane dehydrogenase NADH is produce and CO2 is released

Point: 1.5

Question N29 Increasing the chain length of a fatty acid decreases the melting temperature of that fatty acid

Answer:

0

Point: 0.25

Question N30 Double bonds of most of the unsaturated fatty acids are in cis configuration

Answer:

1

Point: 0.25

Question N31 Which of the following lipids is stored as fat in adipose tissue?

Answer:

Triacylglycerols

Point: 0.4

Question N32 Monounsaturated fatty acids:

Answer:

Contain one double bond

Point: 0.4

Question N33 In most of the unsaturated fatty acids, double bond has:

Answer:

Cis configuration

Point: 0.4

Question N34 What if the name of the following structure: Glycerol 2 fatty acids Phosphate

Answer:

Phosphatidic acid

Point: 0.4

Question N35 Release of FFA-s from adipose tissue is catalysed by lipoprotein lipase

Answer:

0

Point: 0.25

Question N36 Long chain fatty acids are transported into the mitochondria by carnitine shuttle

Answer:

1

Point: 0.25

Question N37 Which hormone activates the hormone-sensitive lipase?

Answer:

Both of them

Point: 0.4

Question N38 Which enzyme catalyzes the activation of fatty acids?

Answer:

Acyl coA synthetase

Point: 0.4

Question N39 Which of the following is a coenzyme for Acyl coA dehydrogenase?

Answer:

FAD

Point: 0.4

Question N40 Which of the ketone bodies is first synthesized from HMG-coA?

Answer:

Acetoacetate

Point: 0.4

Question N41 Explain the function and mechanism of carnitine shuttle

Answer:

carnitine shuttle transfer long fatty acid chain from matrix to inner membrane mitochondria for beta oxidation. first thiokinase activates fatty acids by attaching them to COA then CPT I transfer acyl group to carnitine forming acyl-carnitine which passes to inner mitcohonrial membrane via carnitine-acylcaranitine translocase finally CPT II transfer acyl to regenerate fatty acyl COA which is used for beta oxidation.

Point: 1.5

Question N42 Acetyl coA carboxilase is allosterically activated by citrate

Answer:

1

Point: 0.25

Question N43 Formation of malonyl coA from acetyl coA is a carboxylation reaction

Answer:

1

Point: 0.25

Question N44 What is the coenzyme for acetyl coA carboxylase?

Answer:

Biotin

Point: 0.4

Question N45 Which of the following activates acetyl coA carboxylase?

Answer:

Citrate

Point: 0.4

Question N46 Where does fatty acid elongation take place?

Answer:

Both of them

Point: 0.4

Question N47 How many CO2s does one acetyl-coA give rise to?

Answer:

Two

Point: 0.4

Question N48 What is the main difference between two isoenzymes of HMG CoA synthase

Answer:

HMG COA synthase 1 or cytosolic HMG COA is found in cytosol and takes part in cholestrol synthesis while HMG COA synthase 2 or mitochondrial HMG COA is present in mitochondria and takes part in ketogenesis/ketone bodies production

Point: 1.5

Question N49 Reaction calatyzed by succinate dehydrogenase is an example of substrate-level phosphorilation

Answer:

0

Point: 0.25

Question N50 Glucagon promotes triacylglycerol synthesis

Answer:

0

Point: 0.25

Question N51 Which enzyme transforms glycerol into an activated form?

Answer:

Glycerol kinase

Point: 0.4

Question N1 Glucokinase has a higher affinity to glucose than hexokinase

Answer:

0

Point: 0.25

Question N2 Reaction catalyzed by Phosphoglucose isomerase is the rate-limiting step in glycolysis

Answer:

0

Point: 0.25

Question N3 Which of the following cell use only anaerobic glycolysis?

Answer:

Red blood cells

Point: 0.4

Question N4 Which of the following enzymes catalyzes phosphorylation of the glucose in the cell?

Answer:

Hexokinase

Point: 0.4

Question N5 Which of the following enzymes catalyzes the irreversible step of glycolysis?

Answer:

Pyruvate kinase

Point: 0.4

Question N6 In anaerobic conditions pyruvate is transformed to:

Answer:

Lactate

Point: 0.4

Question N7 Write down the enzymes that catalyze the reactions where ATP is being used up (not produced)

Answer:

hexokinase

PFK1

citrate lysase

Point: Not Checked

Question N8 Glicogenin initiates the glycogen synthesis by self-glucosylating

Answer:

1

Point: 0.25

Question N9 At branch points there are a 1->4 glycosydic bonds in glycogen structure

Answer:

0

Point: 0.25

Question N10 Which enzyme transforms glucose 6-phosphate into glucose 1-phosphate?

Answer:

Phosphoglucomutase

Point: 0.4

Question N11 To which nucleotide is glucose attached to in order to go into glycogenesis?

Answer:

UDP

Point: 0.4

Question N12 cAMP pathway provides:

Answer:

Activation of glycogen phosphorylase

Point: 0.4

Question N13 Which of the following statements is correct?

Answer:

Glycogen synthase is inactivated by phosphorylation and Glycogen phosphorylase is activated by it

Point: 0.4

Question N14 Which one of the ETC components of the electron transport chain only accepts electrons, and does not donate them? Explain your answer

Answer:

complex iv recieve electrons and transport them to molecular oxygen , reduces them to water.

