SEMESTER – 5

COURSE CODE: BPVC-107

COURSE TITLE: PROCESSING OF ANIMAL PRODUCE

Attempt both parts of the assignment. **Maximum Marks: 100**

PART – A: ASSIGNMENTS

Attempt all questions. All questions carry equal marks. Write your answers in about 500 words. **Marks: 5x10=50**

1. Describe the major milk processing and cream separation operations, and analyse the effects of processing conditions and equipment performance on skimming efficiency, cream yield and fat content. 10
2. Explain the principles of conventional sterilization and UHT processing, and compare their effects on milk quality, storage stability and aseptic packaging requirements. 10
3. Describe the essential hygienic handling and chilling practices and the physical, chemical and microbiological parameters used to assess meat quality. A meat retailer observes that meat develops undesirable colour, odour and texture during display. Analyze the possible causes and suggest appropriate measures to maintain meat quality and safety. 10
4. Explain egg structure and composition. Evaluate the nutritional significance of proteins, lipids, vitamins and minerals for human dietary requirements. 10
5. A fish vendor observes unpleasant odour, soft texture and discolouration in fish during transport. Describe the major causes of fish spoilage and develop a suitable chilling and ice-storage strategy to maintain fish quality. 10

PART – B: ACTIVITIES

Perform all activities. Submit the evidence (activities notebook, charts etc.) of any FIVE Activities. For details, kindly refer to Block 5: Activities Manual. **Marks: 5x10=50**

Activity 1: Study the milk procurement, quality control, and distribution system in your locality.

Activity 2: Survey of milk and milk products marketed by different dairy agencies in your locality.

Activity 3: Evaluation of consumer practices related to safe meat handling and consumption.

Activity 4: Survey on availability, packaging and storage of eggs in the local market.

Activity 5: Assessment of egg quality at home using float test method.

Activity 6: Assessment of fish quality available in the local market.

NOTE:

For the assignment questions of other generic courses you have opted for in the 5th semester i.e., Minor Discipline Specific Course and Skill Enhancement Course (SEC), kindly download them (search course codes in the format e.g. BCOS-185, select the correct session and download them) from the assignment section of the IGNOU website (https://www.ignou.ac.in/studentService/download/assignments).

1. Describe the major milk processing and cream separation operations, and analyse the effects of processing conditions and equipment performance on skimming efficiency, cream yield and fat content. 10

Ans.

Milk is a highly nutritious but perishable food. Processing makes it safer, improves its keeping quality and allows different products, such as toned milk, cream, butter and skimmed milk, to be prepared. The operations must be controlled because both hygiene and the physical behaviour of milk fat affect the final product.

Major processing operations. Fresh milk is received after clean milking and rapid transport. At reception, the dairy checks temperature, appearance, smell, acidity, fat and solids-not-fat, and screens for adulteration or antibiotic residues as appropriate. Milk is filtered or clarified to remove visible dirt and suspended particles. It is then chilled, normally to about 4°C or below, to slow bacterial multiplication before further handling. Standardisation adjusts the percentages of fat and solids-not-fat required for a particular product by blending cream and skim milk. Homogenisation, when required, breaks fat globules into smaller droplets under pressure, reducing creaming in market milk. Heat treatment such as pasteurisation destroys important pathogens; hygienic packaging and uninterrupted refrigeration protect the treated product afterwards.

Principle of cream separation. Milk is an oil-in-water emulsion. Fat globules are less dense than the watery portion, so they tend to rise naturally. Gravity separation is slow and gives less precise control. Modern dairies therefore use a centrifugal disc-bowl separator. Warm, well-mixed milk enters the rapidly rotating bowl, where the denser skim-milk phase moves outward while the lighter fat-rich phase moves inward. Separate outlets collect skim milk and cream. Disc stacks shorten the settling distance, giving rapid and continuous separation. Cream separation is usually performed before homogenisation, because homogenised tiny globules are harder to separate efficiently.

Effect of temperature and feed condition. Milk is commonly warmed to approximately 35–45°C for efficient centrifugal separation, subject to the equipment instructions. At low temperature, milk becomes more viscous and some fat is partly crystallised; both effects resist globule movement and may increase fat loss into skim milk. Excessively high temperature or prolonged holding is undesirable because it wastes energy and may affect flavour and product quality. Uniform temperature, steady inlet flow and absence of foam