

臺北醫學大學 90 學年度第 2 學期 期中 考試 (命) 題紙

系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
區二	生物化學	陳連宏	91年6月20日第 節		

※①請注意本試題共 2 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. (40%)

- () 1 The hormone epinephrine (also known as adrenaline) is derived from which amino acid? (A) phenylalanine (B) glycine (C) tyrosine (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 Which of the following enzymes catalyzes the initial reaction in polyamine biosynthesis? (A) carbamoyl phosphate synthetase I (B) aspartate transcarbamoylase (C) thymidylate synthase (D) serine hydroxymethyltransferase (E) ornithine decarboxylase
- () 5 What is the cellular role of ubiquitin? (A) protein translocation (B) protein folding (C) protein degradation (D) calcium binding protein (E) electron transport
- () 6 Nitric oxide is synthesized by NO synthase from what? (A) lysine (B) glutamine (C) arginine (D) asparagine (E) tryptophan
- () 7 Tetrahydrobiopterin is a coenzyme of (A) phenylalanine hydroxylase (B) histidine decarboxylase (C) dihydrofolate reductase (D) ribonucleotide reductase (E) methionine adenosyltransferase
- () 8 Which of the following enzyme activity in serum is an indicator of liver damage? (A) malate dehydrogenase (B) dihydrofolate reductase (C) thymidylate synthase (D) PRPP synthetase (E) alanine aminotransferase
- () 9 The two enzyme catalyzed reactions that utilize cobalamin (from Vitamin B_{12}) as a cofactor are the ones converting: (A) methylmalonyl-CoA to succinyl CoA and homocysteine to methionine (B) aspartate to oxaloacetate and glutamate to γ -aminobutyric acid (GABA) (C) tryptophan to serotonin and tyrosine to 3,4-dihydroxyphenylalanine (DOPA) (D) norepinephrine to epinephrine and lysine to trimethyllysine (E) valine to α -ketoisovaleric acid and α -ketoisovaleric acid to isobutyryl COA
- () 10 Which of the following compounds does NOT contribute any carbons directly to purine biosynthesis? (A) lysine (B) glycine (C) glutamine (D) CO_2 (E) tetrahydrofolate
- () 11 What is (are) the biochemical and genetic symptoms of Lesch-Nyhan syndrome? (A) insufficient ATP in bloodstream (B) deficiency of HGPRT enzyme (C) elevated serum uric acid levels (D) A and C (E) B and C
- () 12 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
- () 13 During the biosynthesis of dTMP, which of the following is the immediate precursor of dTMP? (A) TMP (B) TDP (C) dUMP (D) UMP (E) UDP
- () 14 Uric acid is: (A) a highly water-soluble pyrimidine analog (B) a rather insoluble pyrimidine analog (C) a highly water-soluble purine analog (D) a rather insoluble purine analog (E) none of the above

臺北醫學大學 90 學年度第 2 學期 ~~期中~~ 考試 (試) 題紙

系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
原二	生物化學	陳建勳	91年6月20日第 節		

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- () 15 The chemotherapeutic drug methotrexate reduces DNA synthesis by inhibiting: (A) ribonucleotide reductase (B) dihydrofolate reductase (C) glutathione reductase (D) HMG-CoA reductase (E) thioredoxin reductase
- () 16 Both liver and muscle can degrade glycogen, yet only liver is able to export the glucosyl residues into the blood. What accounts for the difference? (A) Muscle cannot convert the glucosyl residues of glycogen to glucose 1-phosphate. (B) Muscle cannot convert glucose 1-phosphate to glucose 6-phosphate. (C) Muscle cannot convert glucose 6-phosphate to free glucose. (D) Muscle lacks a glucose transporter.
- () 17 Glucokinase activity increases when: (A) glucose levels are low (B) glucose levels are high (C) acetyl CoA is high (D) glucose-6-phosphate is low (E) glycerol-3-phosphate is low
- () 18 Which of the following are the energy sources of the brain? (A) glucose (B) fat (C) protein (D) β -hydroxybutyrate (E) A and D
- () 19 Glucagon (A) stimulates the formation of glycogen and inhibits the breakdown of glycogen (B) inhibits the formation of glycogen and stimulates the breakdown of glycogen (C) simultaneously inhibits the formation of glycogen and glycogen breakdown (D) simultaneously stimulates the formation of glycogen and glycogen breakdown
- () 20 The coenzyme of ribonucleotide reductase is (A) 10-formyl-THF (B) 5,10-methylene-THF (C) NADH (D) $FADH_2$ (E) thioredoxin

Explain why diabetes mellitus may be described as a disorder of lipid metabolism. (5%)

Explain briefly why ammonia is highly toxic to brain cells. (5%)

Explain why alcoholism can sometimes cause hypoglycemia, lactic acidosis and hypoglycemia. (5%)

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醫二	生物化學	陳建宏	91年6月20日第 節		

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配 合 題 (複選)

題目欄

1 Pheochromocytoma

2 K⁺ Channel

3 ras gene

4 rb gene

答案欄

A Amine derivatives

B Effector

C Modulator

D Steroid hormone

A Anti-growth

B Dominant

C Proliferation

D Recessive

答 案 紙

(共 30 分)

題號	1	2	3	4	
答 案	A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

將正確選項之空格圈“○”塗滿“●”

私立臺北醫學院 90 學年度第 一 學期 期中 考試 命 題紙

系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
區二	生物化學	陳建志	91年6月20日第 節		

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1. 如何利用 pronuclear microinjection 的技術製作出 transgenic animals ? (8%)
2. 欲建立 over-expression 或 ectopic-expression 之 transgenic animals，其關鍵在於所選擇控制 transgene 表現的 _____。並請舉例說明之。(7%)