臺北醫學大學 90 學年度第 2 學期 期中 (期末) 考試 命 (試) 題紙

系級	科目	授課教師	考試日期	學號	姓名
藥二	生物化學	陳建勛	91年6月20日第 節		

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②每張試題卷務必填寫(學號)、(姓名)。

Answer ALL questions, as there is no penalty for wrong answers. (20%)

( ) 1 Which of the following is a nonessential amino acid? (A) phenylalanine (B) cysteine (C) methionine (D) histidine (E) arginine

( ) 2 When glutamate dehydrogenase generates α-ketoglutarate from glutamate, which of the following molecules is utilized? (A) NAD^+ (B) $NADP^+$ (C) NADH (D) NADPH (E) none of the above

( ) 3 Urea is the byproduct of which enzymatic reaction? (A) arginosuccinate synthetase (B) arginase (C) arginosuccinase (D) ornithine transcarbamoylase (E) carbamoyl phosphate synthetase I

( ) 4 The coenzyme of aminotransferase is (A) coenzyme A (B) NAD (C) NADP (D) FAD (E) PLP

( ) 5 Tetrahydrobiopterin is a coenzyme of (A) Phenylalanine hydroxylase (B) Histidine decarboxylase (C) Dihydrofolate reductase (D) Ribonucleotide reductase (E) Methionine adenosyltransferase

( ) 6 Asparagine is synthesized by asparagine synthetase from what in human? (A) aspartate (B) alanine (C) glutamine (D) A and B (E) A and C

( ) 7 During the biosynthesis of cysteine, which of the following is the precursor? (A) methionine (B) serine (C) glutamine (D) A and B (E) A and C

( ) 8 Which of the following is not an intermediate of urea cycle? (A) ornithine (B) citrulline (C) aspartate (D) alanine

( ) 9 The coenzyme of methionine synthase is (A) 5-methyl-THF (B) methyl-B_{12} (C) 5'-adenosyl-B_{12} (D) 10-methyl-THF (E) 5,10- methylene-THF

( ) 10 Which of the following is not the major nitrogenous end product? (A) urea (B) uric acid (C) ammonia (D) xanthine

私立臺北醫學院 90 學年度第 2 學期 期中 期末 考試 (試) 題紙

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專二	生物化學	陳建和	91年6月20日第 節		

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I. Single choice (18%)

1. Glycolysis
   (a) requires molecular oxygen to generate energy (b) does not require molecular oxygen to generate energy
   (c) is inhibited by oxygen (d) rate is increased in the presence of oxygen
2. The final product in phase I of glycolysis is
   (a) fructose-1,6-bisphosphate (b) glyceraldehydes-3-phosphate (c) pyruvate (d) glucose-6-phosphate
3. How many reactions in the glycolytic pathway consume or produce ATP?
   (a) 2 (b) 3 (c) 4 (d) 6
4. Pyruvate in humans can be converted to
   (a) acetyl-CoA (b) lactate only (c) ethanol only (d) acetyl-CoA and lactate
5. Both hexokinase and glucokinase are found in the liver. Glucokinase has a Km value of 10 mM, with the Km value for hexokinase being less than 1 mM. The data are consistent with which of the following statement?
   (a) glucokinase acts on glucose at low levels (b) glucokinase acts on glucose only at very high concentrations
   (c) glucokinase plays a major role in glucose metaboism at low glucose levels (d) hexokinase acts on glucose only at high levels of glucose
6. Phosphofructokinase is an enzyme that regulates the rate of glycolysis. Which of the following statements is characteristic of this enzyme?
   (a) phosphofructokinase is not an allosteric enzyme (b) citrate increases the activity of phosphofructokinase
   (c) AMP increases the activity of phosphofructokinase (d) phosphofructokinase activity is a function of free energy
7. An enzyme not involved in the regulation of glycolysis is
   (a) hexokinase (b) triose phosphate isomerase(c) pyruvate kinase (d) phosphofructokinase
8. The glycolytic enzyme influenced by the hormone glucagons is
   (a) triose phosphate isomerase (b) pyruvate kinase (c) hexokinase (d) lactate dehydrogenase

9. Indicate the cellular location of the following glycolysis _____

私立臺北醫學院 90 學年度第 2 學期 期中 期末 考試 命(試)題紙

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醫二	生物化學	陳建初	91年6月20日第 節		

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Part I.

Match the following items.

