臺北醫學大學 92 學年度第 1 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
夜二	生物化學	陳秀忘 等	93年1月9日第一節		

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Single choice (each question is worth two points)

( ) 1. F_1 ATP synthase as a (A) rotary (B) sliding (C) vibration (D) swing engine drives the synthesis of ATP. (p. 546)

( ) 2. Lactic acid bacteria simply use NADH to reduce pyruvate to lactate via the enzyme (A) lactate dehydrogenase (B) pyruvate dehydrogenase (C) alcohol dehydrogenase (D) NADH dehydrogenase. (p.448)

( ) 3. Which of the following is not the major routes of ATP synthesis? (A) substrate level phosphorylation (B) oxidative phosphorylation (C) covalent modification (D) photophosphorylation. (p.450)

( ) 4. Which compound contains energy-rich phosphate bond? (A) pyruvate (B) glyceraldehydes 3-phosphate (C) phosphoenolpyruvate (D) fructose 1,6-bisphosphate. (p.450)

( ) 5. Isomerization of glucose to fructose-6-phosphate proceeds via an (A) enol (B) enediol (C) aldol (D) christian dior. (p.452)

( ) 6. Which complex in respiratory chain contains 13 polypeptides with 170kDa mass? (A) I (B) II (C) III (D) IV. (p. 536)

( ) 7. (A) Phosphofructokinase (B) Glucokinase (C) Pyruvate kinase (D) Hexokinase is inhibited by glucose-6-phosphate. (p.452)

( ) 8. Which amino acid of the following is not in the active site of fructose-1,6- bisphosphate aldolase? (A) lysine (B) cysteine (C) histidine (D) glutamate. (p.454)

( ) 9. Glyceraldehyde-3-phosphate dehydrogenase is inhibited by (A) arsenite (B) iodoacetate (C) arsenate (D) Mg2+. (p.455)

( ) 10. (A) Lactate dehydrogenase (B) Pyruvate dehydrogenase (C) Glyceraldehyde-3-phosphate dehydrogenase (D) NADH dehydrogenase creates a high-energy compound and generates a pair of reducing equivalents in glycolysis. (p.455)

( ) 11. Phosphoglycerate mutase contains a (A) phosphocholine (B) phosphoserine (C) phosphohistidine (D) phosphoinositol residue in the active site. (p.456)

( ) 12. Myocardial infarction will result in increase of the serum level of (A) LDH-1 (B) LDH-2 (C) LDH-4 (D) LDH-5. (p.461)

( ) 13. Which of the following reaction does not require thiamine pyrophosphate as a coenzyme? (A) pyruvate dehydrogenase (B) pyruvate decarboxylase (C) α-ketoglutarate dehydrogeanse (D) succinate dehydrogenase. (p.461)

( ) 14. Which of the following is not an uncoupler of elecron transport chain and oxidative phosphoryaltion? (A) FCCP (B) thermogenin (C) 2,4-dinitrophenol (D) oligomycin. (p. 543)

( ) 15. Which of the following does not activates phosphofructokinase? (A) ADP (B) AMP (C) fructose-2,6-bisphosphate (D) ATP. (p.464).

臺北醫學大學 97 學年度第 1 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
五二	生化		___年___月___日第___節		

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( ) 16. Galactosemia results from hereditary deficiency of (A) UDP-Glc:Gal-1-P uridylyltransferase (B) phosphoglucomutase (C) UDP-Glc pyrophosphorylase (D) lactase. (p. 469)

( ) 17. Which of the following involves both of transferase and glucosidase activity as debranching enzyme of glycogen? (A) α(1->6)-glucosidase (B) phosphorylase (C) amylase (D) (α1,4->α1,4)glucantransferase. (p. 472).

