

Internal Examination 2021
2nd semester

Sub - Bakery Science and
Technology

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1. Answer → Different units of bakery subsections are → (i) Bread, (ii) Biscuit and cookies,

(iii) Cakes and pastries.

Scope, present status and future perspective → Bakery industry in India today has an important place in the industrial map of the country. Bakery products are an item of mass consumption in view of its low price and high nutritive value. With rapid growth and changing eating habits of people, bakery products have gained popularity among masses. The sector typically, constitutes cakes, breads and biscuits.

Bakery industry in India is on a growth curve. The sector which is difficult to define has indicated promising growth prospects and has been making rapid progress. The bakery industry has achieved third position in generating revenue among the processed food sector. The first and second segments are the wheat flour processing and fruits and vegetables processing, stated experts from the food industry.

2. Answer → The sector, which is registered with the government is called an organised sector. In this sector, people get assured work, and the employment terms are fixed and regular. A number of acts apply to the enterprises, schools and hospitals covered under the organised sector. Entry into the organised sector is very difficult as proper registration of the entity is required.

2. Answer →

The sector is regulated and taxed by the government.

3. Answer → A product's life cycle is usually divided into four stages →

(i) Introduction,

(ii) Growth,

(iii) Maturity,

(iv) Decline.

(i) Introduction → Product is launched. Sales grow slowly as people are not aware of the product.

(ii) Growth → Sales start to grow rapidly. Persuasive advertising may be used. Price may be reduced as new competitors enter the market. Profits start coming.

(iii) Maturity → Sales now increase slowly. Intense competition in the market. Competitive or promotional pricing may be used. Advertising expenditure at its highest to sustain growth. Profits may soon start to fall as the product enters the saturation stage.

(iv) Decline → Sales will fall. Product loses its appeal. Stiff competition in the market. Advertising is reduced and then stopped. Production may be stopped in the future.

4. Answer → Baking is a processing of cooking by application of dry heat. The changes to a dough or batter as it bakes are basically the same in all baked products, from breads to cookies and cakes.

4. Answer → P. 1.

The stages in the baking process are as follows →

- (i) Formation and expansion of gases.
- (ii) Trapping of the gases in air cells.
- (iii) Gelatinization of starches.
- (iv) Coagulation of proteins.
- (v) Evaporation of some of the water.
- (vi) Melting of shortenings.
- (vii) Crust formation and browning.

5. Answer → An oven is an enclosed cavity or tunnel where dough or batter is ~~surround~~ surrounded by a hot environment and becomes baked and transformed into bread, cookies or other products. Depending on their mode of operation and heat transfer mechanism, ovens can be classified as either batch or continuous equipment and as using either direct or indirect heat exchange.

Some of the most commonly used ovens are -

1. Direct-fired oven (DFO) → DFO place combusting gas inside the baking chamber to heat the air and the products. The heat transfer in a direct gas-fired oven is primarily carried out by radiation from the flames, top bars and walls of the baking chamber.

5. Answer → ② Indirect-fired oven (IFO) →

IFOs indirectly heat the baking chamber by using exchangers. This oven is suitable for sensitive bakery products (eg. cakes, pastries) since the by products of combustion remain inside the heat exchanger structure and do not come into direct contact with the dough pieces. This eliminates the risk of contamination and of impregnation of off-~~odor~~ odors in the products.

③ Electric oven → Electric oven have construction feature similar to those of DFOs, and operate similarly in terms of heat transfer mechanism to bake the products. This type of oven ~~use~~ uses electrical resistances in place of the traditional gas

④ Rack oven → A rack oven is the batch vertical oven into which racks full of sheet pans can be wheeled for baking. This ~~can~~ unit can hold 8 to 20 sheet pans per baking cycle. Some units ~~make~~ make use of electric or fuel sources and place fans inside the baking chamber to speed up baking times and to develop special features in the products.

⑤ Reel oven → A reel oven is an oven in which trays or shelves are placed on platforms rotating on a central horizontal axis. This type of oven is mostly designed for retail bakeries or baking plants with small-scale production.

5. Answer → (b) Microwave Oven → Microwave oven is an electric oven that heats and cooks food by exposing it to electromagnetic radiation in the microwave frequency range. Microwave oven works on the principle of conversion of electromagnetic energy into thermal energy.

6. Answer → A substance used in dough to make it rise, such as yeast or baking powder.

Example → Yeast - a biological leavening agent
Baking powder and baking soda - a chemical leavening agent.

Function of leavening agent →

- (i) Leavening agents are used in food products to help create structure and texture through gas expansion as a result of a chemical reaction.
- (ii) Leavening agent create the dough or batter to make it light and porous.

7. Answer → (a) Bread making

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|---|------------------------------|
| (i) Weighing and mixture of ingredients | (viii) Baking (225°C/30 min) |
| (ii) Kneading (20 min) | (ix) Cooling (1 hr) |
| (iii) Proofing (30 min) | (x) Slicing |
| (iv) Rising / folding | (xi) Grinding |
| (v) Shaping | (xii) Packing. |
| (vi) Pruning | |
| (vii) Proofing (35 min) | |

7. Answer → 6 Biscuit making

- (i) Creaming (fat and sugar)
- (ii) Addition of flour
- (iii) Addition of flavouring agents
- (iv) Addition of leavening agent
- (v) Kneading to prepare dough
- (vi) Rolling and sheeting
- (vii) Cutting
- (viii) Baking ($450^{\circ}\text{F}/15$ min)
- (ix) Cooling
- (x) Packaging

7 Cake making

- (i) Weighing of ingredients (Butter and sugar)
- (ii) Creamy stage (20 mins)
- (iii) Mixing stage (egg, flour, baking powder, flavour milk and water)
- (iv) Greasing of pan
- (v) Pouring the batter in greased pan
- (vi) Baking ($190^{\circ}/15$ min)
- (vii) Cooling (1 hr)
- (viii) Packaging (in aluminium foil)
- (ix) Storage