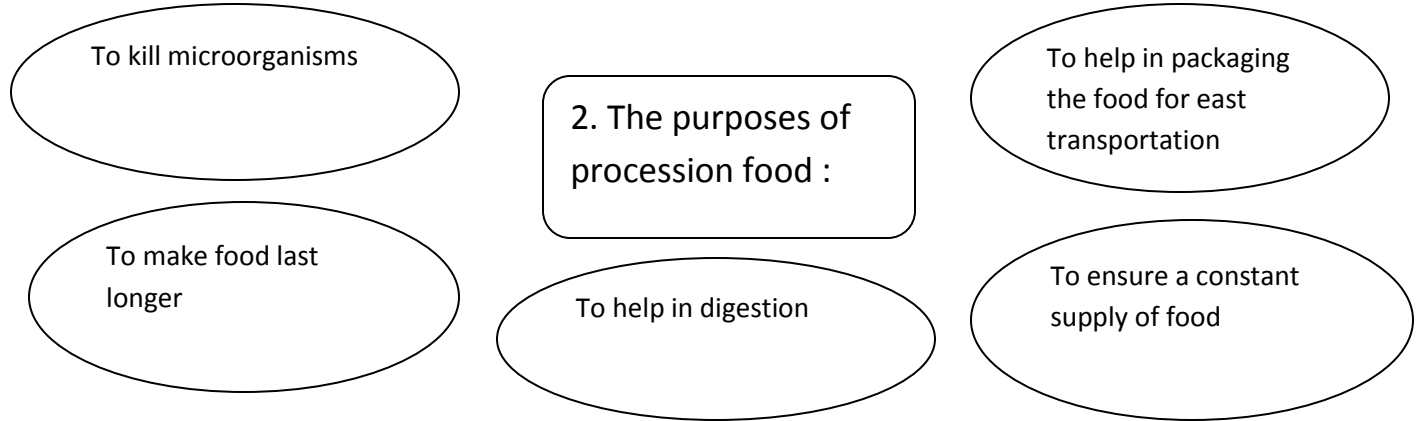


## 6.1 Methods and Substances Used in Food Technology

1. Differences between processed food and unprocessed foods :

Processed food	Unprocessed foods
* These food are altered	* These are foods are in their natural form
* Foods are low in fibre , antioxidant and vitamin	* Foods are high in fibre , antioxidant and vitamin
* Contain food additives	* Do not contain food additives



### The functions of the chemicals used in food processing

Example food preservations:

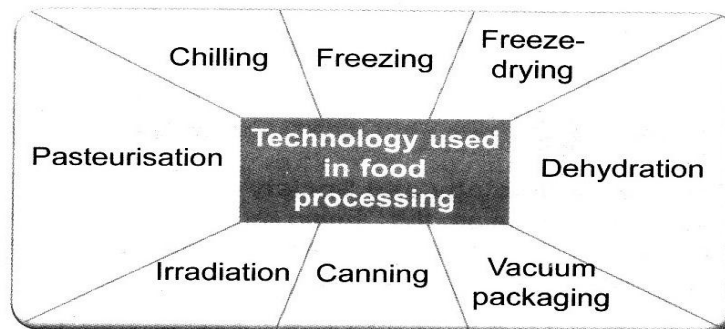
1. Sulphur dioxide
2. Sodium benzoate
3. Potassium sorbate
4. sodium nitrite (fish,meat)

2. Function and examples of food additives :

**Table 6.3 Food additives**

Additive	Purposes	Examples
Preservative	To make food last longer	Salt, sugar, vinegar, sodium nitrite, sulphur dioxide, potassium sorbate
Colouring	To make the food more attractive	Anthocyanins, chlorophyll
Flavouring	To imitate natural flavours	MSG, spices
Stabiliser	To give food a firmer texture	Agar, gelatine, starch
Sweetener	To sweeten the food	Aspartame, saccharin, cyclamate, maltitol
Antioxidant	To stop fats in food from going bad	Vitamin C, Vitamin E
Emulsifier	To prevent fats from separating out; to keep the food smooth	Pectin, gum, seaweed, lecithin
Bleach	To make the food appear white and clean	Benzoyl peroxide

### The technology used in food processing and packaging



### 1. Canning ( 装罐 )

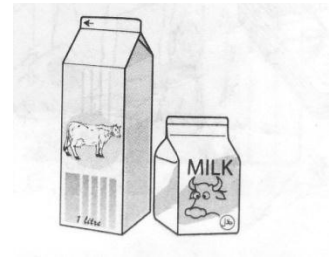
- (a) Food is heated to a temperature of between 115 C and 121 C in a pressure cooker before it is placed in a can
- (b) After sterilization , the can is sealed so that no microorganism can enter the can .