( ) 18. Glycogen mobilization is controlled hormonally by a metabolic cascade that is activated by (A) G-protein (B) cAMP (C) adenylate cyclase (D) phosphorylase kinase formation and involves successive phosphorylations of enzymes protein. (p. 474)

( ) 19. (A) Liver (B) Kidney (C) Muscle (D) Heart is the major gluconeogenic tissue. (p. 534)

( ) 20. Which of the following does not catalyze the citric acid cycle? (A) fumarase (B) dihydrolipoamide dehydrogenase (C) pyruvate dehydrogenase (D) isocitrate dehydrogenase. (p.487)

( ) 21. Branching of glycogen is brought about by the action of (A) glycogen synthase (B) amylase (C) amylopectinase (D) amylo-(1,4->1,6)-transglycosylase. (p. 574)

( ) 22. Which of the following does not catalyze the gluconeogensis? (A) pyruvate carboxylase (B) PEPCK (C) hexokinase (D) aldolase. (p. 563)

( ) 23. (A) Iodoacetate (B) Fluoroacetate (C) Iron-sulfur (D) Suicide substrate acts as a poison by being converted via citrate synthase, to the aconitase inhibitor fluorocitrate. (p. 498)

( ) 24. Two carbon atoms enter the citric acid cycle as acetyl CoA, and two are lost as CO_2 in the reactions (A) 1 and 2 (B) 3 and 4 (C) 5 and 6 (D) 7 and 8 of the cycle. (p. 499)

( ) 25. The reaction of isocitrate dehydrogenase involves dehydrogenation to (A) α-ketoglutarate (B) oxalosuccinate (C) succinyl CoA (D) oxaloacetate, an unstable enzyme-bound intermediate. (p. 498)

( ) 26. In animals, liver cells contain primarily the (A) ATP- (B) GTP- (C) UTP- (D) CTP-linked succinyl-CoA synthetase. (p. 501)

( ) 27. (A) Succinate dehydrogenase (B) Fumarase (C) Malate dehydrogenase (D) Succinyl-CoA synthetase is tightly bound to the mitochondrial inner membrane. (p. 501)

( ) 28. FAD is bound covalently to succinate dehydrogenase protein through a specific (A) lysine (B) serine (C) cysteine (D) histidine residue. (p. 502)

( ) 29.One turn of the citric acid cycle generates (A) six (B) two (C) three (D) four NADH for subsequent reoxidation. (p. 503)

( ) 30. Which of the following reaction is not inhibited by NADH through allosteric interactions? (A) pyruvate dehydrogenase (B) isocitrate dehydrogenase (C) malate dehydrogenase (D) succinate dehydrogenase. (p. 504)

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( ) 31. Activity of the pyruvate dehydrogenase complex is regulated by phosphorylation of the (A) E_1 (B) E_2 (C) E_3 (D) E_4 subunit. (p. 504)

( ) 32. Pyruvate carboxylase is a tetrameric protein carrying four molecules of (A) TPP (B) biotin (C) cysteine (D) acetyl CoA, each bound covalently through an amide bond. (p. 507)

( ) 33. The glyoxylate cycle allows plants and bacteria to carry out net conversion of (A) lysine to serine (B) fat to carbohydrate (C) CO_2 generation (D) acetyl CoA activation. (p. 509)

( ) 34. The pentose phosphate pathway does not primarily generate (A) NADH (B) NADPH (C) ribose-5-phosphate (D) fructose-6-phosphate. (p. 512)

( ) 35. Most electron carriers in the respiratory chain are embedded in the mitochondrial (A) inner membrane (B) outer membrane (C) intermembrane space (D) matrix. (p. 523)

( ) 36. Which of the following does transfer one electron in the respiratory chain? (A) cytochrome c (B) coenzyme Q (C) FMN (D) flavoprotein. (p. 525)

( ) 37. A dihydroxyacetone phosphate is oxidized in brain through glycolysis, citric acid cycle and electron transport chain into H_2O and CO_2, generating (A) 38 (B) 36 (C) 20 (D) 19 ATP. (p. 537)

( ) 38. The inhibitor (A) rotenone (B) antimycin (C) cyanide (D) oligomycin blocks electron flow from NADH to coenzyme Q. (p. 534)

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系級	科目	授課教師	考試日期	學號	姓名
原二	生物化學	陳建志等	92年1月9日第1節		

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1. How does enzyme catalyze the chemical reaction? (12 points)
   a. In **thermodynamic** point of view (please use energy diagram to explain).

   b. Thermodynamic explanation only explains the outcome of the catalysis. Please explain how the enzyme, **triose phosphate isomerase**, or **Chymotrpypsin**, achieve the catalysis? (just choose one enzyme to explain)

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2. Please state the **Michael-Menten Equation**, and explain the **significance** of V_{max} and K_m (6 points)

3. Please list general ways in which enzyme activity is controlled? (5 points).

4. Please explain the enzymatic response during the flight or fight pathway? (12 points)