Point: Not Checked

Question N15 Gluconeogenesis is a simple reverse of the glycolysis

Answer:

0

Point: 0.25

Question N16 Fructose 1,6-bisphosphatase bypasses the glycolytic reaction catalyzed by phosphofructokinase

Answer:

1

Point: 0.25

Question N17 Which enzyme bypasses the glycolytic PFK-1 reaction, in gluconeogenesis?

Answer:

Fructose 1,6-bisphosphatase

Point: 0.4

Question N18 Which enzyme uses GTP as energy source during gluconeogenesis?

Answer:

PEP carboxykinase

Point: 0.4

Question N19 Which of the following can be used for gluconeogenesis?

Answer:

All of them

Point: 0.4

Question N20 Which of the following enzymes catalyzes the reaction in gluconeogenesis when GTP is used as a phosphate donor?

Answer:

PEP carboxykinase

Point: 0.4

Question N21 Explain Reciprocal regulation of Gluconeogenesis

Answer:

when the phosphoryulation occurs glycolysis activates and glconeogenesis inhibits ,

when dephosphoryulation occurs gluconeogenesis activates and glycolysis inhibits.

Point: Not Checked

Question N22 NAD is a coenzyme in redox reactions in Pentose phosphate pathway

Answer:

0

Point: 0.25

Question N23 Ribulose-5-phosphate is a product of oxidative part of pentose phosphate pathway

Answer:

1

Point: 0.25

Question N24 Which of the following enzymes catalyzes the reversible step in pentose phosphate pathway?

Answer:

Glucose 6-phosphate dehydrogenase

Point: 0

Question N25 Which enzyme catalyzes the reaction where a ketopentose is produced in pentose phosphate pathway?

Answer:

Phosphogluconate dehydrogenase

Point: 0.4

Question N26 Which of the following is the cofactor of glutathion reductase?

Answer:

NADH

Point: 0

Question N27 Which enzyme catalyzes the commited step of pentose phosphate pathway?

Answer:

Glucose 6-phosphate dehydrogenase

Point: 0.4

Question N28 Why does fructose undergo more rapid glycolysis in the liver than does glucose, Explain your answer

Answer:

(rate limmiting steps)

Point: Not Checked

Question N29 Fatty acids are amphipathic molecules

Answer:

1

Point: 0.25

Question N30 Saturated fatty acids contain one or more double bond

Answer:

0

Point: 0.25

Question N31 Fatty acids with more that one doeble bonds are called:

Answer:

Polyunsaturated

Point: 0.4

Question N32 How many carbons do eicosanoids contain?

Answer:

20

Point: 0.4

Question N33 Which alcohol backbone do glycolipids contain?

Answer:

Sphingosine

Point: 0.4

Question N34 Cholesteryl esters contain cholesterol and:

Answer:

Fatty acid

Point: 0.4

Question N35 Fatty acid thiokinase provides the activation of fatty acids before beta-oxidation

Answer:

1

Point: 0.25

Question N36 Acetone is the first one out of the ketone bodies to be synthesized

Answer:

0

Point: 0.25

Question N37 Which of the following is a coenzyme for Acyl coA dehydrogenase?

Answer:

FMN

Point: 0

Question N38 Which of the ketone bodies is first synthesized from HMG-coA?

Answer:

Acetoacetate

Point: 0.4

Question N39 Which of the following cells can not use fatty acids as alternative fuel?

Answer:

None of them can

Point: 0.4

Question N40 Which part of a cell does beta-oxidation of fatty acids take place?

Answer:

Mitochondria

Point: 0.4

Question N41 What are the main differences between HDl and LDL

Answer:

HDL is transporting cholestrol to the liver and making sure that there is no bad cholestrol going to the arteries and it contain ABO A1 ,ABO A2 , ABO C and ABO E .

LDL is transporting cholestrol directly to the arteries even bad cholestrol and it contains ABO B100.

Point: Not Checked

Question N42 Formation of malonyl coA from acetyl coA is a carboxylation reaction

Answer:

1

Point: 0.25

Question N43 In order to transport acetyl-coA from mitochondria to cytosool it needs to condensate with oxaloacetate to produce citrate which will be transported to cytosol

Answer:

1

Point: 0.25

Question N44 Dephosphorylation activates enzyme Acetyl-coA carboxylase. According to this, which of the following hormones activate this enzyme?

Answer:

Epinephrin

Point: 0.4

Question N45 Which two vitamins are acting as cofactors at different levels of fatty acid synthesis?

Answer:

Vitamins B5 and B7

Point: 0.4

Question N46 How is acetyl coA transported from mitochondria to cytosol for fatty acid synthesis?

Answer:

As citrate

Point: 0.4

Question N47 What is the coenzyme for acetyl coA carboxylase?

Answer:

Biotin

Point: 0.4

Question N48 Write down the function of palmitoyl thioesterase. Explain your answer

Answer:

..

