

國立中興大學97學年度碩士班招生考試試題

科 目：營養學

所 別：食品暨應用生物科技學系丙組

單選題（每題1分，合計14分）

本科目試題共4 頁

1. 下列油脂中何者可被直接吸收進入血液？ A) phospholipids; B) cholesterol molecules; C) triglycerides; D) short-chain fatty acids.
2. 通常餐後約多少時間，油脂可從血液中被清除？ A) 30 minutes; B) 2 hours; C) 4 hours; D) 10 hours.
3. Chylomicrons 在何處形成？ A) 肝臟；B) 腸道；C) 腎臟；D) 淋巴結。
4. 對人體而言，下列何者非為必需脂肪酸 (essential fatty acid) 或必需胺基酸 (essential amino acid)？ A) linoleic acid; B) tryptophan; C) gamma-linolenic acid; D) alpha-linolenic acid.
5. Carbohydrate and lipid are protein sparing because they: A) provide more energy per gram than protein; B) act as buffers in the blood instead of protein; C) are the only sources of glucose for cells; D) can reduce the need to use amino acids for fuel.
6. 下列何種酵素存在於胃中？ A) pepsin; B) trypsin; C) chymotrypsin; D) both A and B.
7. Ketoacidosis: A) is irreversible; B) usually increases the pH in the blood; C) prevents the brain from using ketone bodies for energy; D) can be the result of eating a high-fat, low-carbohydrate diet.
8. 下列何種蛋白質之生物價(biological value)最接近100？ A) 大豆；B) 菠菜；C) 馬鈴薯；D) 雞蛋。
9. 食物熱效應 (thermic effect of food; TEF) 大約佔每個人總能量消耗之多少百分比？ A) 10%; B) 20%; C) 30%; D) 55%.
10. 下列哪一種情況下BMR會降低？ A) 甲狀腺機能亢進； B) 飢餓；C) 懷孕；D) 發燒、體溫超過37°C以上。
11. 正常情況下，當血液中insulin濃度增加，人會感覺到：A) 尿多； B) 飢餓； C) 口渴； D) 發燒。
12. 某人要進行減重計畫，約需減少攝取(或增加消耗)多少熱量，才可減少體脂肪 1 公斤？ A) 9900 Kcal; B) 8800 Kcal; C) 7700 Kcal; D) 9000 Kcal.
13. 某人攝入一營養素，其吸收及運送路徑為：乳糜管→胸管→左鎖骨下靜脈→心臟→血液循環，請問下列何者最不可能為此營養素？ A) 長鏈脂肪酸；B) 脂溶性維生素；C) 蛋白質；D) 膽固醇。
14. Which of the following statements is True? A) Modern clinical trials should contain the experimental group receiving both the placebo and the treatment; B) During a scientific study, 50 subjects received vitamin B6 pills and 50 subjects received sugar pills. None of the subjects or investigators knew what was contained in the pills. This type of study is a case controlled study; C) The advantage of a double-blind study is that the subjects feel that they are treated more fairly; D) A study that examines the incidence of anorexia among female gymnasts at a community college compared to other female students at the college would be an intervention study.

複選題（每題2分，合計52分）

1. 下列那種作用不會發生在mitochondria中：A) energy generation; B) protein hydrolysis; C) beta-oxidation of fatty acid; D) antibody production.
2. 以Harris-Benedict equation來計算熱量需求時，其計算公式中包括下列何項？ A) age; B) weight; C) waist circumference; D) height.
3. 下列關於 protein-energy malnutrition 之描述，何者正確？ A) 可區分為 kawashiorkor 及 marasmus 兩種類型；B) kawashiorkor 患者大多伴隨有水腫；C) 此為不可逆之疾病，即使再補充營養，患者仍無法復原；D) 患者發生年齡大多為青少年。