( )5'→3' exonuclease
( )a major polymerase on replication fork(E. coli)
( )Klenow fragment was generated from
( )mitochondrial DNA polymerase
( )Type I topoisomerase
( )Type II topoisomerase
( )Anti-cancer drug (topoisomerase inhibitor)
( )Reverase transcription
( )Synthesis of RNA primer
( )promoter recognition in E. coli
( )Eucaryotic ribosome
( )anticodon is located on
( ) an inhibitor of RNA transcription

(A) DNA polymerase I (E. coli)
(B) DNA polymerase II (E. coli)
(C) DNA polymerase III (E. coli)
(D) DNApolymerase α
(E) DNApolymerase β
(F) DNApolymerase γ
(G) topoisomerase I
(H) topoisomerase IV
(I) campothecin
(J) reverase transcriptase
(L) SSB
(M) primase
(N) RNA polymerase α subunit
(O) RNA polymerase σ subunit
(P) 80S
(Q) 70S
(R) mRNA
(S) tRNA
(T) rRNA
(U) puromycin
(V) actinomycin D

Part II. Choice one best answer

( ) Which one is not a AT-rich sequence? (A) OriC (B) promoter (C) sequence-dependent termination in transcription (D) enhancer
( ) Rolling circle mechanism of DNA replication was used by (A) E. coli (B) human (C) phage M13 (D) mitochondria
( ) Which strand was first synthesized in the replication of mitochondria? (A) L (B) M (C) H (D) D-loop strand
( ) Which one can induce transcription of *Z, Y* and *A* gene in *lac* operon? (A) glucose (B) operator (C) CRP (D) repressor
( ) Attenuation was used for regulation of transcription in (A) *lac* (B) *His* (C) *Trp* (D) *Gly* operon
( ) Peptide bond formation is catalyzed by peptidyl transferase and is formed at (A) P site (B) A site (C) E site (D) all correct above.
( ) Protein translation in E. Coli, the function of IF-3 is (A)assisting IF-1 function (B)binding initiator tRNA and GTP (C)binding to 30S subunits and directing mRNA binding (D)recognition of capping structure

私立臺北醫學院 90 學年度第 二 學期 期中/期末 考試 命(試) 題紙

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藥一、二 (25%)

1. ( ) Fatty acid was degraded by (a) CoASH addition (b) carboxylation (c) methylation (d) beta-oxidation (e) glycolysis
2. ( ) The first step of fatty acid synthesis is catalyzed by (a) fatty acid synthase (b) acetyl-CoA carboxylase (c) citrate synthase (d) Isomerase (e) reductase
3. ( ) The steroid hormones are converted from (a) triacylglycerol (b) protein (c) cholesterol (d) phospholipid (e) acetyl-CoA
4. ( ) Which form of energy compound is used in synthesis of glycerol-phospholipid (a) ATP (b) NADH (c) NADPH (d) CTP (e) GTP
5. ( ) Which compound is the key substrate in cholesterol synthesis (a) acetyl-CoA (b) HMG-CoA (c) mevalonate (d) cholic acid (e) acetoacetate
6. ( ) The respirator stress syndrome is induced by which compound deficiency (a) ganglioside (b) galactosidase (c) dipalmitoylphosphotidylcholine (d) ceramidase (e) sphingomyelin
7. ( ) Which compound is the source of acetyl-CoA at fatty acid synthesis from mitochondria (a) pyruvate (b) fatty acid (c) citrate (d) oxaloacetate (e) manoyl-CoA
8. ( ) Which is called " good cholesterol" (a) chylomicron (b) VLDL (c) LDL (d) IDL (e) HDL
9. ( ) Cholesterol is transported from circulation to peripheral tissue by which lipoprotein (a) chylomicron (b) VLDL (c) LDL (d) IDL (e) HDL
10. ( ) The lovastatin is the inhibiter to which protein (a) acetyl-CoA carboxylase (b) phosphodieasterase (c) HMG-CoA lyase (d) HMG-CoA reductase (e) fatty acyl-CoA synthase
11. ( ) Which protein in mitochondria outer-membrane is necessary in process of fatty acyl-CoA transport from cytosol to matrix of mitochondria (a) carnitine acyltransferase I (b) carnitine acyltransferase II (c) translocase (d) NADH dehydrogenase (e) thiolase
12. ( ) How many molecules of NADPH is needed in steric acid (C18:0) synthesis (a) 13 (b) 14 (d) 15 (e) 16