قائمة الاسئلة 2025-04-30 04:15

الكيمياء الحيوية الغذائية - التغذية العلاجية - ثاني - درجة هذا الاختبار (70)

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1) Citric acid cycle occurs in
   1) - Cytoplasm
   2) + Mitochondria
   3) - Endoplasmic Reticulum
   4) - Golgi Bodies
2) Which of the following enzyme does not take part in the TCA cycle?
   1) - Citrate synthase
   2) - Iso-citrate dehydrogenase
   3) + Pyruvate dehydrogenase
   4) - Malate dehydrogenase
3) How many ATPs are produced during citric acid cycle?
   1) - 10
   2) - 13
   3) + 12
   4) - 8
4) How is glucose transported into intestinal epithelial cells?
   1) - Simple diffusion
   2) - Facilitated diffusion via GLUT2
   3) + Active transport via SGLT1
   4) - Pinocytosis
5) Which metabolic pathway is the primary source of ATP generation from glucose?
   1) + Glycolysis
   2) - Gluconeogenesis
   3) - Glycogenesis
   4) - Pentose phosphate pathway
6) precursor during fasting?
   1) - Fatty acids
   2) - Glycerol
   3) - Lactate
   4) + Amino acids
7) What is the fate of pyruvate under anaerobic conditions in human cells?
   1) - Converted to acetyl-CoA
   2) + Converted to lactate
   3) - Converted to ethanol
   4) - Converted to oxaloacetate
8) The hormones, glucagon and epinephrine, stimulate glycogen breakdown to G-6-P
   1) - Directly, by binding to glycogen phosphorylase.
   2) + Indirectly, by first stimulating adenylate cyclase to make cAMP.
   3) - Only in the liver.
   4) - Only in muscle cells.
9) What body conditions favor gluconeogenesis over glycolysis?
   1) - High blood sugar
   2) + Starvation
   3) - Increasing cellular levels of AMP
   4) - Low cellular levels of pyruvate

10) High concentration of glucose 6-phosphate is inhibitory to _____
1) + Hexokinase
2) - Pyruvate kinase
3) - Glucokinase
4) - Phosphofructokinase-1

11) What is the role of glycogen phosphorylase in glycogen metabolism?
1) - Synthesizes glycogen from glucose
2) - Cleaves alpha-1,6-glycosidic bonds
3) + Cleaves alpha-1,4-glycosidic bonds
4) - Converts glucose-1-phosphate to glucose-6-phosphate

12) Why does the glycolytic pathway continue in the direction of glucose catabolism?
1) + There are three irreversible reactions that act as the driving force for the pathway
2) - High levels of ATP keep the pathway going in a forward direction
3) - The enzymes of glycolysis only function in one direction
4) - Glycolysis occurs in either direction

13) Glucose enters the cells by
1) - A) insulin independent transport
2) - B) insulin dependent transport
3) - C) enzyme mediated transport
4) + D) Both (A) and (B)

14) What is the primary function of the pentose phosphate pathway?
1) - ATP production
2) + Production of ribose-5-phosphate and NADPH
3) - Glucose storage as glycogen
4) - Lactate production

15) The major energy source for brain during Starvation
1) - Carbohydrate
2) - Protein
3) - Cholesterol
4) + Ketone Bodies

16) What is the process when triglycerides are broken down into glycerol and free fatty acids?
1) - Lipogenesis
2) + Lipolysis
3) - Beta-oxidation
4) - Glycolysis

17) Net energy generation on complete oxidation of linoleic acid (18:0) is
1) - 148 ATP equivalents
2) - 146 ATP equivalents
3) - 144 ATP equivalents
4) + 142 ATP equivalents

18) Synthesis of fatty acid takes place when
1) - fatty acid are plentiful
2) - carbohydrate is plentiful
3) + carbohydrate and energy are plentiful
4) - none of these

19) Cholesterolemia means
1) + lack of functional LDL receptors
2) - lack of functional HDL receptor
3) - high sensitivity to fatty food intake

4) - none of the above

20) Which of the following is NOT a ketone body?
1) - Acetoacetate
2) - Beta-hydroxybutyrate
3) - Acetone
4) + Oxaloacetate

21) Fatty acids Beta oxidation occurs in
1) + mitochondrial matrix
2) - cell membrane
3) - cytosol
4) - endoplasmic reticulum

22) Which enzyme is responsible for catalyzing the hydrolysis of triglycerides in adipose tissue?
1) + Hormone-sensitive lipase
2) - Lipoprotein lipase
3) - Acetyl-CoA carboxylase
4) - Phospholipase A2

23) Which of the following is the primary storage form of lipids in the human body?
1) - Phospholipids
2) - Cholesterol
3) + Triglycerides
4) - Free fatty acids

24) Which of the following tissues primarily uses ketone bodies for energy during prolonged fasting?
1) - Liver
2) + Brain
3) - Adipose tissue
4) - Red blood cells