Point: Not Checked

Question N49 Glucagon promotes triacylglycerol synthesis

Answer:

0

Point: 0.25

Question N50 Diacylglycerol acyltransferase is a rate-limiting enzyme in triacylglycerol synthesis

Answer:

1

Point: 0.25

Question N51 Which enzyme catalyses the hydrolysis of TAGs form VLDL and chylomicrons?

Answer:

Lipoprotein lipase

Point: 0.4

Question N52 Which of the following hormones promotes lipogenesis?

Answer:

Insulin

Point: 0.4

Question N53 What is the product of acyl coA combining with glycerol 3-phosphate?

Answer:

Phosphatidate

Point: 0.4

Question N54 Which enzyme transforms glycerol into an activated form?

Answer:

Glycerol kinase

Point: 0.4

Question N55 How is glycerol utilized after being released form TAGs?

Answer:

glycerol is reabsorbed by liver

glycerol is used in gluconeogenesis

glycerol is used in glcolysis

Point: Not Checked

Question N56 LDL is involved in reverse cholesterol transport

Answer:

0

Point: 0.25

Question N57 Lipoprotein lipase breaks down the triacylglycerols in chylomicrons

Answer:

1

Point: 0.25

Question N58 Which of the following is the electron acceptor in complex I of ETC?

Answer:

FAD

Point: 0

Question N59 Which of the following is ubiquinon?

Answer:

Coenzyme Q

Point: 0.4

Question N60 Which of the following create the ,,proton leak'' mitochondria during ETC?

Answer:

Oligomycin

Point: 0

Question N61 Which of the following prevents the reentry of the protons in mitochondrial matrix through H channel?

Answer:

Oligomycin

Point: 0.4

Question N62 Fatty acid synthesis is active:

Answer:

During fasting state

Point: 0

Question N63 Acetyl coA can not leave mitochondria, which compound goes to cytoplasm from mitochondria to give rise to acetyl coA?

Answer:

Oxaloacetate

Point: 0

Question N64 Explain reverse cholesterol transport

Answer:

HDL acts as reverse cholestrol transport lipoprotiens and removing extra cholestrol levels from the prepheral tissues

and tranporting them back to the liver for excretion .

Point: Not Checked

Question N65 Low sterol levels promote HMG-coA reductase activity

Answer:

1

Point: 0.25

Question N66 Which complex is refferred to as ATP synthase?

Answer:

Complex V

Point: 0.4

Question N67 Which ETC complex is NADH dehydrogenase?

Answer:

Complex I

Point: 0.4

Question N68 Which of the following are the mobile careers of the electrons?

Answer:

Both of them

Point: 0.4

Question N69 Which of the following lipoproteins has the smalles density?

Answer:

Chylomicrons

Point: 0.4

Question N70 Which of the following lipoproteins transport endogenously produced triacylglycerols?

Answer:

VLDL

Point: 0.4

Question N71 Which apolipoprotein activates lipoprotein lipase?

Answer:

Apo C-II

Point: 0.4

Question N72 What are other uses of acetyl-coA besides going into TCA cycle?

Answer:

other uses of acetyl-coA , ketone body synthesis,cholestrol synthesis, and fatty acids synthesis.

Point: Not Checked

Question N73 Reaction catalyzed by Malate dehydrogenase is the last step where NADH is produced in TCA cycle

Answer:

1

Point: 0.25

Question N74 Which of the following is used as a reducing agent in the reaction catalyzed by HMG coA reductase?

Answer:

NADPH

Point: 0.4

Question N75 Statins are the drugs that are used for the treatment of high levels of cholesterol in blood, which enzyme do they inhibit in cholesterol synthesis?

Answer:

HMG coA Reductase

Point: 0.4

Question N76 Which of the following is the precursor of bile acids?

Answer:

Cholesterol

Point: 0.4

Question N77 What is the common product of the metabolism of all food products?

Answer:

Acetyl-coA

Point: 0.4

Question N78 What are the main sites for cholesterol synthesis?

Answer:

liver : it makes bile salts

adrenal cortex :it makes steroid hormones like (cortisol)

gonadal cells:it makes sex hormones like (tests)

Point: Not Checked

Question N79 What is the alternate fuel for brain, when the glucose supply is low?

Answer:

Ketones

Point: 0.4

Question N80 Which of the following processes takes place in mitochondria?

Answer:

Beta-oxidation of fatty acids

Point: 0.4

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Sum of Points: 25.0

Question N1 Glucokinase has a higher affinity to glucose than hexokinase

Answer:

0

Point: 0.25

Question N2 Reaction catalyzed by Phosphoglucose isomerase is the rate-limiting step in glycolysis

Answer:

0

Point: 0.25

Question N3 Which part of a cell does beta-oxidation of fatty acids take place?

Answer:

Mitochondria

Point: 0.4

Question N4 How many ATP molecules are used up during glycolysis?

Answer:

Two

Point: 0.4

Question N5 Which enzyme catalyzes the reaction that provides acetyl-coA?

Answer:

Pyruvate dehydrogenase

Point: 0.4

Question N6 Which of the following enzymes works as a sensor for high blood glucose concentration, in pancreas beta cells?

Answer:

Glucokinase

Point: 0.4

Question N7 Explain difference between glucokinase and hexokinase (at least 3)

Answer:

Glucokinase: mainly found in liver and pancreatic beta cells. It is stimulated by insulin. Glucokinase has lower affinity for glucose.

