

國立彰化師範大學 97 學年度碩士班招生考試試題

系所： 生物學系碩士班

組別： 乙組

科目： 生物化學

☆☆請在答案紙上作答☆☆

共 2 頁，第 1 頁

1. Matching the following A column (1-20) and B column (a-t). (20 %)

A	B
1. acyl carrier protein	a. acetone
2. albinism	b. coenzyme of aminotransferase
3. albumin	c. coenzyme of carboxylation reaction
4. aromatic amino acid biosynthesis	d. help triacylglycerol transport through the blood stream
5. arachidonic acid	e. help fat transport out of adipose tissue to other tissue
6. carnitine	f. intermediate of methionine metabolism
7. biotin	g. involve in cholesterol uptake by peripheral tissue cell
8. chylomicron	h. involve in fatty acid biosynthesis
9. pyridoxal pyrophosphate	i. involve in fatty acid degradation
10. ethylene	j. lysine
11. endosome	k. mediate in blood cholesterol endocytosis
12. glycerol - 3 - phosphate	l. metabolisc disease of tyrosine
13. ketogenic amino acid	m. precursor of eicosanoids
14. ketone body	n. precursor of fat
15. LDL receptor	o. precursor of fatty acid
16. malonyl CoA	p. precursor of lecithin
17. methyl transfer	q. precursor of terpenoid compounds
18. mevalonate	r. S-adenosy methionine
19. one carbon transfer	s. skimic acid pathway
20. phosphatidic acid	t. tetrahydrofolate

2. Illustrate the allosteric behavior of 2, 3 - bisphosphoglycerate on the oxygen binding of hemoglobin. (4 %)

3. How does fructose - 2, 6 - bisphosphate regulate glycolysis and gluconeogenesis, respectively? (6%)

4. What are the components of pmf (proton motive force)?

How does this pmf relate to oxidative phosphorylation in mitochondria ? (6 %)

5. How does epinphrine affect glycogen metabolism ? (6 %)

6. Give the structural characteristics of insulin receptor. (4%)

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7. Estimate the net charge of tetrapeptide Tyr-Cys-Arg-Glu at pH 10.0 by the following pK values.

(4 %)

	pK α -COOH	pK α -NH ₃ ⁺	pK side group
Arg	2.17	9.04	12.48
Cys	1.71	10.78	8.33
Glu	2.19	9.67	4.25
Tyr	2.20	9.11	10.07

8. Please describe the synthesis, structure, function and application of the Glutathione. (8%)

9. Please describe the synthesis, structure, function and application of the Nitric oxide. (8%)

10. Please describe the mechanism and application of the RNA interference. (10%)

11. Please describe the Genome, Transcriptome, Proteome and Metabolome. (8%)

12. How dose the immune system defend the body? (16%)