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
護一	生物化學概論	陳建志	91年6月20日第 節		

※①請注意本試題共 5 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
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. (16%)

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

( ) 2 When glutamate dehydrogenase generates glutamate from α-ketoglutarate, 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 The metabolic defect of what amino acid will cause albinism? (A) tyrosine (B) leucine (C) arginine (D) threonine (E) lysine

( ) 6 Which of the following amino acid is a ketogenic amino acid? (A) alanine (B) leucine (C) serine (D) glutamate (E) aspartate

( ) 7 Which of the following amino acids is not an intermediate of urea cycle? (A) ornithine (B) citrulline (C) aspartate (D) alanine (E) arginosuccinate

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

護一 (15%)

( ) 1. Which is called " bad cholesterol" (a) chylomicron (b) VLDL (c) LDL (d) IDL (e) HDL

( ) 2. 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

( ) 3. The fatty acid is degraded to acetyl-CoA by which reaction (a) glycolysis (b)β-odidation (c) triacylglycerol lipase (d) reductase

( ) 4. How many ATP will be produced in steric acid (C18 : 0) degradation (a) 129 (b) 131 (c) 150 (d) 148 (e) 146

( ) 5. 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

( ) 6. Which hormone can increase fatty acid synthesis in cell (a) glucagons (b) insulin (c) epinephrine (d) cortisol (e) squalene

( ) 7. The mevinolin is inhibiter of which enzyme (a) acetyl-CoA carboxylase (b) phosphodieasterase (c) HMG-CoA lyase (d) HMG-CoA reductase (e) fatty acyl-CoA synthase

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

系級	科目	授課教師	考試日期	學號	姓名
護一	生物化學概論	陳建名	91年6月20日第 節		

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護 理 學 系

配 合 題 (複選)

題目欄		答案欄	
1	ras gene	A	Anti-growth 抑制生長
2	rb gene	B	Dominant 顯性
		C	Proliferation 增生
		D	Recessive 隱性

答 案 紙

(共 15 分)

題號		1	2
答案	A	○	○
	B	○	○
	C	○	○
	D	○	○

將正確選項之空格圈 "○" 塗滿 "●"

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

系級	科目	授課教師	考試日期	學號	姓名
護一	生物化學概論	張建光	91年6月20日第 節		

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護一 生化試題 鄭可大 姓名：_____ 學號：_____

選擇題 (24%)

( )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. Which of the following statements is NOT true of telomerase?
A. Telomerase contains a ribozyme.
B. Telomerase activity decreases as the cell ages.
C. Telomerase adds a repeating sequence to the 5' end of DNA.
D. Telomerase adds a repeating sequence to the 3' end of DNA.

( )4. DNA replication is not perfect; a mistake is made for every 10^4 to 10^5 nucleotides added. However, there are proofreading enzymes that excise incorrect bases and insert the correct one. Which of the following enzymes proofread DNA?
A. DNA ligase B. DNA gyrase
C. DNA Polymerase I and II D. DNA Polymerase III.

( )5. In DNA sequencing reactions, which of the following molecules is responsible for the chain termination reaction that results in DNA fragments?
A. dNTPs B. DNA primer
C. ddNTPs D. ^{32}P-dATP

( )6. The site of protein synthesis is:
A. DNA B. The ribosome
C. The nucleus D. The cell membrane

( )7. 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

( )8. 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.

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

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護一	生物化學概論	陳建元	91年6月20日第 節		

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I. Single choice (44%)

1. How many tricarboxylic acids are found in the citric acid cycle?
   (a) 1 (b) 2 (c) 3 (d) 4
2. How many dicarboxylic acids are found in the citric acid cycle?
   (a) 2 (b) 3 (c) 4 (d) 5
3. How many enzymes in the TCA cycle catalyze dehydration reaction?
   (a) 1 (b) 2 (c) 3 (d) 0
4. Which enzymes in the TCA cycle catalyze oxidative decarboxylation reactions?
   (a) aconitase and succinate dehydrogenase (b) isocitrate dehydrogenase and α-ketoglutarate dehydrogenase complex
   (c) furmarase and succinate dehydrate (d) α-ketoglutarate dehydrogenase complex and succinate thiokinase
5. Which coenzyme listed below is not associated with the α-ketoglutarate dehydrogenase complex?
   (a) thiamine pyrophosphate (b) lipoamide (c) NAD^+ (d) biotin
6. After what reaction is the complete oxidation of the acetyl group formally accomplished?
   (a) isocitrate → α-ketoglutarate (b) α-ketoglutarate → succinyl-CoA (c) succinyl-CoA → succinate (d) fumarate → malate
7. How many NADH molecules are produced in the TCA cycle per glucose molecule?
   (a) 2 (b) 4 (c) 6 (d) 8
8. The only membrane-bound enzyme in the TCA clcle is
   (a) aconitase (b)succinate dehydrogenase complex (c) α-ketoglutarate dehydrogenase complex (d) malate dehydrogenase
9. A reaction that involves a phosphorylation is
   (a) isocitrate → α-ketoglutarate (b) citrate → isocitrate (c) succinyl-CoA → succinate (d) succinate → fumarate
10. How many ATPs are directly produced as a result of glycolysis and TCA cycle?
    (a) 2 (b) 4 (c) 5 (d) 6
11. The control of the TCA cycle is effected at each of the following enzymes, except for
    (a) citrate synthase (b) isocitrate dehydrogenase (c) aconitase (d) α-ketoglutarate dehydrogenase complex
12. The complex in the electron transport chain that does not have a direct link to ubiquinone in some form is
    (a) cytochrome c oxidase (b) succinate dehydrogenase (c) NADH dehydrogenase (d) complex III
13. Of the species below, which is a mobile electron carrier in electron transport chain?
    (a) FMN (b) Fe-S protein (c) cytochrome c (d) cytochrome bc1 complex
14. The complete reduction of one molecule of oxygen gas requires how many electrons?
    (a) 1 (b) 2 (c) 4 (d) 8
15. 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
16. The final product in phase I of glycolysis is
    (a) fructose-1,6-bisphosphate (b) glyceraldehydes-3-phosphate (c) pyruvate (d) glucose-6-phosphate
17. How many reactions in the glycolytic pathway consume or produce ATP?
    (a) 2 (b) 3 (c) 4 (d) 6
18. Pyruvate in humans can be converted to
    (a) acetyl-CoA (b) lactate only (c) ethanol only (d) acetyl-CoA and lactate
19. 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

私立臺北醫學院 90 學年度第 2 學期 期中 期末 考試 命題(試)紙

系級	科目	授課教師	考試日期	學號	姓名
護一	生物化學概論	陳達夫	91年6月20日第 節		

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20. 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

21. An enzyme not involved in the regulation of glycolysis is
(a) hexokinase (b) triose phosphate isomerase(c) pyruvate kinase (d) phosphofructokinase

22. The glycolytic enzyme influenced by the hormone glucagons is
(a) triose phosphate isomerase (b) pyruvate kinase (c) hexokinase (d) lactate dehydrogenase

II. Indicate the cellular location of the following molecules, enzymes or processes. (7%)
(If the location is within the mitochondrion, specify whether it is in the matrix, inner membrane space or the outer membrane.)

a. pyruvate dehydrogenase complex _____
b. ATP synthase _____
c. citric acid cycle _____
d. glycolysis _____
e. NADH _____
f. Cytochrome oxidase _____
g. Succinate dehydrogenase _____