

**FURTHER DETAILS REGARDING MAIN TOPICS OF  
PROGRAMME NO. 02/2018/ONLINE (Item No.1)**

**LECTURER IN BIOCHEMISTRY**

**COLLEGIATE EDUCATION**

**(CATEGORY No.245/17)**

**PART I**

**GENERAL KNOWLEDGE AND CURRENT AFFAIRS**

General Knowledge and Current Affairs

**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, Swadeshbhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, AI-Ameen, Prabhatham, 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\

## **PART -II**

### **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.

## **PART – III**

### **RESEARCH METHODOLOGY/TEACHING APTITUDE**

#### **I. TEACHING APTITUDE**

- Teaching: Nature, objectives, characteristics and basic requirements;
- Learner's characteristics;
- Factors affecting teaching;
- Methods of teaching;
- Teaching aids;
- Evaluation systems.

#### **II. RESEARCH APTITUDE**

- Research: Meaning, Characteristics and types;
- Steps of research;
- Methods of research;
- Research Ethics;
- Paper, article, workshop, seminar, conference and symposium;
- Thesis writing: its characteristics and format.

## **PART - IV**

### **Module I**

**General Biochemistry**- Biomolecules, sugars, aminoacids, fatty acids, steroids, vitamins, hormones, free radicals (chemistry and function)- macromolecules-carbohydrates, proteins, lipids, nucleic acids. (Structure and function)-physical aspects-acids and bases, pH, buffers, colloids, viscosity, surface tension, stabilizing interaction and hydrogenbonds.

### **Module II**

**Cell and molecular Biology**- Ultrastructure of cell, subcellular organelles, cell cycle and cell signalling – membrane transport, replication, transcription, translation, regulation of gene expression, gene mutation, repair, molecular biology techniques rDNA technology, PCR, reverse transcriptase, DNA finger printing-western blotting, apoptosis and cancer.

### **Module III**

**Biochemical techniques** - Principle, Instrumentation and application of chromatography-TLC, paper, affinity, Gel chromatography, HPLC, GC, and GLC, electrophoresis, Gel, PAGE, SDS PAGE, Isoelectricfocussing, Immuno electrophoresis, radio immunoassay, spectroscopic techniques, UV, IR, Fluorescence NMR and mass spectrum, circular dichorism, x-ray diffraction, polarimetry, radiation techniques.

#### **Module IV**

##### **Enzymology of enzyme technology**

Introduction to enzymes, nomenclature kinetics, regulation, inhibition, mechanism of enzyme action, coenzymes, isoenzymes, apozyme, abzyme, isolation and characterization criteria of purity, microbial enzymes, industrial applications of enzymes in food, leather, detergent and beverages, diagnostic and therapeutic enzymes, enzyme engineering.

#### **Module V**

##### **Metabolism and clinical aspects**

Different approaches to study metabolism, Bioenergetics, metabolism of carbohydrates, lipids, proteins, nucleic acids, regulation, photosynthesis and regulation, nitrogen fixation, secondary plant metabolites-mitochondrial electron transport-and oxidative phosphorylation, regulation-genetic disorders of metabolism.

#### **Module VI**

##### **Immunology, Microbiology, Bioinformatics and Biostatistics**

Immune system and function, antigen-antibody structure and genetic basis of antibody structure, immunological techniques, vaccines, classification of microbes-bacteria, virus, fungi, properties, cultivation of microbes, identification of microbes, sterilization techniques, microbial conjugation, basics of bioinformatics, tools of bioinformatics, biological databases, data mining, protein data bank, molecular modelling and docking.

Average, statistical dispersion, coefficient of variation, standard deviation, standard error, t-test, basics of correlation, probability, regression, statistical packages SPSS, Excel and Anova.

#### **Module VII**

##### **Recent Developments in Biochemistry**

Microanalytical techniques, LC-MS, GC-MS, MALDI-TOF, MS-MS, ICP-AES, Metabolomics, Modern Molecular biology techniques, Nano biotechnology, drug designing, drug delivery, epigenetics, executional pathway.

***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.***