

UNIT-2 (TREMATODES AND CESTODES OF VETERINARY IMPORTANCE)

Study of morphological characters of adults and developmental stages of the following trematodes and cestodes: *Fasciola*, *Fasciolopsis*, *Dicrocoelium*, *Opisthorchis*, *Schistosoma*, *Paragonimus*, *Prosthogonimus*, Echinostomes, Paramphistomes (*Paramphistomum*, *Cotylophoron*, *Gigantocotyle*, *Gastrothylax*, *Fischoederius*, *Gastrodiscus*, *Gastrodiscoides* and *Pseudodiscus*). *Anoplocephala*, *Paranoplocephala*, *Moniezia*, *Avitellina*, *Stilesia*, *Davainea*, *Cotugnia*, *Raillietina*, *Amoebotaenia*, *Choanotaenia*, *Hymenolepis*, *Dipylidium*, *Taenia*, *Echinococcus*, *Diphyllobothrium* and *Spirometra*. Demonstration of gross and microscopic lesions of parasites.

UNIT-3 (NEMATODES OF VETERINARY IMPORTANCE)

Study of morphological characters of adults and developmental stages of the following nematodes : *Ascaris*, *Parascaris*, *Toxocara*, *Toxascaris*, *Ascaridia*, *Heterakis*, *Oxyuris*, *Strongyloides*, *Strongylus*, *Chabertia*, *Syngamus* and *Oesophagostomum*. *Stephanurus*, *Diectophyma*, *Ancylostoma*, *Bunostomum*, *Ostertagia*, *Trichostrongylus*, *Cooperia*, *Nematodirus*, *Haemonchus* and *Mecistocirrus*. *Habronema*, *Draschia*, *Thelazia*, *Spirocerca*, *Gongylonema*, *Physaloptera*, *Gnathostoma*, *Dirofilaria*, *Parafilaria*, *Onchocerca*, *Setaria*, *Stephanofilaria*, *Dictyocaulus*, *Muellerius*, *Protostrongylus*, *Metastrongylus*, *Dracunculus*, *Trichinella*, *Trichuris*, *Capillaria* and *Macracanthorhynchus*. Demonstration of gross and microscopic lesions of parasites.

UNIT-4 (ARTHROPODS OF VETERINARY IMPORTANCE)

Study of morphological characters of adults and life cycle stages of the following arthropods : *Culicoides*, *Simulium*, *Phlebotomus*, *Cimex*, *Culex*, *Anopheles*, *Aedes*, *Tabanus*, *Haematopota* and *Chrysops*. *Musca*, *Stomoxys*, *Haematobia*, *Gasterophilus*, *Hypoderma*, *Oestrus ovis*, bottle flies, *Sarchophaga*, *Hippobosca*, *Melophagus* and *Pseudolynchia*. *Trichodectes*, *Menopon*, *Menacanthus*, *Lipeurus*, *Haematopinus*, *Linognathus* and *Damalinia*. *Xenopsylla*, *Ctenocephalides* and *Echidnophaga*. *Argas*, *Ornithodoros*, *Otobius*, *Ixodes*, *Hyalomma*, *Rhipicephalus* (*Boophilus*), *Haemaphysalis*, *Dermacentor* and *Amblyomma*. *Dermanyssus*, *Ornithonyssus*, *Demodex*, *Notoedres*, *Sarcoptes*, *Psoroptes*, *Chorioptes*, *Cnemidocoptes*, *Otodectes* and *Pentastomida*. Demonstration of gross and microscopic lesions of parasites.

UNIT-5 (PROTOZOA OF VETERINARY IMPORTANCE)

Study of morphological characters of different stages of following protozoan parasites: *Leishmania*, *Trypanosoma*, *Trichomonas*, *Histomonas*, *Entamoeba*, *Balantidium*, *Giardia*, *Eimeria*, *Isospora*, *Sarcocystis*, *Toxoplasma* and *Cryptosporidium*. *Plasmodium*, *Haemoproteus* and *Leucocytozoon*. *Babesia*, *Theileria* and *Hepatozoon*, Rickettsial organism *Anaplasma* and *Ehrlichia*. Demonstration of formol ether and Ziehl-Neelson's staining techniques and other faecal examination techniques. Diagnosis of intestinal protozoan infections by iodine and eosin stain methods. Demonstration of gross and microscopic lesions due to protozoan parasites. Demonstration of *Haemoproteus columbae* in the blood. Demonstration of sporulation for diagnosis of coccidian parasites.