25) What is the role of carnitine in lipid metabolism?
1) - Activation of fatty acids for beta-oxidation
2) + Transport of fatty acids into the mitochondria
3) - Synthesis of triglycerides
4) - Conversion of fatty acids to glucose

26) Which enzyme is responsible for breaking down triglycerides in the small intestine?
1) + Lipase
2) - Amylase
3) - Pepsin
4) - Trypsin

27) What is the main function of high-density lipoprotein (HDL) in lipid metabolism?
1) - Transport triglycerides from the liver
2) - Deliver cholesterol to peripheral tissues
3) + Reverse cholesterol transport to the liver
4) - Promote cholesterol esterification in the plasma

28) Which organ is primarily responsible for ketogenesis?
1) - Brain
2) + Liver
3) - Muscle
4) - Kidney

29) Which of the following conditions favors beta-oxidation over fatty acid synthesis?
1) - High insulin levels
2) + High glucagon levels

3) - High levels of malonyl-CoA
4) - Low levels of fatty acids

30) Which of the following is the primary site of amino acid metabolism in the human body?
1) - Brain
2) + Liver
3) - Kidney
4) - Muscle

31) The process of removing an amino group from an amino acid is called:
1) - Transamination
2) + Deamination
3) - Decarboxylation
4) - Peptide bond formation

32) Which enzyme catalyzes the transamination reaction in amino acid metabolism?
1) + Alanine aminotransferase (ALT)
2) - Amylase
3) - Lipase
4) - Pepsin

33) What is the main nitrogenous waste product excreted in urine after protein metabolism?
1) - Ammonia
2) - Uric acid
3) + Urea
4) - Creatine

34) The urea cycle primarily occurs in which organ?
1) + Liver
2) - Kidney
3) - Muscle
4) - Pancreas

35) Which of the following amino acids is exclusively ketogenic?
1) + Leucine
2) - Alanine
3) - Glutamate
4) - Aspartate

36) The carbon skeletons of amino acids can be converted into which metabolic intermediates?
1) - Glucose
2) - Fatty acids
3) - Ketone bodies
4) + All of the above

37) Which vitamin is essential for transamination reactions?
1) - Vitamin B1 (Thiamine)
2) + Vitamin B6 (Pyridoxal phosphate)
3) - Vitamin B12 (Cobalamin)
4) - Vitamin C (Ascorbic acid)

38) Which of the following enzymes is responsible for the conversion of ammonia into urea in the urea cycle?
1) + Carbamoyl phosphate synthetase I (CPS I)
2) - Hexokinase
3) - Pyruvate dehydrogenase
4) - Lactate dehydrogenase

39) Which of the following conditions is associated with a defect in the urea cycle?
1) - Phenylketonuria (PKU)

2) - Alkaptonuria
3) + Ornithine transcarbamylase deficiency
4) - Maple syrup urine disease

40) In protein metabolism, gluconeogenesis refers to:
1) - The breakdown of proteins into amino acids
2) + The conversion of amino acids into glucose
3) - The synthesis of urea from ammonia
4) - The conversion of ammonia into uric acid

41) Which metabolic pathway converts excess amino acids into energy or storage molecules?
1) - Glycolysis
2) - Urea cycle
3) + Amino acid catabolism
4) - Electron transport chain

42) Which amino acid is the primary carrier of nitrogen in the bloodstream?
1) + Glutamine
2) - Valine
3) - Methionine
4) - Tyrosine

43) A deficiency in which enzyme leads to phenylketonuria (PKU)?
1) - Tyrosinase
2) + Phenylalanine hydroxylase
3) - Ornithine transcarbamylase
4) - Glutamate dehydrogenase

44) The end products of protein metabolism include:
1) - Carbon dioxide and water
2) + Urea and ammonia
3) - Glycogen and ATP
4) - Fatty acids and ketone bodies

45) In beta-oxidation, fatty acids are broken down into which molecule that enters the citric acid cycle ?
1) + Acetyl-CoA
2) - Pyruvate
3) - Oxaloacetate
4) - Glycerol

46) What is the fate of pyruvate under anaerobic conditions in human cells?
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2) + Converted to lactate
3) - Converted to ethanol
4) - Converted to oxaloacetate

47) Which hormone promotes glycogenolysis in the liver?
1) - Insulin
2) + Glucagon
3) - Somatostatin
4) - Growth hormone

48) The conversion of acetyl CoA to malonyl CoA is the rate limiting step in fatty acid synthesis. Which of the following enzyme catalyzes the above-mentioned reaction?
1) + Acetyl CoA carboxylase
2) - Malonyl CoA synthetase
3) - Acetyl CoA decarboxylase
4) - Malonyl CoA synthase

49) Which one of the following enzymes is involved in the mobilization of fatty acids from triacylglycerol stores in adipose tissue?
1) + Hormone sensitive lipase
2) - Lipoprotein lipase
3) - Pancreatic lipase
4) - Phospholipase A2

50) In beta-oxidation, fatty acids are broken down into which molecule that enters the citric acid cycle?
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