Hexokinase: found in most of the cells. Insulin doesn‘t have effect on it. Has higher affinity for glucose.

Point: Not Checked

Question N8 Glicogenin initiates the glycogen synthesis by self-glucosylating

Answer:

1

Point: 0.25

Question N9 At branch points there are a 1->4 glycosydic bonds in glycogen structure

Answer:

0

Point: 0.25

Question N10 Which enzyme transforms glucose 6-phosphate into glucose 1-phosphate?

Answer:

Phosphoglucomutase

Point: 0.4

Question N11 To which nucleotide is glucose attached to in order to go into glycogenesis?

Answer:

UDP

Point: 0.4

Question N12 cAMP pathway provides:

Answer:

Activation of glycogen phosphorylase

Point: 0.4

Question N13 Which of the following statements is correct?

Answer:

Glycogen synthase is inactivated by phosphorylation and Glycogen phosphorylase is activated by it

Point: 0.4

Question N14 Describe the glycogen branching process

Answer:

Glycogen branching process is the formation of new glycogen chain. This is done by the glycogen branching enzyme where it breaks segments of glucose residues and transfer them by alpha-1,6 glycosidic bond to form new branches.

Point: Not Checked

Question N15 Gluconeogenesis is a simple reverse of the glycolysis

Answer:

0

Point: 0.25

Question N16 Fructose 1,6-bisphosphatase bypasses the glycolytic reaction catalyzed by phosphofructokinase

Answer:

1

Point: 0.25

Question N17 Which of the following an be used as a substrate for gluconeogenesis?

Answer:

Glycerol

Point: 0.4

Question N18 Which enzyme bypasses the glycolytic hexokinase step in gluconeogenesis?

Answer:

Glucose-6 phosphatase

Point: 0.4

Question N19 What is the product of pyruvate carboxilase reaction?

Answer:

Oxaloacetate

Point: 0.4

Question N20 Which enzyme catalyzes the transformation of pyruvate into oxaloacetate?

Answer:

Pyruvate carboxilase

Point: 0.4

Question N21 What is glycerol transformed to in liver during the gluconeogenesis?

Answer:

Glycerol is converted to Dihydroxyacetone phosphate in liver by the enzymes glycerol kinase and glucose-6-phosphate dehydrogenase.

Point: Not Checked

Question N22 NAD is a coenzyme in redox reactions in Pentose phosphate pathway

Answer:

0

Point: 0.25

Question N23 Ribulose-5-phosphate is a product of oxidative part of pentose phosphate pathway

Answer:

1

Point: 0.25

Question N24 Which of the following enzymes catalyzes the reversible step in pentose phosphate pathway?

Answer:

Transketolase

Point: 0.4

Question N25 Which enzyme catalyzes the reaction where a ketopentose is produced in pentose phosphate pathway?

Answer:

Phosphogluconate dehydrogenase

Point: 0.4

Question N26 Which of the following is the cofactor of glutathion reductase?

Answer:

NADPH

Point: 0.4

Question N27 Which enzyme catalyzes the commited step of pentose phosphate pathway?

Answer:

Glucose 6-phosphate dehydrogenase

Point: 0.4

Question N28 Why does fructose undergo more rapid glycolysis in the liver than does glucose, Explain your answer

Answer:

Fructose bypasses the rate limiting step catalyzed by PEP carboxylase in glycolysis. Thereby it can be broken down faster when compared to glucose and provide energy to the needed cells.

Point: Not Checked

Question N29 Fatty acids are amphipathic molecules

Answer:

1

Point: 0.25

Question N30 Saturated fatty acids contain one or more double bond

Answer:

0

Point: 0.25

Question N31 Fatty acids with more that one doeble bonds are called:

Answer:

Polyunsaturated

Point: 0.4

Question N32 How many carbons do eicosanoids contain?

Answer:

20

Point: 0.4

Question N33 Which alcohol backbone do glycolipids contain?

Answer:

Sphingosine

Point: 0.4

Question N34 Cholesteryl esters contain cholesterol and:

Answer:

Fatty acid

Point: 0.4

Question N35 Fatty acid thiokinase provides the activation of fatty acids before beta-oxidation

Answer:

1

Point: 0.25

Question N36 Acetone is the first one out of the ketone bodies to be synthesized

Answer:

0

Point: 0.25

Question N37 Which of the following cells can not use fatty acids as alternative fuel?

Answer:

None of them can

Point: 0.4

Question N38 Which part of a cell does beta-oxidation of fatty acids take place?

Answer:

Mitochondria

Point: 0.4

Question N39 For fatty acid beta-oxidation acylcarnitine is transported through the mitochondrial membrane in exchange of:

Answer:

Carnitine

Point: 0.4

Question N40 How does malonyl coA affect the carnitine palmytoiltransferase-1 activity?

Answer:

It inhibits it

Point: 0.4

Question N41 What are the main differences between HDl and LDL

Answer:

HDL is the good cholestrol in the body because it collects the cholestrol and transports it back to the liver. This prevents accumulation of excess cholestrol in arteries thereby preventing the risk of atheroscelrosis. It contains APO A1-APO A2, APO C etc.