Advantages	Disadvantages
* Food can be stored longer	* High heat will destroy the nutrients and vitamins in the food
* Food is free from microorganisms and their spores	* Cans can become rusty and cause food poisoning



### 2. Pasteurisation ( 巴氏杀菌法 )

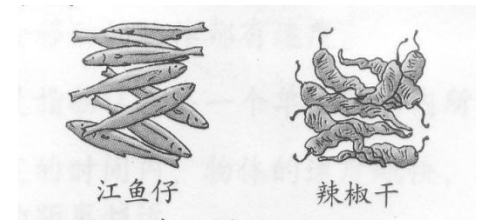
- (a) is a food preservation process that uses heat of a low temperature
- (b) can kill microorganisms but not their spores



Advantages	Disadvantages
* Taste of food does not change and the nutrients and vitamins are not destroyed	* It cannot destroy spores
* Microorganisms can be killed	* The food can be stored for a short time only

### 3. Dehydration ( 干藏 )

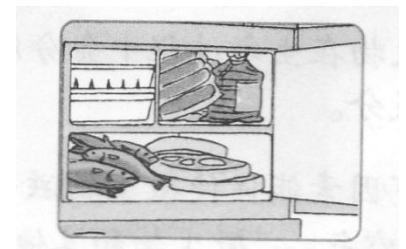
- (a) In dry conditions , some microorganisms will be destroyed
- (b) is the process of removing water from a food by using heat and hot air
- (c) to remove water ,most food are dried in the sun



Advantages	Disadvantages
* can be stored for a long time	* Nutrients and vitamins can be destroyed
* taste of some food can be maintained	* Bacteria may not be destroyed

### 4. Freezing ( 冷冻 )

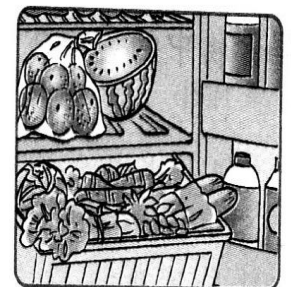
- (a) does not kill microorganisms but prevent their growth and reproduction



Advantages	Disadvantages
* freshness of food can be maintained	* bacteria and their spores are not destroyed
* vitamins in the food are not destroyed	

### 5. Chilling / Refrigeration ( 冷藏 )

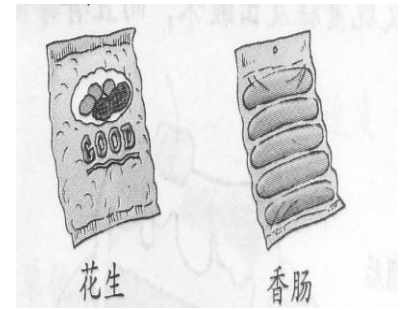
- (a) does not destroy bacteria
- (b) temperature between 0C to 10 C



Advantages	Disadvantages
* freshness of food can be maintained	* bacteria and their spores are not destroyed
* vitamins in the food are not destroyed	

6. Vacuum-packing (真空包装)

- (a) food is packed in a package after they have been sterilized
- (b) Air in the package is removed
- (c) ensures that food is always free of bacteria and other microorganisms



