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COURSE TITLE: FOOD AND CATERING STUDIES

QUESTION 1: Explain food and studies as a subject of study and outline the relevance of food and catering studies to events management professional.

QUESTION 2: Discuss various heating techniques used in a food processing plant with appropriate examples.

QUESTION 3: Discuss in details the major types of food preservation techniques commonly employed by the food processing companies.

QUESTION 1

Food studies is the critical examination of food and its contexts within science, art, history, society, and other fields. It is distinctive from other food-related areas of study such as nutrition, agriculture, gastronomy, and culinary arts in that it tends to look beyond the mere consumption, production, and aesthetic appreciation of food and tries to illuminate food as it relates to a vast number of academic fields. It is thus a field that involves and attracts philosophers, historians, scientists, literary-scholars, sociologists, art historians, anthropologists, and others.

CATERING

Catering is the business of providing food service at a remote site or a site such as a hotel, hospital, pub, aircraft, cruise ship, park, filming site or studio, entertainment site, or event venue.

The study of food can also be paired with food microbiology, hence it's the study of micro-organisms to small to be seen that inhabit, contaminate, process or spoil food.

Therefore the study of food by event proffesionals helps them to understand the necessary health regulations binding the production of any food as well as laws, processes and external agents that could be harmfull to the food. Therefore, various reasons why food studies is important are:

1. **They are aware of all the health regulations:** it helps to know which foods are more perishable than others and where they can serve what. They will take into account the location and the type of the venue, as well as whether it's an indoor or outdoor event when planning a menu for it. Event management companies with such knowledge will make sure all the food they serve is made with respect to the health regulations and top hygiene, and that they adjust all the meals and their ingredients to the location of your event.
2. **They will tend to everybody's diet:** Event professionals with the knowledge of food and catering will have a whole variety of meals for each of these groups of people on their menus and will make sure that all the guests are well tended to at the event. They will know which ingredients they can use and how to combine them to get the most delicious bites, whether those bites are vegan, vegetarian, gluten- or dairy-free, and they will make sure that all food is appropriately labeled, so that your guests know which meals they can choose when they get hungry.
3. **They can manage bigger events:** A event management company have their own qualified waiters, which is also important when they have a large guest count, since they can't hire just anybody and they can't have five waiters serving hundreds of people. By putting your trust in a respectable event professional, you'll be able to relax, since they'll know exactly how many waiters will be required to cover all the tables and all the guests at the event.
4. **They will have the best ideas for every occasion**

This is where Event companies come in. They have a whole assortment of meals for any occasion and will be able to recommend just the right combinations for the event you're hosting. They'll know which wine goes best with the cheese plate and how to make the best cocktails for the crowd you've invited. Furthermore, not only will they make sure that the food tastes

incredibly good, but they'll invest some time, patience and effort into presenting it to your guests.

QUESTION 2

There are two main temperature categories employed in thermal processing: Pasteurization and Sterilisation. The basic purpose for the thermal processing of foods is to reduce or destroy microbial activity, reduce or destroy enzyme activity and to produce physical or chemical changes to make the food meet a certain quality standard. e.g. gelatenization of starch & denaturation of proteins to produce edible food. There are a number of types of heat processing employed by the food industry which are:

1. **Blanching**: The primary purpose of blanching is to destroy enzyme activity in fruit and vegetables. It is not intended as a sole method of preservation, but as a pretreatment prior to freezing, drying and canning. Other functions of blanching include:

   • Reducing surface microbial contamination • Softening vegetable tissues to facilitate filling into containers • Removing air from intercellular spaces prior to canning.

METHOD OF BLANCHING

Blanching is carried out at up to 100°C using hot water or steam at or near atmospheric pressure. Some use of fluidised bed blanchers, utilising a mixture of air and steam, has been reported.

Advantages include faster, more uniform heating, good mixing of the product, reduction in effluent, shorter processing time and hence reduced loss of soluble and heat sensitive components. There is also some use of microwaves for blanching.

Advantages include rapid heating and less loss of water soluble components.

Disadvantages include high capital costs and potential diffculties in uniformity of heating.

2. **PASTEURIZATION**: Pasteurization is a relatively mild heat treatment in which food is heated to 100C. It is widely used throughout the food industry and is frequently employed as a CCP in various HACCP plans. As a unit operation in food processing it can be used to destroy enzymes and relatively heat sensitive micro-organisms (e.g. non spore forming bacteria, yeast and moulds). In this regard is it used to extend shelf life by several days e.g. milk or months e.g. bottled fruit. Pasteurization is normally used for the destruction of all disease causing organisms (e.g. pasteurization of milk) or the destruction or reduction in the number of spoilage organisms in certain foods e.g. vinegar. The two groups of micro-organisms that survive pasteurisation temperatures used in milk are:
   a. Thermoduric: organisms that can survive exposure to relatively high temperatures but do not necessarily grow at these temperatures e.g. Streptococcus and Lactobacillus.

b. Thermophilic: organisms that not only survive relatively high temperatures but require high temperatures for their growth.