LDL is considered to be the bad cholestrol in the body cause it directly transports cholestrol to arterial walls and peripheral tissues thereby forming fatty streaks and risk of having atherosclerosis. It contains high composition of TAGs and less protein.

Point: Not Checked

Question N42 In order to transport acetyl-coA from mitochondria to cytosool it needs to condensate with oxaloacetate to produce citrate which will be transported to cytosol

Answer:

1

Point: 0.25

Question N43 Vitamin B7 is a coenzyme for acetyl-coA carboxylase

Answer:

1

Point: 0.25

Question N44 Which enzyme catalyzes the reaction that provides acetyl-coA for TCA cycle?

Answer:

Pyruvate dehydrogenase

Point: 0.4

Question N45 Which enzyme catalyzes isomerization of citrate to isocitrate?

Answer:

Aconitase

Point: 0.4

Question N46 Glucagon and epinephrin:

Answer:

Inibits fatty acid synthesis

Point: 0.4

Question N47 Citrate molecule, that leaves the mitochondria and goes to cytoplasm, gives rise to which molecule after cleavage, besides acetyl coA?

Answer:

Oxaloacetate

Point: 0.4

Question N48 What are the major suppliers of reducing equivalents for fatty acid synthesis?

Answer:

NADPH and FADH2.

Point: Not Checked

Question N49 Diacylglycerol acyltransferase is a rate-limiting enzyme in triacylglycerol synthesis

Answer:

1

Point: 0.25

Question N50 Insulin activates triacylglycerol synthesis

Answer:

1

Point: 0.25

Question N51 Which coenzyme does complex I use as electron acceptor?

Answer:

FMN

Point: 0.4

Question N52 What pumps the protons from mitochondrial matrix to intermembrane space?

Answer:

All of them

Point: 0.4

Question N53 ATP synthesis is driven by:

Answer:

Transfer of protons from matrix to intermembrane space

Point: 0.4

Question N54 Which pathway can the glycerol get involved in after being released from TAGs?

Answer:

Gluconeogenesis

Point: 0.4

Question N55 How is glycerol utilized after being released form TAGs?

Answer:

Glycerol is reabsorbed by the liver. It can involve in the gluconeogenesis pathway for the synthesis of glucose. Glycerol can also join the glycolysis and glycogenolysis.

Point: Not Checked

Question N56 Lipoprotein lipase breaks down the triacylglycerols in chylomicrons

Answer:

1

Point: 0.25

Question N57 Apo B-100 is a specific apolipoprotein for HDL

Answer:

0

Point: 0.25

Question N58 Which pathway can provide glycerol for acylglycerol synthesis?

Answer:

Glycolysis

Point: 0.4

Question N59 Which enzyme transforms fatty acids into an activated form?

Answer:

Fatty acyl coA synthetase

Point: 0.4

Question N60 High amount of insulin:

Answer:

Promotes the lipogenesis

Point: 0.4

Question N61 Phosphatidic acid contains:

Answer:

Two acyl groups

Point: 0.4

Question N62 What’s the product of a reaction catalyzed by succinate thiokinase in TCA cycle?

Answer:

Succinate

Point: 0.4

Question N63 How many molecules of FADH2 is produced during TCA cycle (meaning per acetyl coA) ?

Answer:

One

Point: 0.4

Question N64 Define biochemical mechanism of cholelithiasis.

Answer:

Cholelithiasis is the formation of gallstones mainly in gall bladder and bile duct. It is mainly due to decreased bile acid synthesis and increased cholestrol synthesis which leads to super saturation of bile to cholestrol. Thus forming insoluble crystals like cholestrol and bilirubin.

Point: Not Checked

Question N65 Low sterol levels promote HMG-coA reductase activity

Answer:

1

Point: 0.25

Question N66 Which of the following lipoproteins is the biggest in size?

Answer:

Chylomicrons

Point: 0.4

Question N67 Which of the following lipoproteins is responsible for transporting dietary lipids?

Answer:

Chylomicrons

Point: 0.4

Question N68 Which of the following lipoproteins has the lowest concentration of TAGs in it?

Answer:

HDL

Point: 0.4

Question N69 Which apoprotein is characteristic for chylomicrons?

Answer:

APO B-48

Point: 0.4

Question N70 How many carbon units does cholesterol molecule consist of?

Answer:

27

Point: 0.4

Question N71 How many molecules of NADPH are used during reduction of HMG-coA to mevalonate?

Answer:

Two

Point: 0.4

Question N72 What is the rate-limiting step for cholesterol synthesis explain it's regulation

Answer:

The rate-limiting step for cholestrol synthesis is when HMG coA reductase enzyme converts HMG coA to Mevalonate. The step is regulated by hormones like insulin which stimulates the enzyme activity by increasing transcription process and glucagon which inhibits it.

Point: Not Checked

Question N73 Reaction catalyzed by Malate dehydrogenase is the last step where NADH is produced in TCA cycle

Answer:

1

Point: 0.25

Question N74 Which of the following lipoproteins is responsible for reverse cholesterol transport?

