

SL No of QP 5864

Unique Paper Code: 2172513602
 Name of the Paper: DSC: FOOD ADDITIVES, CONTAMINATION AND SAFETY
 Name of the Course: B.Sc. (Prog.) Industrial Chemistry
 Semester: VI
 Duration: 2 hrs
 Maximum Marks: 60

Attempt **four** questions in all. Question no. 1 is compulsory.

Ques. 1. a) Find out the correct option from the following:

- i) FSSAI stands for:
 - a. Food Safety and Sanitation Authority of India
 - b. Food Standards and Safety Authority of India
 - c. Food Safety and Standards Authority of India
 - d. Food and Sanitary Surveillance of India
- ii) According to FSSAI rules, class II preservatives include:
 - a. Acetic acid
 - b. Dextrose
 - c. Benzoic acid and its salts
 - d. Honey
- iii) Which of the following is NOT a natural colour:
 - a. Lutein
 - b. Annatto
 - c. Sunset yellow FCF
 - d. Chlorophyll
- iv) Which of the following is a heavy metal commonly found as a food contaminant:
 - a. Calcium
 - b. Zinc
 - c. Lead
 - d. Sodium
- v) Which of the following is a natural antioxidant?
 - a. BHT
 - b. BHA
 - c. Tocopherol
 - d. Propyl gallate

b) What is the role of antioxidants in preventing food spoilage? Explain the mechanism of action of antioxidants.

c) What do you mean by direct food additives? What chemicals are usually added as preservatives and additives to canned juices?

(1 x 5, 5, 5)

Ques. 2. a) Describe the antimicrobial properties, mechanisms, and uses of sulphites and sulphur dioxide in the food industry.

b) Explain the chemistry responsible for the sweet taste of sweeteners. Discuss the advantages and disadvantages of natural versus artificial sweeteners.

c) Differentiate between natural, artificial, and natural identical food colours with examples.

(5, 5, 5)

Ques. 3. a) Differentiate between physical and chemical contaminants in food with suitable examples.

b) What are pesticide residues? Describe their sources and how they can be minimized in food products.

c) Write a short note on environmental pollutants and their pathways into the food chain.

(5, 5, 5)

Ques. 4. a) What are solvent residues? How do they contaminate food during processing?

b) Describe the formation of nitrosamines during food processing and discuss their potential health risks.

c) Discuss the presence and risks of PAHs (Polycyclic Aromatic Hydrocarbons) in smoked or charred foods.

(5, 5, 5)

Ques. 5. a) Define food adulteration. How does it differ from contamination?

b) List and explain any three common food adulterants along with the food items in which they are found.

c) Explain simple household tests to detect adulterants in milk, turmeric and chilli powder.

(5, 5, 5)

Ques. 6. a) What are the basic components of food risk analysis? Why is food risk analysis critical for food regulatory decisions?

b) Briefly explain the importance of food safety regulations in controlling food contamination and adulteration.

c) Differentiate between (any two):

i) Class I and class II food preservatives

ii) Acute and chronic studies

iii) ADI and LD50

(5, 5, 5)