RV College of Engineering®
Mysore Road, RV Vidyaniketan Post, Bengaluru - 560059, Karnataka, India
+91-080-68188100 | www.rvce.edu.in

Go, change the world®

DEPARTMENT OF

BIOTECHNOLOGY

Academic year 2024-2025 (Even Sem)

Date	July 23, 2024	Maximum Marks	10 + 50
Course Code	BT242AT	Duration	120 min
Sem	IV Semester	Closed Book Offline Quiz and Test – 2	

Bio Safety Standards and Ethics (Basket course)

Answer all questions in Part A & Part B, Answer Part A in first two pages in sequence only

Part A

	Questions	M	BT-L	CO
1	In food, the term used for disease causing microorganism is referred as _____	1	2	3
2	Mention the temperature range which is optimum for bacterial growth in food	1	1	4
3	What is the 6^{th} principle of HACCP ?	1	2	3
4	Mention the instrument used to multiply the DNA	1	1	3
5	Mention the allowable concentration of the lead in food as per the FSSAI	1	2	3
6	Mention any two-food certification followed in the world	1	2	3
7	Expand the term GAP	1	2	4
8	People, premises, processes, products and procedures is related to_____	1	3	4
9	Mention any two examples for microbiological contamination	1	2	3
10	Mention the number of Licenses issued by FSSAI	1	2	3

Part B

Sl. No	Questions (Test)	M	BT-L	CO
1.	Mention the physical, chemical, and biological hazardous material which contaminate the food.	10	2	3
2	Expand the term FSSAI, illustrate its functions, importance & type of license issued by them.	10	3	3
3	Discuss various methods to eliminate the chemical, Biological and physical hazardous materials from food.	10	3	3
4	Expand the term HACCP and explain in detail the principles of HACCP.	10	3	4
5a	List out the food spoilage microorganisms and explain the diseases caused by them.	5	3	4
5b	Mention the GMP and GLP in maintaining the food hygiene	5	3	4

BT-L-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Test	Max Marks	---	--	37	24	2	17	41	---	---	--

RV College of Engineering®
Mysore Road, RV Vidyaniketan Post,
Bengaluru - 560059, Karnataka, India
+91-080-68188100 | www.rvce.edu.in

Go, change the world®

DEPARTMENT OF

BIOTECHNOLOGY

Academic year 2024-2025 (Even Sem)

Answer key and scheme

Date	July 23, 2024	Maximum Marks	10 + 50
Course Code	BT242AT	Duration	120 min
Sem	IV Semester	Closed Book Offline Quiz and Test – 2	

Bio Safety Standards and Ethics (Basket course)

Answer all questions in Part A & Part B, Answer Part A in first two pages in sequence only

Part A

	Questions	
1	In food, the term used for disease causing microorganism is referred as _____	Pathogen
2	Mention the temperature range which is optimum for bacterial growth in food	5^0 to 60^0 C
3	What is the 6^{th} principle of HACCP ?	Establish verification procedure
4	Mention the instrument used to multiply the DNA	RTPCR
5	Mention the allowable concentration of the lead in food as per the FSSAI	2.5 ppm
6	Mention any two-food certification followed in the world	Halal, Kosher
7	Expand the term GAP	General Agricultural Practices
8	People, premises, processes, products and procedures is related to_____	GMP
9	Mention any two examples for microbiological contamination	Coliform, pseudomonas or other two
10	Mention the number of Licenses issued by FSSAI	3

Part B

Sl. No	Questions (Test)	M
1.	Mention the physical, chemical, and biological hazardous material which contaminate the food.	10

DEPARTMENT OF
BIOTECHNOLOGY
Academic year 2024-2025 (Even Sem)

	Physical • Hair • Pin • Stone • Glass • Metal piece • Jewellery • Buttons • Safety pins • Nut/bolt/washer • Eqpt. part **Chemical** • **Detergent** • **Pesticides** • **Water pollution** • **Air pollution** • **Lubricant oil** • **Heavy metals** • **Toxins** • **Veterinary drugs** **Biological** • Insects • Rodents • Flies • Excreta of … • Microorganisms • Bacteria • Fungus • Virus eliminate the hazards – reduce the risks	
2	Expand the term FSSAI, illustrate its functions, importance & type of license issued by them. The full form of FSSAI is the **Food Safety and Standards Authority of India.** The organization belongs to the Ministry of Health and Family Welfare of the Indian Government. To ensure that healthy and nutritious foods are accessible to humans, it aims to establish scientific standards for the control, inspection and regulation of the production, storage, selling, distribution and import of foods. Functions • Framing of laws to set down food safety standards. • Authorizing standards to accredit labs for food testing. • Providing the Central Government to technical assistance and scientific guidance. • Conducting surveys to obtain food intake and food pollution information. • Spread data to raise awareness regarding food quality. • Conduct training programmes to educate individuals who have been in or want to begin a food business. **Importance of FSSAI** • Under the Food and Safety Act of 2006, FSSAI was established. • Its headquarter is located in New Delhi, India. • It has eight regional office which is located in Chandigarh, Delhi, Lucknow, Mumbai, Guwahati, Kolkata, Cochin & Chennai. • There are four referral laboratories and seventy-two local food testing lab for the testing of adulterated products. • The organization has the power to perform chemical research on various firms' food items. • It also makes progress against businesses that do not ensure the appropriate nutrition & quality of the food items. For example, FSSAI banned Maggi noodles. • FSSAI is allowed to grant licences that conform to its rules and practices to Food Business Operators. • The licence is now compulsory anyone who is in a food company, like a food processor, food trader and owner of a hotel or restaurant. The three licenses are – FSSAI Basic Registration, FSSAI State license and FSSAI Central License.	10