第 1 頁

背面有題，請繼續作答。

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4. 下列何者不屬於必需胺基酸？ A) aspartic acid; B) glutamic acid; C) methionine; D) isoleucine.
5. 下列對反式脂肪酸 (trans fatty acid) 之描述，何者正確？ A) 天然油脂中含量並不高； B) 大多存在氫化(或硬化)植物油中； C) 攝取過多可能增加心臟血管疾病之風險； D) 人體可輕易消化反式脂肪酸。
6. 某人只吃了一塊奶油當早餐，請問此食物經過消化道時，可在何處被消化分解？ A) 口腔； B) 胃； C) 小腸； D) 直腸。
7. 下列何者屬於完全蛋白質 (complete protein)？ A) 大豆； B) 動物膠； C) 牛肉； D) 雞蛋。
8. 關於酮體 (ketone body) 之描述，下列何者正確？ A) 當身體處於飢餓狀態時，酮體可作為部分能量來源； B) acetyl CoA 屬於酮體； C) acetone 屬於酮體； D) beta-hydroxybutyrate 不屬於酮體。
9. 下列關於肥胖 (obesity) 的敘述，何者正確？ A) gynoid obesity 是指下半身肥胖； B) android obesity 是指上半身肥胖； C) hyperplastic obesity 是指脂肪細胞增多型的肥胖； D) hypertrophic obesity 是指脂肪細胞增大型的肥胖。
10. 下列敘述何項正確？ A) 一公克酒精完全燃燒可產生 7 大卡熱量； B) 抽脂 (liposuction) 是一種正確的減重技巧； C) 攝取過多蛋白質可能造成體內礦物質流失； D) 脂肪酸的 beta-oxidation 不是發生在粒腺體內。
11. Which of the following statements are TRUE regarding carbohydrates absorption? A) galactose is absorbed by facilitated diffusion; B) galactose is absorbed by active transport; C) fructose is absorbed by facilitated diffusion; D) glucose is absorbed by facilitated diffusion; E) all kinds of sugars including monosaccharides need energy for absorption in the intestine then glucose, galactose, and fructose enter the liver through the portal vein.
12. Which of the following digestive organs can secrete enzyme amylase? A) salivary gland; B) pancreas; C) hepatic cells; D) intestinal glands; E) G cells of the stomach wall.
13. Which of the following statements are TRUE? A) To meet carbohydrate needs, a person should concentrate on foods from the top half of the Food Guide Pyramid; B) When the acidic chymes enter the small intestine, gastric inhibitory peptide will stimulate the secretion of hydrochloride in the stomach; C) When the acidic chymes enter the small intestine, secretin will stimulate the secretion of pancreatic juice; D) When the acidic chymes enter the small intestine, secretin will inhibit the secretion of bicarbonates in the intestine; E) When the acidic chymes enter the small intestine, secretin will inhibit the secretion of gastric inhibitory peptide.
14. Which of the following statements are TRUE? A) Estimated Average Requirement is the amount that meets the nutrient requirements of 50% of people in a life stage/gender group; B) Recommended Dietary Allowance (RDA) is the amount that meets the nutrient requirements of 50% of people in a life stage/gender group; C) Estimated Average Requirement is the intake level that is sufficient to meet the need of over 95% of the population of a specific group; D) Recommended Dietary Allowance (RDA) is the amount that meets the needs of most people in a life stage/gender group; E) Dietary intake below the Tolerable Upper Intake Level could be harmful.
15. Which of the following information are mandatory statements on food labels? A) Nutrition facts; B) List of ingredients; C) Name and address of manufacturer, packer, distributor; D) Net contents of the package; E) Statement of identity of the food.
16. Which of the following statements regarding to the Exchange Lists are TRUE? A) divides foods into groups that have similar phytochemical and vitamin contents; B) can be used for meal planning for people; C) only divides foods into groups by their cholesterol contents so people can be more careful about cholesterol intake; D) divides foods into groups that have similar energy nutrients; E) grouping foods by their macronutrient contents.