Answer:

HDL

Point: 0.4

Question N75 Which apoprotein is characteristic for VLDL?

Answer:

Apo B-100

Point: 0.4

Question N76 How does high level of sterols affect the activity of HMG-coA reductase?

Answer:

Inhibits it

Point: 0.4

Question N77 Which of the following is used as a reducing agent in the reaction catalyzed by HMG coA reductase?

Answer:

NADPH

Point: 0.4

Question N78 What are the main sites for cholesterol synthesis?

Answer:

Liver, adrenal gland, small intestines, ovaries , testes and placenta.

Point: Not Checked

Question N79 What is the alternate fuel for brain, when the glucose supply is low?

Answer:

Ketones

Point: 0.4

Question N80 Which of the following processes takes place in mitochondria?

Answer:

Beta-oxidation of fatty acids

Point: 0.4

NI Glycolysis can only proceed in aerobic conditions

Point: 0.25

Question N2 Reaction catalyazed by phosphoructokinase is reversible Onswer:

Point: 0.25

Question N3 ATP is an allosteric inhibitor of which glycolytic enzyme?

Answer:

Glyceraldehyde 3-phosphate dehydrogenase

Point: 0

Question N4 Which of the following cell use only anaerobic glycolysis?

Answer

Red blood cells

Which of the following enzymes catalyzes Phosphorylation of glucose in the cell

Answer

Phosphoructokinase

Point: 0

Question N6 Which of the following enzymes catalyzes the irreversible step of glycolysis?

Answer:

Pyruvate kinase

Point: 0.4

Question N7 Write down the enzymes that catalyze the reactions where ATP is being used up (not produced)

Answer

Question N8 Glicogenin initiates the glycogen synthesis by self-glucosylating

Answer:

1

Point: 0.25

Question N9 At branch points there are a 1->4 glycosydic bonds in glycogen structure

Answer:

1

Point: 0

Question N10 Which of the following tissues have thier own glycogen storage?

Answer:

Muscle

Point: 0.4

Question N11 Which nucleotide does glucose get attached to for glycogen synthesis?

Answer:

UDP

Point: 0.4

Question N12 Which of the following hormones stimulates glycogen synthesis?

Answer

All of them

Point: 0

Question N13 Which of the following is a coenzyme of glycogen phosphorylase?

Question N26 Which biochemical reductant is produced by pentose phosphate pathway?

Answer:

NADPH

Point: 0.4

Question N27 Which of the following hormones stimulates the ativity of glucose 6-phosphate dehydrogenase

Answer:

Insulin

Point: 0.4

Question N28 Why does fructose undergo more rapid glycolysis in the liver than does glucose, Explain your answer Answer:

Fructose bypasses the rate limiting step so it is not broken down as slowly as glucose in the liver

Point: Not Checked

Question N29 Fatty acids, containing double bonds are considered unsaturated

Point: 0.25

Question N30 tryglycerides contain three fatty acid residues connected to alcohol sphingosine

Point: 0.25

Question N31 Fatty acids that do not contain any double bonds are:

Answer:

Saturated

Point: 0.4

Question N32 Fatty acids are stored in adipose tissue, as:

Answer:

Tryacylglycerols

Quater even- humbered lakey ad daturation affect the meting

Both of the statements are correct

Point: 0

Question N34 The terminal methyl carbon of fatty acid is called

Answer:

Omega

Point: 0.4

Question N35 Beta-oxidation of fatty acids takes place in mitochondria

Answer:

Point: 0.25

Question N36 Carnitine shuttle is used to transport long-chain fatty acids from cytosol to mitochondria

Answer:

1|

Point: 0.25

Question N37 For fatty acid beta-oxidation acvlcarnitine i ransported through the mitochondrial membrane in exchange of

Answer:

Carnitine

Point: 0.4

How does malonyl COA affect the carnitine palmtoyltransferase-1 activity

Answer

it inhibits it

Point: 0.4

Question N39 Which hormone activates the hormone-sensitive lipase?

Answer

Epinephrin

Point: 0.4

Question N40 Which enzyme catalyzes the first oxidation reactior in beta-oxidation process?

Answer:

Acyl-coA dehydrogenase

Point: 0.4

Question N41 What are the main differences between HDI and

LDL

Answer:

HDL are considered as good cholesterol as they bring cholesterol directly to the liver to be broken down while LDL is considered to be a bad cholesterol because it deposits cholesterol directly into the arteries.

LDLs also have more cholesterol than HDLs while HDis have

more protein.

Point: Not Checked

Question N42 Vitamin B7 is a coenzyme for acetyl-coA

Answerlase

Point: 0.25

Question N43 acetyl coA carboxilase recuires vitamin B5 as coenzyme

Answer:

Point: 0

An 4 , MAp molecules are require in 1

Point: 0.4

Question N45 Citrate molecule, that leaves the mitochondria and gesides acet ves rise to which molecule after cleavage Answer:

Oxaloacetate

Question N1 Brain cells completely depend of anaerobic glucose usage

Answer:

0

Point: 0.25

Question N2 Reaction catalyzed by hexokinase is the only irreversible reaction in glycolysis

Answer:

0

Point: 0.25

Question N3 Which part of a cell does beta-oxidation of fatty acids take place?