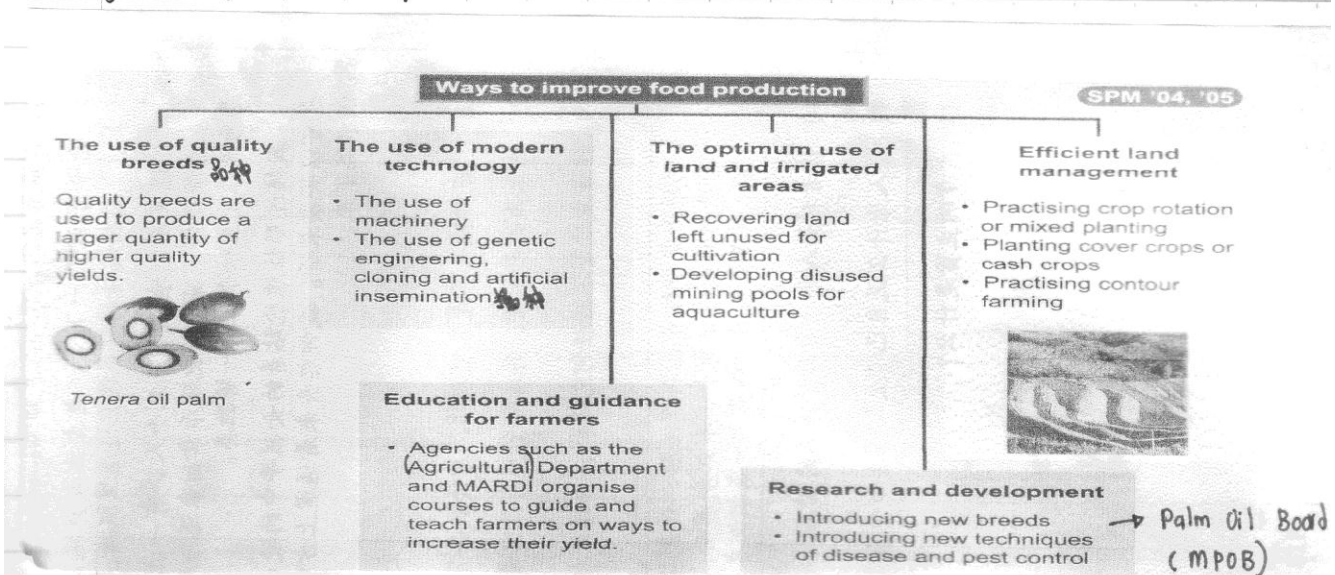
Advantages	Disadvantages
* The taste of food does not change	* this method can be used on certain types of food only
* Vitamins are not destroyed	

7. Irradiation

- (a) food is exposed to gamma rays which can kill microorganisms without changing the taste and appearance of the food
- (b) Ex : meat , grains , fruits + vegetables

Advantages	Disadvantages
* destroy microorganisms	* Nutrients and vitamins in the food are destroyed
* safe because the amount of radiation is very small	

6.2 Ways to improve food production



6.4 Practising critical and Analytical thinking when selecting Processed Food

**Yummy Chunky Peanut Butter**

Use by: 10.7.2011

MIN. NET WT 340 g

**NUTRITION INFORMATION**

Servings per package: 24  
Serving size: 14 g (1 tablespoon)

	Per serving	Per 100 g
Energy	51 kcal	549 kcal
Protein	3.9 g	22.0 g
Total fat	7.6 g	54.0 g
Saturated fat	1.5 g	11.0 g
Monounsaturated fat	2.1 g	15.0 g
Cholesterol	0.0 g	0.0 g
Carbohydrate	2.3 g	20.0 g
Sugar	1.4 g	10.0 g
Dietary fibre	0.9 g	6.4 g
Sodium	59 mg	419 mg

**INGREDIENTS:** PEANUTS, SUGAR, PEANUT OIL, HYDROGENATED VEGETABLE OIL (RAPESEED, COTTONSEED AND SOYA BEAN), SALT & PERMITTED PRESERVATIVE

**STORAGE CONDITIONS:** UNOPENED AND OPENED JARS OF YUMMY MAY BE STORED AT ROOM TEMPERATURE. EG. KITCHEN TABLE. KEEP JAR TIGHTLY CLOSED AWAY FROM DIRECT SUNLIGHT OR EXCESSIVE HEAT.

**MANUFACTURED IN MALAYSIA BY:** KILANG MAKANAN ZAIRI SARI BHD, 3, GALAN LAKSIN, KAWASAN PERINDUSTRIAN LAKSIN JAYA, 80000 KOTA CIKUT (SARAWAK), JENARAH