

臺北醫學大學 92 學年度第 1 學期 ~~期中~~ 考試 (命試) 題紙

系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
牙二	生物化學	陳建宏等	92年1月9日第一節		

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 ②每張試題卷務必填寫(學號)、(姓名)。

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 reaction of the following is not involved in glycolysis? (A) hydration (B) isomerization (C) dehydrogenation (D) phosphorylation. (p.451)
- ( ) 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)  $Mg^{2+}$ . (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)  $\alpha$ -ketoglutarate dehydrogeanse (D) succinate dehydrogenase. (p.461)
- ( ) 14. Which of the following is not an uncoupler of electron 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).

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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)  $\alpha(1\rightarrow6)$ -glucosidase (B) phosphorylase (C) amylase (D)  $(\alpha1,4\rightarrow\alpha1,4)$ 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 $\rightarrow$ 1,6)-transglycosylase. (p. 574)
- ( ) 22. Which of the following does not catalyze the gluconeogenesis? (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<sub>2</sub> 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)  $\alpha$ -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) one (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)

臺北醫學大學 97 學年度第 1 學期 ~~期中~~ 考試 (命題) 題紙

系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
牙二	生物化學		____年____月____日第____節		

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- ( ) 31. Activity of the pyruvate dehydrogenase complex is regulated by phosphorylation of the (A) E<sub>1</sub> (B) E<sub>2</sub> (C) E<sub>3</sub> (D) E<sub>4</sub> 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<sub>2</sub> 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. Complex I contains (A) FAD (B) FeS (C) FMN (D) cyt b<sub>560</sub> as a tightly bound prosthetic group. (p. 529)
- ( ) 38. The inhibitor (A) rotenone (B) antimycin (C) cyanide (D) oligomycin blocks electron flow from NADH to coenzyme Q. (p. 534)
- ( ) 39. Which complex contains 13 polypeptides with 170kDa mass? (A) I (B) II (C) III (D) IV. (p. 536)
- ( ) 40. A dihydroxyacetone phosphate is oxidized in brain through glycolysis, citric acid cycle and electron transport chain into H<sub>2</sub>O and CO<sub>2</sub>, generating (A) 38 (B) 36 (C) 20 (D) 19 ATP. (p. 537)

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921 牙二 Lipid metabolism (15 %)

Rita-Huang

一 選擇題 (2 points each)

- In E. Coli the synthesis of phosphatidylethanolamine directly involves:
  - acyl carrier protein
  - serine
  - CDP-choline
  - biotin
  - phosphatidylglycerol
- In the synthesis of phosphatidylcholine from phosphatidylethanolamine, the methyl group donor is:
  - methanol
  - S-adenosylmethionine (adoMet)
  - a tetrahydrofolate derivative
  - choline
  - serine
- A strategy that is NOT employed in the synthesis of phospholipids is:
  - condensation of CDP-alcohol with diacylglycerol
  - condensation of CDP-diacylglycerol with CDP-alcohol
  - condensation of CDP-diacylglycerol with alcohol
  - exchange of free alcohol with head group alcohol of phospholipids
- Tay-Sachs disease results from:
  - the lack of a phospholipids-synthesizing enzyme
  - a deficiency of ganglioside due to the lack of ganglioside- synthesizing enzyme
  - an accumulation of ganglioside due to the lack of a ganglioside-degrading enzyme
  - an accumulation of ganglioside due to an overactive ganglioside- synthesizing enzyme system
- Which hormone participate in "waking"? (A) PGE<sub>2</sub> (B) PGD<sub>2</sub> (C) TXA<sub>2</sub> (D) PGF<sub>2</sub>α
- Eicosanoids family 是因由那一種 Fatty acid 代謝而得名? \_\_\_\_\_ (1%) 其特性為 \_\_\_\_\_ (2%)  
 種類有 \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ (2%)

臺北醫學大學 97 學年度第 1 學期 期中(試) 命題紙

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牙二 生化試題 鄭可大 選擇題 (15%)

- ( ) 1. DNA replication results in: A. Protein production B. Heavy DNA C. Two new daughter strands D. Induced mutations
- ( ) 2. Why does lagging strand synthesis consist of discontinuous Okazaki fragments?  
 A. There is a shortage of dNTPs for lagging strand synthesis.  
 B. DNA is synthesized 5' to 3'. Replication can only proceed from the unwound portion of DNA outward.  
 C. Lagging strand DNA polymerase can only handle a few nucleotides at a time.  
 D. Okazaki fragments are riddled with mistakes; proofreading enzymes chop up the nucleotide into short fragments.
- ( ) 3. The site of protein synthesis is:  
 A. DNA B. The ribosome  
 C. The nucleus D. The cell membrane
- ( ) 4. To make protein, the cell must first transcribe the genetic code from DNA to produce mRNA. The genetic code on mRNA is in the form of codons, which are:  
 A. Helix-turn-helix structures B. Positively charged bases  
 C. A set of three adjacent bases D. DNA-RNA hybrids
- ( ) 5. Each codon on mRNA codes for one amino acid. The codons are non-overlapping, and they do not have punctuation between them. Codons are universal, meaning that the same genetic code is used for almost all organisms. Codons are also degenerate, meaning:  
 A. They can be read backwards.  
 B. A single amino acid may be specified by more than one codon.  
 C. They may or may not bind to ribosomes.  
 D. They contain radioactive carbon centers.