

કુલ પ્રશ્નો:૩૦૦	પ્રાથમિક કસોટીનો અભ્યાસક્રમ	કુલ ગુણ -૩૦૦
Part-I		
માધ્યમ: ગુજરાતી	સામાન્ય અભ્યાસ	ગુણ -૧૦૦
૧	ભારતની ભૂગોળ- ભૌગોલિક, આર્થિક, સામાજિક, કુદરતી સંસાધન અને વસ્તી અંગેની બાબતો- ગુજરાતના ખાસ સંદર્ભ સાથે	
૨	ભારતનો સાંસ્કૃતિક વારસો- સાહિત્ય, કલા, ધર્મ અને સ્થાપત્યો- ગુજરાતના ખાસ સંદર્ભ સાથે	
૩	ભારતનો ઇતિહાસ - ગુજરાતના ખાસ સંદર્ભ સાથે	
૪	ભારતની અર્થવ્યવસ્થા અને આયોજન	
૫	<p>ભારતીય રાજનીતિ અને ભારતનું બંધારણ:</p> <p>(૧) આમુખ</p> <p>(૨) મૂળભૂત અધિકારો અને ફરજો</p> <p>(૩) રાજ્યનીતિના માર્ગદર્શક સિદ્ધાંતો</p> <p>(૪) સંસદની રચના</p> <p>(૫) રાષ્ટ્રપતિની સત્તા</p> <p>(૬) રાજ્યપાલની સત્તા</p> <p>(૭) ન્યાયતંત્ર</p> <p>(૮) અનુસૂચિત જાતિ, અનુસૂચિત જનજાતિ અને સમાજના પછાત વર્ગો માટેની જોગવાઈઓ</p> <p>(૯) એટર્ની જનરલ</p> <p>(૧૦) નીતિ આયોગ</p> <p>(૧૧) પંચાયતી રાજ</p> <p>(૧૨) નાણા પંચ</p> <p>(૧૩) બંધારણીય તથા વૈધનિક સંસ્થાઓ- ભારતનું ચૂંટણી પંચ, સંઘ લોક સેવા આયોગ, રાજ્ય લોક સેવા આયોગ, કોમ્પ્ટ્રોલર એન્ડ ઓડિટર જનરલ; કેન્દ્રીય સતર્કતા આયોગ, લોકપાલ તથા લોકાયુક્ત અને કેન્દ્રીય માહિતી આયોગ</p>	
૬	સામાન્ય બૌદ્ધિક ક્ષમતા કસોટી	
૭	સામાન્ય વિજ્ઞાન, પર્યાવરણ અને ઈન્ફર્મેશન એન્ડ કોમ્યુનિકેશન ટેકનોલોજી	
૮	ખેલ જગત સહિત રોજબરોજના પ્રાદેશિક, રાષ્ટ્રીય અને આંતરરાષ્ટ્રીય મહત્વના બનાવો	

<b>Post: Tutor Biochemistry, Class –II (Advt.No.117/18-19)</b>	
Total Questions:300    Syllabus of Preliminary Test    Total Marks-300	
<b>Part-I</b>	
Medium: Gujarati	General Study
Marks- 100	
1	Geography of India- Physical, Economic, Social, Natural Resources and population related topics- with special reference to Gujarat
2	Cultural heritage of India- Literature, Art, Religion and Architecture- with special reference to Gujarat
3	History of India with special reference to Gujarat
4	Indian Economy and Planning
5	<u>Indian Polity and the Constitution of India:</u> <ol style="list-style-type: none"> <li>(1) Preamble</li> <li>(2) Fundamental Rights and Fundamental Duties</li> <li>(3) Directive Principles of State Policy</li> <li>(4) Composition of Parliament</li> <li>(5) Powers of the President of India</li> <li>(6) Powers of Governor</li> <li>(7) Judiciary</li> <li>(8) Provisions for Scheduled Castes, Scheduled Tribes and backward classes of the society</li> <li>(9) Attorney General</li> <li>(10) NITI Aayog</li> <li>(11) Panchayati Raj Institutions</li> <li>(12) Finance Commission</li> <li>(13) Constitutional and Statutory Bodies: Election Commission of India, Union Public Service Commission, State Public Service Commission, Comptroller and Auditor General; Central Vigilance Commission, Lokpal and Lokayukta, Central Information Commission</li> </ol>
6	General Mental Ability
7	General Science, Environment and Information & Communication Technology
8	Daily events of Regional, National and International Importance including Sports

**Part-II Syllabus of Concerned Subject**

**(Biochemistry)**

**Medium: English**

**Questions: 200**

**Marks: 200**

**1. ANATOMY**

Gross Anatomy: Introduction to Anatomy, nomenclature, anatomical position, planes, tissues and movements. Osteology. Muscular System. Arthrology. Cardiovascular System. Respiratory System. Digestive System. Genito-Urinary System. Endocrine System and Individual Endocrine Glands. Nervous System and its components. Special sensory Organs. Lymphatic System. Surface Anatomy. Cross Sectional Anatomy. Microanatomy: Microscope and basic principles of microscopy, commonly used stains, basophilic and acidophilic staining reactions and their significance. Commonly encountered artifacts. Brief principle of electron microscopy and interpretation of ultrastructural features.