ANNUAL EXAMINATION

PAPERS	UNITS	MAXIMUM MARKS	WEIGHTAGE
THEORY			
Paper-I	1, 2 and 3	100	20
Paper-II	4 and 5	100	20
PRACTICAL			
Paper-I	1, 2 and 3	60	20
Paper - II	4 and 5	60	20

(xi) DEPARTMENT OF LIVESTOCK PRODUCTS TECHNOLOGY**LIVESTOCK PRODUCTS TECHNOLOGY****Credit Hours: 2+1=3****THEORY****UNIT-1 (MILK AND MILK PRODUCTS TECHNOLOGY)**

Retrospect and prospects of milk industry in India. Layout of milk processing plant and its management. Composition and nutritive value of milk and factors affecting composition of milk. Physico-chemical properties of milk. Microbiological deterioration of milk and milk products. Collection, chilling, standardization, pasteurization, UHT treatment, homogenization, bacto-fugation. Dried, dehydrated and fermented milk. Introduction to functional milk

products. Preparation of cream, butter, paneer or channa, ghee, khoa, lassi, dahi, ice-cream, mozzarella cheese and dairy byproducts. Common defects of milk products and their remedial measures. Packaging, transportation, storage and distribution of milk and milk products. Good manufacturing practices and implementation of HACCP in milk plant. Organic milk products. Food safety standards for milk and milk products. Cleaning and sanitation in milk plant. Dairy effluent management

UNIT-2 (WOOL SCIENCE)

Introduction to wool, fur, pelt and specialty fibers with respect to processing industry. Glossary of terms of wool processing. Basic structure and development of wool follicle. Post shearing operations of wool, classification and grading of wool, physical and chemical properties of wool. Impurity of wool, factors influencing the quality of wool. Brief outline of processing of wool.

UNIT-3 (ABATTOIR PRACTICES AND ANIMAL BYPRODUCTS TECHNOLOGY)

Layout and management of rural, urban and modern abattoirs. HACCP concepts in abattoir management. FSSAI standards on organization and layout of abattoirs. Animal welfare and pre-slaughter care, handling and transport of meat animals including poultry. Procedures of Ante-mortem and post mortem examination of meat animals. Slaughtering and dressing of meat animals and birds. Emergency and casualty slaughter. Evaluation, grading and fabrication of dressed carcasses including poultry. Abattoir byproducts; rendering, meat, bone, glue, gelatin, fat and byproducts of pharmaceutical value. Skin and hides; methods of flaying, defects, preservation and tanning. Treatment of condemned meat and carcasses. Management of effluent emanating from abattoir.

UNIT-4 (MEAT SCIENCE)

Prospect of meat industry in India. Structure and composition of muscle (including poultry muscle). Conversion of muscle to meat. Nutritive value of meat. Fraudulent substitution of meat. Preservation of meat and poultry; drying, salting, curing, smoking, chilling, freezing, canning, irradiation and chemicals. Ageing of meat. Modern processing technologies of meat and meat products. Packaging of meat and meat products. Formulation and development of meat; kabab, sausages, meat balls or patties, tandoori chicken, soup, pickles. Fermentation of meat products. Physico-chemical and microbiological quality of meat and their products. Basics of sensory evaluation of meat products. Nutritive value, preservation, packaging of egg and egg products. Laws governing national or international trade in meat and meat products. Organic and genetically modified meat and poultry products.

PRACTICAL

UNIT-1 (MILK AND MILK PRODUCTS TECHNOLOGY)

Sampling of milk. Estimation of fat, solid not fat (SNF) and total solids. Platform tests. Cream separation. Detection of adulteration of milk. Determination of efficiency of pasteurization. Preparation of milk products like ghee, paneer or channa, khoa, ice-cream or kulfi, milk beverages. Visit to modern milk processing and milk products manufacturing plants.

UNIT-2 (WOOL SCIENCE)

Wool sampling techniques. Tests for identification of wool; determination of fleece density, fiber diameter, staple length, crimp and medulation percentage. Scouring or clean fleece yield.

UNIT-3 (ABATTOIR PRACTICES AND ANIMAL BYPRODUCTS TECHNOLOGY)

Methods of ritual and humane slaughter, flaying and dressing of food animals including poultry. Carcass evaluation. Determination of meat yield, dressing percentage, meat bone ratio and cut up parts. Preparation of different abattoir byproducts. Visit to slaughterhouses or meat plants.

UNIT-4 (MEAT SCIENCE)

Packaging of meat, poultry and shell eggs and their products. Estimation of deteriorative changes in meat and meat products. Preparation of comminuted and non comminuted meat and poultry products. Evaluation of external and internal egg quality and preservation technique of eggs

ANNUAL EXAMINATION

PAPERS	UNITS	MAXIMUM MARKS	WEIGHTAGE
THEORY			
Paper-I	1 and 2	100	20
Paper-II	3 and 4	100	20