

1. Draw and explain the difference(s) between followings using **Fishers** and/or **Haworth** projections. (12%)
  - (a) aldoses and ketoses
  - (b) L- and D-xylose
  - (c)  $\alpha$ - and  $\beta$ -lactose
2. Describe three types of sample **degradation** that may occur during **moisture analysis**. What is the outcome of the assay (**underestimated or overestimated**)? Briefly describe **how or what method** can be used to inhibit these reactions. (9 %)
3. Explain why **resistant starch** is measured as fiber in the **AOAC (991.43) method for total, soluble, and insoluble fiber** whereas in the **Englyst-Cummings method** resistant starch is not measured as fiber. Also describe a situation where you would want to measure resistant starch as fiber. (8 %)
4. Define the following terms and tell their differences. You are encouraged to answer the questions based on their chemical structures. (16%)
  - (a) M-block versus G-block in alginate
  - (b) HM (High methoxyl) versus LM (Low methoxyl) pectins
  - (c) Methylcellulose (MC) versus Hydroxypropylmethylcellulose (HPMC)
  - (d) Amorphous region versus Crystalline region in starch granules
5. Describe the **structure of Kappa casein** and how this structure affects its **solubility characteristics**. Also discuss how it is cleaved with **rennet** and how this affects the solubility of other caseins. (5%)
6. 食品一般分析項目除水分含量外，尚包括那幾項？另，請簡述各項之分析原理與方法。(10分)
7. 試述油脂氧化之影響因素及防止方法。(8%)
8. A 250 mg sample of pure olive oil required 47.5 mg of KOH for complete saponification. Calculate the average Molecular Mass of the triglycerides in the olive oil. (The saponification value is defined as the number of milligrams of KOH required to saponify 1.0 g of triglyceride; molecular mass of KOH is 56 g/mole.) (8%)
9. 以營養觀點說明何謂品質良好的蛋白質；另，從化學反應觀點說明過度加熱造成食品蛋白質品質降低的因素。(8%)
10. 簡述乙烯對更性與非更性水果採收後儲存所引發生理代謝之差異。(8%)
11. 計算下表空格之  $Q_{10}$  值。(8%)

$Q_{10}$ ：溫度升高 10°C 時，呼吸速率增加的倍數

表 18-8 蔬果之呼吸速率與熟成性之關係

蔬 果	呼吸速率 (mg CO <sub>2</sub> /kg/hr)		
	5°C	25°C	$Q_{10}$
豌豆	50	475	_____
蘆筍	45	260	_____
酪梨	10	400	_____
燕麥	6	17	_____
蘋果	3	30	_____

註：呼吸速率依品種及栽培條件而異，表中數據為代表值。  
(引用自：Fennema, 1965)

試題隨卷繳回