

**FURTHER DETAILS REGARDING MAIN TOPICS OF
PROGRAMME NO. 04/2016 (Item No. 8)**

OTHER RESEARCH ASSISTANT (ZOOLOGY)

FISHERIES

(CATEGORY No. 635/2014)

Part I

Module 1

Salient features of Protozoa, Porifera, Coelenterata, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, Hemichordata, Urochordata, Cephalochordata, Cytostomata, Elasmobranchi, Teleosti, Amphibia, Reptalia, Aves and Mammals. Gluconeogenesis, Glycolysis, Glycogenolysis, Lactose intolerance, Glucose Tolerance test, Diabetes mellitus, Muscle fatigue, Oxygen debt, Bohr effect. Deamination Transamination, Amino acid decarboxylation, Essential Amino acids, Biogenic amines, Ornithine cycle, Catabolism of Purines, Oxidation of fatty acids Beta oxidation, Alpha oxidation, Omega oxidation, Ketone bodies, Atherosclerosis, LDL cholesterol, HDL-cholesterol, Lipid peroxidation, Free radical scavenging systems, Alzheimer's Disease, Prions, Apoptosis, Chaperons, Phenylketonuria, Alkaptonuria.

Module 2

Striated Muscle, Muscle contraction, flight muscles, catch muscle, fibrillar muscle, Cardiac muscle, Blood pressure, Angiotensin, Hemodialysis, Regulation of Acid - Base balance, Nerve impulse, Action Potential, Neurotransmitters, Giant neurones, Parkinson's Disease, Tay-Sachs Disease, Insecticidal poisoning, Vertebrate hormones, Thyroxine, Goitre, Somatotrophin, Acromegaly, Insulin, Glucagon, Glucocorticoids, Mineralocorticoids, Adrenaline, Serotonin, Testosterone, Oestrogen, Progesterone, Melatonin, Oxytocin, Vasopressin, Invertebrate Hormones, Sinus gland, Juvenile Hormone, Ecdysone. Mode of action of steroid Hormones - Cyclic AMP, Signal transduction, Human Chorionic Gonadotropin.

Module 3

Gene, Gene mapping, Expressivity, Penetrance, Co-dominance, Epistasis, Gene pool, Gene frequency, Selection pressure, Karyo type, Idiogram, Lyon Hypothesis, Human Blood groups,

Bombay Blood Group, Rh - Group. Sickle cell Hemoglobin, Thalassenia, Downn Syndrome, Klenfeler syndrome, Turner syndrome, Cri-du-chat syndrome Philadelphia chromosome, Plasmids, Lambda Phages, Retrovirus, HIV, DNA Finger Printing. DNA bar coding, Phylogenetic trees. Mitochondrial DNA. Gene evolution, C-value paradox, Genetic code. Nucleotide sequence. Transcription, m-RNA, t-RNA, r-RNA, Translation, Sigmafactor, Cell cycle, Regulation of cell cycle, Nucleosome, Histones, Polyembryony, Homeotic genes, Stem cells, Totipotency, Pleuri Potency

Module 4

Innate immunity, Acquired immunity, Humoral immunity, Cell mediated immunity, Primary and Secondary Lymphoid organs, T cells, B - cells, Antigens, Immunogens, Epitopes, Haptens, Immunoglobulins and their diversity, Immunoglobulin gene organization, Somatic hypermutation, Monoclonal antibodies, Immune response, MHC complex, Complement system, Tissue Transplantation, Organ transplantation, Graft rejection, Graft retention, Immunosuppressive drugs. Autoimmune Diseases, Systemic lupus erythromatosus, Rheumatoid Arthritis, Type - 1 Diabetes, Myasthenia gravis.