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17. Which of the following statements are **TRUE**? A) A traditional Mediterranean diet has very low fat intake and high physical activity than a traditional Japanese diet; B) population of the Mediterranean in the 60s had low rate of chronic diseases and relatively higher life expectancy mainly due to the advanced medical services at that time; C) Red meat and poultry are grouped at the top of the Mediterranean food pyramid which are usually consumed a few times per week; D) Choosing a healthful diet involves moderation, variety, and balance; E) Dietary Guidelines recommended of selecting grains, but not enriched grains, as foundation of a healthful diet.
18. Which of the following statements are **TRUE**? A) segmentation involves physical movement in the digestion process; B) peristalsis involves chemical breakdown of food by various digestive enzymes; C) peristaltic contractions transport food and nutrients along the GI tract; D) insulin stimulates the uptake of glucose by the cells and stimulates break down of glycogen; E) insulin helps fat mobilization in our body.
19. Which of the following would **NOT** be an example of an anthropometric part of a nutritional assessment? A). the amount of hemoglobin in the blood; B). the amount of protein in the diet using food frequency questionnaire; C). measurements of height and weight; D). assessments of body fat using caliper; E) Using the Barthel's Index in institutionalized elder people.
20. Which statement(s) are **FALSE**? A) Measuring of albumin in the blood and urea in the urine would be anthropometric measurements; B) diet history is the simplest way to determine the usual eating pattern of a person; C) The Daily Value (DV) on a food label is based upon the needs of a caloric intake of 2,500 calories per day; D) In the old version of The Food Guide Pyramid implies that legumes can be eaten in place of meat; E) Sugar-free products are always low in calories.
21. Which statement(s) are **FALSE**? A) alcohol does not require energy for absorption; B) The layers of the digestive system from inner to outer are submucosa, mucosa, muscular, serosa; C) Digesting food travels through stomach, pancreas, small intestine and large intestine; D) stomach, liver, small intestine and large intestine are organs directly involved in the absorption of nutrients from the digestive system into the circulatory system; E) When epiglottis is not functioning properly a person will get heartburn immediately.
22. Which statement(s) are **FALSE**? A) Ice cream has a higher glycemic index than crackers; B) In reactive hypoglycemia the body produces too much insulin in response to food; C) The stomach lining is protected from the acid environment in the stomach by bicarbonate that is secreted by the pancreas into the stomach; D) The most common cause of ulcers in Taiwan is bacteria infection; E) A person can have ketosis condition with inadequate intake of carbohydrates.
23. Which statement(s) are **FALSE** when acidic chyme enters the duodenum? A). Secretin stimulates the release of pancreatic juices; B). CCK slows gastric emptying; C). Gastric inhibitory peptide (GIP) stimulates the release of insulin; D). Gastrin stimulates production of pepsin; E) Pancreas secretes insulin and glucagons into the digestive system for regulation of blood glucose.

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24. Which statement(s) are **FALSE**? A) Most nutrients absorbed in the small intestine with many folds, villi, microvilli that expand absorptive surface; B) the Fat-soluble and water-soluble nutrients directly go into the blood stream in small intestine; C) Regulation of GI activity involves central nervous system and the endocrine system; D) The stomach releases the food into the small intestine after cholecystokinin is released; E) secretin and cholecystokinin inhibit gastric movement and the release of bile acid into the intestine.
25. Which statement(s) are **FALSE**? A) When an athlete follows a carbohydrate-loading regimen, he is trying to boost his body stores of glycerol; B) Bile juice is important for the lipase activity; C) colon, small intestine, pancreas and liver are organs directly involved in the enterohepatic pathway; D) liver is the capital of metabolism that is both endocrine and exocrine (secreting both enzymes and hormones); E) Patients with PKU cannot metabolize amino acid phenylalanine.
26. Which statement(s) are **True**? A) Proper functioning of the pyloric sphincter is most important when the bolus enters in the stomach; B) gastric lipase begins the digestion of short chain fatty acids in the stomach; C) bicarbonate neutralizes the chyme in the stomach; D) intrinsic factor is secreted for the absorption of vitamin B12 in the upper part of small intestine; E) pepsinogen is converted to pepsin in the stomach.

填充題（每個空格 1.5 分，共 24 分，中英文答案皆可，但不可有錯字）。

1. Fluoride promotes mineralization of _____ and teeth and protects the teeth from dental _____.
2. We usually can estimate the chloride content of processed foods by multiplying 1.5 from the _____ content.
3. Vitamin 這個英文字是在 1912 年由 Funk 把哪兩個英文字所集合而成？ _____ + _____.
4. 單獨補充何種維生素會導致 flushing and itching? _____.
5. 所有的脂溶性維生素都可由哪一種五個碳的成分合成？ _____.
6. Alcohol-induced malnutrition is the most common cause of Wernicke-Korsakoff syndrome, which is a _____-deficient disease.
7. The primary symptoms of pellagra are known as three D's: _____, _____, and _____.
8. 請寫出動物試驗時，必需遵守的 3 個 R。 _____, _____, _____.
9. 大小鼠屬於齧齒類動物，大鼠的英文通稱為 _____，小鼠為 _____。

計算題（10 分）

An 80-kilogram (176-LB) man consumes a diet which contains 88 grams of protein. Please calculate niacin equivalents (NE) for him based on the fact that tryptophan makes up about 1% of the protein.

1. How much is his protein RDA?
2. How much is his NE?