DEPARTMENT OF
BIOTECHNOLOGY
Academic year 2024-2025 (Even Sem)

3	Discuss various methods to eliminate the chemical, Biological and physical hazardous materials from food. **Methods to Prevent / eliminate hazards** **Physical** • Cleaning • Magnetic separator • Maintenance of eqpt./ building /utilities/instruments • Hair nets, masks, gloves, uniform • No jewellery **Chemical** • Cleaning/washing, sanitizing • Check quality of water • GAP • Labelled and designated storage of chemicals • Ventilation • Air curtains **Biological** • Building • Pest control • Fly killers • Rat baits • Time • Temperature • Acidity • Oxygen • Moisture **Hazards and control measures** **Hazard** | **Control measures** **Biological** | **Raw material: Analysis of raw material ,maturity indices, purchase specifications; pH/hardness/chemical residues/ temp. of processing water Operations: Concentration/strength of disinfectant and chemicals; washing time, temperature of water, intact packing, storage temperature** **Physical** | **Proper use of magnets, visual inspection, preventive maintenance of equipment** **Chemical** | **Use of food grade chemicals, compliance to GMP, separate storage for hazardous substance, purchase specifications, surveillance program for raw materials, Raw material**	10
4	Expand the term HACCP and explain in detail the principles of HACCP. **Principles of HACCP** 1. **Conduct a hazard analysis.** 2. ***Determine the critical control* points (CCPs)** 3. ***Establish critical limit(s).*** 4. ***Establish a system to monitor* control of the CCP.** 5. ***Establish the corrective action* to be taken when monitoring indicates that a particular CCP is not under control.** 6. ***Establish procedures for* verification to confirm that the HACCP system is working effectively.** 7. ***Establish documentation* concerning all procedures and records appropriate to these principles and their application.**	10
5a	List out the food spoilage microorganisms and explain the diseases caused by them. Foodborne illnesses may result from any of the following sources: • **Bacteria:** These may be present in raw and undercooked meat, fish, and poultry; unpasteurized dairy products; contaminated fruits and vegetables; and contaminated drinking water.	5

DEPARTMENT OF
BIOTECHNOLOGY
Academic year 2024-2025 (Even Sem)

- **Viruses:** Viruses are transmitted to the body through food contaminated by viral particles.
- **Parasites:** Contaminated water and soil can transmit harmful parasites to fresh produce, seafood, meat, poultry, and other foods.
- **Prions:** These infectious proteins are associated with "mad cow disease" and can come from eating parts of cattle, such as the brain tissue.
- **Naturally occurring chemicals:** Naturally occurring toxins in mushrooms, staple foods such as corn and cereal, and mold on grains can cause long-term health complications.
- **Environmental pollutants:** Byproducts of plastic production and waste management, as well as heavy metals such as lead and mercury found in water and soil, can contaminate foods and lead to foodborne illnesses.

Organism	Common Name of Illness
Hepatitis A	Hepatitis
Listeria monocytogenes	Listeriosis
Noroviruses	Variously called viral gastroenteritis, winter diarrhea, acute non- bacterial gastroenteritis, food poisoning, and food infection
Salmonella	Salmonellosis

5b

Mention the GMP and GLP in maintaining the food hygiene — 5

- Five Main Components of Good Manufacturing Practices 5P'S
- 10 Principles of GMP

All premises need to be kept clean and tidy
- Clean to remove soil and dirt and sanitise to kill bacteria.
- Cleaning procedures should be available describing how to clean the equipment and the structure of the facility.
- Cleaning chemicals should be stored away from work areas and from food and packaging storage areas.
- Record all cleaning activities in the cleaning report.

Keep surfaces in good condition so they are easy to clean
- Fix broken tiles
- Avoid wooden shelves
- Repair damaged junction seals
- Repair and eliminate rust on any surface

Cleaning will ensure
- Cross contamination is reduced and minimised
- Bacteria does not grow on the surfaces
- Quality of the product or process is of high standard

BT-L-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Test	Max Marks	---	--	37	24	2	17	41	---	---	--