Answer:

Mitochondria

Point: 0.4

Question N4 How many ATP molecules are used up during glycolysis?

Answer:

Two

Point: 0.4

Question N5 Which enzyme catalyzes the reaction that provides acetyl-coA?

Answer:

Pyruvate dehydrogenase

Point: 0.4

Question N6 Which of the following enzymes works as a sensor for high blood glucose concentration, in pancreas beta cells?

Answer:

Aldolase

Point: 0

Question N7 Write down the step of glycolysis when NADH is produced

Answer:

Point: Not Checked

Question N8 Glycogenin is a dimer protein that inititates glycogen breakdown

Answer:

0

Point: 0.25

Question N9 Glycogen branching enzyme trasfers 7 glucose residues to make 1->6 glycosydic linkages

Answer:

1

Point: 0.25

Question N10 Which enzyme catalyzes the creation of glycosidic α (1->4) bonds?

Answer:

Phosphoglucomutase

Point: 0

Question N11 Phosphorylation:

Answer:

None of the above are correct

Point: 0

Question N12 Which bonds are broken by glycogen phosphorylase?

Answer:

alpha 1->4 glycosydic bonds

Point: 0.4

Question N13 Which of the following cells have glucose-6-phosphatase activity?

Answer:

Liver

Point: 0.4

Question N14 Which hormones affect glycogenesis and how?

Answer:

Point: Not Checked

Question N15 in gluconeogenesis pyruvate is transformed into oxaloacetate by pyruvate carboxilase

Answer:

1

Point: 0.25

Question N16 Pyruvate carboxylase is allosterically inhibited by acetyl coA

Answer:

0

Point: 0.25

Question N17 Which enzyme catalyzes the transformation of pyruvate into oxaloacetate?

Answer:

Pyruvate carboxilase

Point: 0.4

Question N18 Which enzyme bypasses the glycolytic PFK-1 reaction, in gluconeogenesis?

Answer:

Glucose-6-phosphatase

Point: 0

Question N19 Which enzyme uses GTP as energy source during gluconeogenesis?

Answer:

Glucose 6-phosphatase

Point: 0

Question N20 Which of the following can be used for gluconeogenesis?

Answer:

All of them

Point: 0.4

Question N21 Write down the sources for gluconeogenesis

Answer:

Point: Not Checked

Question N22 Two molecules of ATP is synthesized during pentose phosphate pathway

Answer:

0

Point: 0.25

Question N23 In pentose phosphate pathway 5-phosphogluconolactone is aproduct of a reaction catalysed by glucose 6-phosphate dehydrogenase

Answer:

1

Point: 0.25

Question N24 Which of the following products of PPP is needed for normal glutathion antioxidant activity?

Answer:

NADPH

Point: 0.4

Question N25 Which of the following is a final product of oxidative phase of PPP?

Answer:

Ribulose 5-phosphate

Point: 0.4

Question N26 Which enzyme is a regulated site in PPP?

Answer:

Glucose 6-phosphate dehydrogenase

Point: 0.4

Question N27 Which phase is irreversible in PPP?

Answer:

Oxidative

Point: 0.4

Question N28 Write down the step of the oxidative phase in pentose phosphate pathway that results in production of pentose sugar phosphate

Answer:

Point: Not Checked

Question N29 Increasing the chain length of a fatty acid decreases the melting temperature of that fatty acid

Answer:

0

Point: 0.25

Question N30 Double bonds of most of the unsaturated fatty acids are in cis configuration

Answer:

1

Point: 0.25

Question N31 Which of the following lipids is stored as fat in adipose tissue?

Answer:

Triacylglycerols

Point: 0.4

Question N32 Monounsaturated fatty acids:

Answer:

Contain one double bond

Point: 0.4

Question N33 In most of the unsaturated fatty acids, double bond has:

Answer:

Cis configuration

Point: 0.4

Question N34 What if the name of the following structure: Glycerol 2 fatty acids Phosphate

Answer:

Phosphatidic acid

Point: 0.4

Question N35 Release of FFA-s from adipose tissue is catalysed by lipoprotein lipase

Answer:

0

Point: 0.25

Question N36 Long chain fatty acids are transported into the mitochondria by carnitine shuttle

Answer:

1

Point: 0.25

Question N37 Which of the following is a coenzyme for Acyl coA dehydrogenase?

Answer:

FMN

Point: 0

Question N38 Which of the ketone bodies is first synthesized from HMG-coA?

Answer:

None of them

Point: 0

Question N39 Which of the following cells can not use fatty acids as alternative fuel?

Answer:

RBCs

Point: 0

Question N40 Which part of a cell does beta-oxidation of fatty acids take place?

Answer:

Mitochondria

Point: 0.4

Question N41 Explain the function and mechanism of carnitine shuttle

Answer:

Point: Not Checked

Question N42 Formation of malonyl coA from acetyl coA is a carboxylation reaction

Answer:

1

Point: 0.25

Question N43 In order to transport acetyl-coA from mitochondria to cytosool it needs to condensate with oxaloacetate to produce citrate which will be transported to cytosol

Answer:

1

Point: 0.25

Question N44 Citrate molecule, that leaves the mitochondria and goes to cytoplasm, gives rise to which molecule after cleavage, besides acetyl coA?