**2. PHYSIOLOGY**

General Physiology. Nerve-Muscle. Blood. Respiratory System. Cardiovascular System Gastrointestinal System. Nutrition. Environmental Physiology. Reproduction. Kidney. Neurophysiology.

**3. GENERAL HISTOLOGY**

Cell. Four primary tissues. Histology of various organs/organ systems: Exocrine glands, Circulatory system, Respiratory system, Skin and nerve-end-organs, Immune system and lymphoid organs, Digestive system (GIT), Endocrine glands, Urinary system, Female reproductive system, Male reproductive system.

## 4. BIOCHEMISTRY

### **Biological cell**

Architecture, compartmentation, cell membrane structure and functions; structure- function relationships. Membrane transport.

### **Biomolecules**

Function and classification of carbohydrates, lipids, protein and amino acids. Stereoisomerism and chemistry of monosaccharides, amino acids, and fatty acids. Structural organization and structure-function relationships of proteins. Hemoglobin and myoglobin, molecular mechanism of O<sub>2</sub> transport and storage. Molecular basis of sickle cell anaemia and thalassemy. Molecular mechanism of muscle contraction. Plasma proteins, their functions and clinical significance.

### **Enzymes**

Nomenclature, classification. Kinetics, mechanism of enzymatic catalysis. Factors influencing enzymatic catalyses, enzyme activators and inhibitors. Regulation of enzyme activity. Clinical enzymology, isoenzymes.

### **Metabolic pathways, their regulation and metabolic interrelationships**

**Metabolism:** general concepts and characteristics of metabolic pathways.

**Carbohydrate metabolism:** Pathways of glucose metabolism: glycolysis. MP shunt. Gluconeogenesis. Glycogenolysis, glycogenesis. Galactose and fructose metabolism. Glycogen storage disease. Inborn errors of glucose metabolism. Regulation of glucose metabolism.

### **Amino acid metabolism**

General reactions, transamination, its metabolic and diagnostic significance. Disposal of amino acid nitrogen and detoxication of urea. Metabolic fate of amino acid carbon skeleton. Sulphur containing amino acids. In born errors of branched chain and aromatic amino acids. Important amino acid derivatives.

## **Lipid metabolism**

Biosynthesis and degradation of fatty acids, phospholipids and triacylglycerol. Biosynthesis of cholesterol, chemistry and metabolism of lipoproteins. Hyperlipoproteinemias. Lipid storage disease. Ketone bodies: their synthesis, utilization and conditions leading to ketoacidosis, prostaglandin. **TCA cycle** and biological oxidation, prostanoids.

## **Regulation of the metabolic pathways**

Carbohydrate, lipid and amino acid metabolism. Interlinks between these pathways. Organ interrelationships in metabolism. Blood glucose regulation, and its impairment in diabetes mellitus. Metabolic adaptation in the fed state, fasting and prolonged starvation. Metabolic derangements and adaptations in diabetes mellitus.

## **Food assimilation and nutrition**

Digestive enzymes, their action on dietary carbohydrates, fats and proteins. Absorption of glucose, amino acids and lipids. Gastric, pancreatic and intestinal function tests, liver function tests. Functions of dietary ingredients, the macro and micronutrients. Fat soluble and water soluble vitamins. Malnutrition. Iron metabolism and heme synthesis.

## **Hormones**

Molecular basis of hormonal action, signal transduction mechanisms. Chemistry, functions and mechanism of action of hormones of the pituitary, thyroid, parathyroid, adrenals, pancreas, and gonads. Biosynthesis of steroid hormones their functions and mechanism of action. Pineal body. Endorphins and enkephalins. Calcium homeostasis. Hormonal interplay in the regulation of metabolism.

## **Molecular Biology**

Nucleic acids: DNA and RNA structure. DNA Replication. DNA Transcription. Post-transcriptional processing. Translation of genetic code.

Regulation of gene expression and protein synthesis inhibitors of protein synthesis. DNA repair mechanisms. Applied aspects of purine and pyrimidine metabolism. Genetic Engineering: Recombinant DNA technology. DNA and diagnostics. DNA repair mechanisms and related disorders. Telomers, telomerases. Inhibitors of DNA replication, apoptosis.

### **pH, Buffer, physiological buffer systems**

Regulation of blood pH, acidosis, alkalosis. Renal functions tests.

### **Immunology**

Reticuloendothelial system, components and functions of the innate and adaptive immunity. Role of T and B lymphocytes, antigen presentation. Induction of immune response. Cell mediated immune response. Immunoglobulin structure and functions. Humoral immune response. Fate of antigen antibody complex. Complement system. Generation of antibody diversity. Hypersensitivities. Immunoregulation, autoimmunity, tolerance. HLA, disease association & transplantation. Immunological techniques, application in medicine (vaccines, immunotherapy, immunoassays and immunodiagnostics).

### **Environmental biochemistry, cancer and cancer makers**

Xenobiotics, interaction with biomolecules, effects, metabolism, detoxication. Biochemical characteristics of cancer. Environmental pollutants and carcinogenesis.

## **5. PATHOLOGY**

Basic Concepts of General Pathology and Systemic Pathology.

## **6. Current Trends and Recent Advancements in the field of Biochemistry.**