Module 5

Major inland waters of the world and India. Trends in global and Indian inland capture fish production. Capture fisheries of major rivers, lakes, reservoirs and estuaries in India. Fish and shell fisheries in the lakes and estuaries of Kerala. Importance of wetlands in fisheries resource management. Introduction to marine fisheries of the world. Major fishing zones of world and India. Trends in marine capture fisheries of India. Marine capture fisheries of India. Pelagic fisheries of India: sardines, mackerels, anchovies, white baits, tuna, seer fish, carangids, ribbonfish, shads and other clupeids, barracudas, Bombay duck, pomfrets, mullets. Features and trends in the production of pelagic fisheries. Demersal fisheries of India: sharks, major perches, threadfin, breams, sciaenids, silver belly. Features and trends in production of demersal fisheries. Impact of trawling and bycatch on fishery resources. Crustacean fishery of India-Penaeid and non-penaeid shrimp fisheries, lobster fishery, crab fishery. Molluscan fisheries of India. Marine product export from India and role of MPEDA. Major crafts and gears used in inland and marine fisheries of Kerala. Importance of fisheries in the world and Indian economics.

Module 6

Objectives and scope of aquaculture. Status of global and Indian aquaculture scenario. Selection of site for aquaculture. Aquaculture systems: Extensive, semi-intensive and intensive culture of fish. Management of aquafarms: eradication of pests and predators,

weeds and their control. Liming. Manuring. Water quality management and monitoring. Effluent treatment system. Culture practices. Selection of species for aquaculture. Types of aquaculture: monospecies culture, polyculture, monosex culture, composite fish culture, integrated fish farming; cage and pen culture, cage aquaculture in Indian reservoirs; recirculatory systems. Traditional aquaculture practices in India –prawn filtration, rice-fish culture. Culture of carps in India: Composite fish culture, recent advances in carp culture. Culture of freshwater prawns, monosex culture, advances in prawn culture. Integrated farming systems: Design, farming practices, constraints and economics of IFS of fish with paddy, cattle, pig, poultry, duck, rabbit, etc. Seed production and culture of Carps: Wild collection and transportation. Bundh Breeding. Brood stock maintenance. Chinese Hatchery. Hypophysation. Ovulating agents like Ovaprim, Ovatide, etc. Seed production of exotic carps. Design of carp hatchery. Seed production of freshwater prawns: water quality requirements, feeding, health management, design of prawn hatchery. Freshwater prawn culture and farm management. Principles of coastal aquaculture and mariculture. Cage culture technology. Candidates for coastal aquaculture in India. Site selection, design and project preparation for the establishment of a shrimp hatchery. Culture of shrimps: stocking, water quality, feeding, health management, harvesting. Seed production and culture of brackishwater fishes pearl spot and sea bream. Shrimp seed production: brood stock maintenance, larval stages, feeding, water quality requirements, health management, packing and transportation, design of shrimp hatchery. Aquaranching.

Module 7

Importance of fish in human diet. Nutritional quality of Fish. Proximate composition of fish. Spoilage of fish, Rigor mortis. Bacteriology of fish and shellfish. Spoilage Bacteria. Bacteria of human health significance in seafood. Major methods of fish processing- Drying, salting, smoking, freezing and canning. Basic principles, methods and application of chilling, Block freezing, Individual quick freezing (IQF), storage of chilled and frozen fish. Fundamental aspects of quality control in sea food. Inspection of sea food quality. Different aspects of sea food quality. National agencies for sea food inspection. HACCP. Hygiene in processing plants. Fishery products and by-products. Common fish and shellfish diseases in Indian aquaculture sector. Management of fish and shellfish diseases: Prophylaxis and therapy. Quarantine. Biosecurity. Regulations in use of exotic species in India.

Module 8

Inland and marine fisheries research institutions in India. Conservation of pelagic and demersal marine fishery resources. Management of inland fishery resources. FAO Code of conduct for responsible fisheries. Fisheries legislations of India. Fisheries policy of India and

Kerala. Marine Fisheries Regulation Act of India. Deep sea fishing policy of India. Kerala Marine Fisheries Regulation Act (KMFRA), The Kerala Inland Fisheries and Aquaculture Act. Closed seasons and regulation of fishing during monsoon season. Government projects for enhancing Inland fish production and sustainable marine fisheries production. Matsyakeralam project. Inland and marine fish marketing in India. Role of cooperatives in marketing. FFDAs, Matsyafed, ADAK. Extension in fisheries and aquaculture, introduction to extension education and methods, participatory fisheries extension approaches, aquaculture extension systems, market-led extension approaches, importance of information and communication technology in fisheries, aqua-tourism, role of women's self-help groups. Importance of Information and Communication Technology (ICT) in fisheries extension system.