Answer:

Oxaloacetate

Point: 0.4

Question N45 Dephosphorylation activates enzyme Acetyl-coA carboxylase. According to this, which of the following hormones activate this enzyme?

Answer:

Insulin

Point: 0.4

Question N46 Which two vitamins are acting as cofactors at different levels of fatty acid synthesis?

Answer:

Vitamins B5 and B7

Point: 0.4

Question N47 How is acetyl coA transported from mitochondria to cytosol for fatty acid synthesis?

Answer:

As citrate

Point: 0.4

Question N48 Deficiency of which two vitamins would disrupt the proper functioning of fatty acid synthesis pathway?

Answer:

Point: Not Checked

Question N49 Glucagon promotes triacylglycerol synthesis

Answer:

1

Point: 0

Question N50 Diacylglycerol acyltransferase is a rate-limiting enzyme in triacylglycerol synthesis

Answer:

1

Point: 0.25

Question N51 Which pathway can the glycerol get involved in after being released from TAGs?

Answer:

Gluconeogenesis

Point: 0.4

Question N52 Which enzyme catalyses the hydrolysis of TAGs form VLDL and chylomicrons?

Answer:

None of them

Point: 0

Question N53 Which of the following hormones promotes lipogenesis?

Answer:

Insulin

Point: 0.4

Question N54 What is the product of acyl coA combining with glycerol 3-phosphate?

Answer:

Phosphatidate

Point: 0.4

Question N55 Which hormones activate lipolysis?

Answer:

Point: Not Checked

Question N56 LDL is involved in reverse cholesterol transport

Answer:

0

Point: 0.25

Question N57 Lipoprotein lipase breaks down the triacylglycerols in chylomicrons

Answer:

1

Point: 0.25

Question N58 High amount of insulin:

Answer:

Inhibits the lipogenesis

Point: 0

Question N59 Phosphatidic acid contains: ~nbsp;

Answer:

Two acyl chaind

Point: 0.4

Question N60 Glucose is the indirect source of glycerol for TAG synthesis in:

Answer:

In liver cells

Point: 0

Question N61 Triacylglycerols are derived from: ~nbsp;

Answer:

Sphingomyelin (SM)

Point: 0

Question N62 ApoA2 is present in HDL and:

Answer:

Activates LCAT, CEPT and inhibits LPL

Point: 0.4

Question N63 Which of the lipoprotein receptors (ApoB/E or Scavenger) is selective?

Answer:

Both of them

Point: 0

Question N64 Explain reverse cholesterol transport

Answer:

Point: Not Checked

Question N65 LDL is produced in liver

Answer:

0

Point: 0.25

Question N66 Which of the following hormones stimulate the gene expession of HMG-coA reductase?

Answer:

All of the above

Point: 0

Question N67 How many carbons do bile acids contain?

Answer:

24

Point: 0.4

Question N68 An individual with hypothyroidism exhibits elevated serum cholesterol levels. What is the most likely mechanism?

Answer:

Increased activity of HMG-CoA reductase~nbsp;

Point: 0.4

Question N69 A newborn is diagnosed with abetalipoproteinemia, characterized by absence of apolipoprotein B-containing lipoproteins. What is the primary defect in cholesterol metabolism?

Answer:

Defective conversion of cholesterol to bile acids

Point: 0

Question N70 A patient is diagnosed with sitosterolemia, a rare condition involving increased absorption of plant sterols. How does this disorder affect cholesterol metabolism

Answer:

Elevated plasma plant sterol levels compete with cholesterol, leading to increased cholesterol absorption~nbsp;

Point: 0

Question N71 A patient with liver cirrhosis develops elevated serum cholesterol levels. Which pathway of cholesterol metabolism is likely disrupted?

Answer:

Bile acid synthesis from cholesterol

Point: 0

Question N72 Explain the process of cholesterol esterification within celss and the significance of cholesteryl esters in lipid metabololism

Answer:

Point: Not Checked

Question N73 Cholesterol is the precursore of all steroid hormones

Answer:

0

Point: 0

Question N74 The synthesis of mineralocorticoids occurs mainly in which zone of the adrenal cortex

Answer:

Zona glomerulosa

Point: 0.4

Question N75 Which hormone stimulates the production of cortisol in the adrenal cortex?

Answer:

~nbsp;Adrenocorticotropic hormone (ACTH)

Point: 0.4

Question N76 Which steroid hormone is primarily responsible for the regulation of sodium and potassium balance?

Answer:

Aldosterone

Point: 0.4

Question N77 Which enzyme is deficient in Congenital Adrenal Hyperplasia (CAH) resulting in impaired cortisol synthesis

Answer:

Aromatase~nbsp;

Point: 0

Question N78 Write down at least 3 androgenic hormones

Answer:

Point: Not Checked

Question N79 Which one is very important for nervous tissue? ~nbsp;

Answer:

Cardiolipin

Point: 0.4

Question N80 How is the cardiolipin made ? ~ndash; Phosphaditic acid + ----? ~nbsp;

Answer:

~nbsp;phosphatidic acid

Point: 0.4