METHOD OF PASTEURIZATION

There are number of basic methods of pasteurization widely used in the industry.

Batch (holding) Method: In this method every particle (e.g. milk) must be heated to at least 63°C and held for at least 30 minutes, however this is not used commercially these days.

High-Temperature-Short-Time (HTST): In this method the heating of every particle of milk to at least 72°C and holding for at least 15 seconds. Carried out as a continuous process. Ultra Heat Treatment (UHT) a sterilisation treatment, can also be performed using higher temperatures and shorter times e.g. 1 s at 135°C.

Typical Equipment employed for this method includes: • Plate heat exchanger (PHE)

• Holding tube – sized to ensure the correct treatment time is achieved

• Holding tanks – for storage of the raw and pasteurised milk

• Balance tank – to assist in maintaining full flow, and to take returned milk if temperature not achieved

• Control and monitoring system – to record temperature and to divert flow back to the balance tank if correct temperature is not achieved.

3. STERILIZATION

The aim of sterilization is the destruction of all bacteria including their spores. Heat treatment of such products must be severe enough to inactivate/kill the most heat resistant bacterial microorganisms, which are the spores of Bacillus and Clostridium. Food products filled in sealed containers are exposed to temperatures above 100°C in pressure cookers. Temperatures above 100°C, usually ranging from 110-121°C depending on the type of product, must be reached inside the product. Products are kept for a defined period of time at temperature levels required for the sterilization depending on type of product and size of container.

If spores are not completely inactivated, vegetative microorganisms will grow from the spores as soon as conditions are favourable again. Favourable conditions will exist when the heat treatment is completed and the products are stored under ambient temperatures. The surviving microorganisms can either spoil preserved food or produce toxins which cause food poisoning. Amongst the two groups of spore producing microorganisms Clostridium is more heat resistant than Bacillus. Temperatures of 110°C will kill most Bacillus spores within a short time. In the case of Clostridium temperatures of up to 121°C are needed to kill the spores within a relatively short time. These sterilization temperatures are needed for short-term inactivation (within a few

seconds) of spores of Bacillus or Clostridium. These spores can also be killed at slightly lower temperatures, but longer heat treatment periods must be applied.

Two typical forms of sterilised product are:

• In package sterilised, in which product is packed into containers and the container of product is then sterilised e.g. canning, some bottled products, retort pouches

• UHT or Aseptically processed products in which the product and the package is sterilised separately then the package is filled with the sterile product and sealed under specific conditions e.g. long life milk, tetrapack or combibloc fruit juices and soups etc.

QUESTION 3

Dehydration and freeze-drying:

Dehydration, such as Lyophilisation to produce freezing dried foods, is a common method of eliminating microbial growth. It is especially effective for vegetables and pasta.

Refrigeration:

Refrigeration temperatures (typically -2°c to 16°c) slows microbial growth but can't eliminate microbes completely. Thus, it is only used to preserve food for shorter periods and generally used for household purposes.

Vacuum Packing:

Food can be packed under vacuum or under atmosphere with decreased oxygen or increased carbon dioxide level. For example, carbon dioxide storage is particularly effective for extending the shelf life of Apples.

Pasteurisation:
Pasteurisation involves heating food to a temperature that kills disease-causing microorganisms and substantially reduces the levels of spoilage organisms with minimal effect on food value and texture. For example, milk is commonly pasteurised at 63°c for 30 minutes followed by quick cooling to 4°c.

Canning:

Canning is most widespread and effective means of long-term food storage. In canning, food is cooked under pressure to attain a temperature high enough to destroy endospores (around 121°c). After heat treatment, the cans are cooled as rapidly as possible, usually with cold water. The main drawback of canning is that the quality of food is sometimes compromised, particularly that of liable biochemicals such as vitamins.

Microbial Product–Based Inhibition:

Bacteriocins are bactericidal proteins active against closely related **bacteria**, which bind to specific sites on the cell, and affect cell membrane integrity and function. The only currently approved product is **Nisin**. It is nontoxic to humans and affects mainly gram-positive bacteria, especially *Enterococcus faecalis.* Nisin can be used particularly in low-acid foods to improve inactivation of *Clostridium botulinum* during the canning process or to inhibit germination of any surviving spores.

Irradiation:

Exposure to ionising radiation, known as food irradiation, effectively sterilises many kinds of food for long-term storage. The main concerns about food irradiation are its potential for unknown effects on food chemistry and the hazards of irradiation during human involvement in the process.

Organic Acids as Preservatives: Organic acids commonly used to preserve food include benzoic acid, sorbic acid, and propionic acid. The acids are generally added as salts such as sodium benzoate, potassium sorbate, sodium propionate. They work best in foods that already have moderate acidities (pH 5-6), such as dried fruits and processed cheeses.

Filtration:

Microorganisms can be removed from the water, wine, beer, juices, soft drinks and other liquids by filtration. Several major brands of beers are filtered rather than pasteurised to preserve the flavour and aroma of the original product.