Part II : General Knowledge, Current Affairs & Renaissance in Kerala

Salient Features of Indian Constitution

Salient features of the Constitution - Preamble- Its significance and its place in the interpretation of the Constitution.

Fundamental Rights - Directive Principles of State Policy - Relation between Fundamental Rights and Directive Principles - Fundamental Duties.

Executive - Legislature - Judiciary - Both at Union and State Level. - Other Constitutional Authorities.

Centre-State Relations - Legislative - Administrative and Financial.

Services under the Union and the States.

Emergency Provisions.

Amendment Provisions of the Constitution.

Social Welfare Legislations and Programmes

Social Service Legislations like Right to Information Act, Prevention of atrocities against

Women & Children, Food Security Act, Environmental Acts etc. and Social Welfare

Programmes like Employment Guarantee Programme, Organ and Blood Donation etc.

RENAISSANCE IN KERALA

Towards A New Society

Introduction to English education - various missionary organisations and their functioning- founding of educational institutions, factories. printing press etc.

Efforts To Reform The Society

(A) Socio-Religious reform Movements

SNDP Yogam, Nair Service Society, Yogakshema Sabha, Sadhu Jana Paripalana Sangham, Vaala Samudaya Parishkarani Sabha, Samathwa Samajam, Islam Dharma Paripalana Sangham, Prathyaksha Raksha Daiva Sabha, Sahodara Prasthanam etc.

(B) Struggles and Social Revolts

Upper cloth revolts.Channar agitation, Vaikom Sathyagraha, Guruvayoor Sathyagraha, Paliyam Sathyagraha. Kuttamkulam Sathyagraha, Temple Entry Proclamation, Temple Entry Act .Malyalee Memorial, Ezhava Memorial etc.

Malabar riots, Civil Disobedience Movement, Abstention movement etc.

Role Of Press In Renaissance

Malayalee, Swadeshabhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, AI-Ameen, Prabhatam, Yukthivadi, etc

Awakening Through Literature

Novel, Drama, Poetry, Purogamana Sahithya Prasthanam, Nataka Prashtanam, Library movement etc

Women And Social Change

Parvathi Nenmenimangalam, Arya Pallam, A V Kuttimalu Amma, Lalitha Prabhu, Akkamma Cheriyan, Anna Chandi, Lalithambika Antharjanam and others

Leaders Of Renaissance

Thycaud Ayya Vaikundar, Sree Narayana Guru, Ayyan Kali.Chattampi Swamikal, Brahmananda Sivayogi, Vagbhadananda, Poikayil Yohannan(Kumara Guru) Dr Palpu, Palakkunnath Abraham Malpan, Mampuram Thangal, Sahodaran Ayyappan, Pandit K P Karuppan, Pampadi John Joseph, Mannathu Padmanabhan, V T Bhattathirippad, Vakkom Abdul Khadar Maulavi, Makthi Thangal, Blessed Elias Kuriakose Chaavra, Barrister G P Pillai, TK Madhavan, Moorkoth Kumaran, C. Krishnan, K P Kesava Menon, Dr.Ayyathan Gopalan, C V Kunjuraman, Kuroor Neelakantan Namboothiripad, Velukkutty Arayan, K P Vellon, P K Chathan Master, K Kelappan, P. Krishna Pillai, A K Gopalan, T R Krishnaswami Iyer, C Kesavan. Swami Ananda Theerthan , M C Joseph, Kuttippuzha Krishnapillai and others

Literary Figures

Kodungallur Kunhikkuttan Thampuran, KeralaVarma Valiyakoyi Thampuran, Kandathil Varghese Mappila. Kumaran Asan, Vallathol Narayana Menon, Ulloor S Parameswara Iyer, G Sankara Kurup, Changampuzha Krishna Pillai, Chandu Menon, Vaikom Muhammad Basheer. Kesav Dev, Thakazhi Sivasankara Pillai, Ponkunnam Varky, S K Pottakkad and others

GENERAL KNOWLEDGE AND CURRENT AFFAIRS

General Knowledge and Current Affairs

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.