

Himachal Pradesh Public Service Commission

No. 3-11/2023-PSC (R-I)

Dated 03-05-2025

Syllabus for the descriptive type Subject Aptitude Test (SAT) for recruitment to post of Assistant Professor (Public Health Dentistry), Class-I (on regular basis) in the Department of Medical Education & Research, H.P. The SAT shall be of 03 hours duration having 120 marks. The SAT paper shall have two parts, i.e. Part-I and Part-II covering following topics of BDS Degree of an Indian University or an equivalent qualification with Post-Graduate qualification/Diploma of National Board level.

PART-I (60 Marks)

1. Applied Basic Science:

i. Applied Anatomy and Histology:

a. Applied Anatomy in relation to:

- Development of face
- Branchial arches
- Muscles of facial expression
- Muscles of mastication
- TMJ
- Salivary gland
- Tongue
- Hard and soft palate
- Infratemporal fossa
- Paranasal air sinuses
- Pharynx and larynx
- Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve
- Osteology of maxilla and mandible
- Blood supply, venous and lymphatic drainage of head and neck
- Lymph nodes of head and neck
- Structure and relations of alveolar process and edentulous mouth
- Genetics-fundamentals.

b. Oral Histology:

- Development of dentition, Innervations of dentin and pulp
- Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage,
- Oral mucous membrane
- Pulp-periodontal complex.

ii. Applied Physiology and Biochemistry:

- Cell
- Mastication and deglutition

- Food and nutrition
- Metabolism of carbohydrates, proteins and fats
- Vitamins and minerals
- Saliva and Oral health
- Fluid and electrolyte balance
- Pain pathway and mechanism-types, properties
- Blood composition and functions, clotting mechanism and erythropoiesis, Blood groups and transfusions, Pulse and blood pressure,
- Dynamics of blood flow
- Cardiovascular homeostasis-heart sounds
- Respiratory system: Normal physiology and variations in health and diseases, Asphyxia and artificial respiration
- Endocrinology: thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, Endocrine regulation of blood sugar.

iii. Applied Pathology:

- Pathogenic mechanism of molecular level,
- Cellular changes following injury
- Inflammation and chemical mediators
- Oedema, thrombosis and embolism
- Hemorrhage and shock
- Neoplasia and metastasis
- Blood disorders
- Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal lesions, and malignancies
- HIV
- Propagation of dental infection.

iv. Microbiology:

- Microbial flora of oral cavity
- Bacteriology of dental caries and periodontal disease
- Methods of sterilization
- Infection control in dental office / camps
- Virology of HIV, herpes, hepatitis
- Parasitology
- Basic immunology – basic concepts of immune system in human body
 - Cellular and humoral immunity
 - Antigen and antibody system - Hypersensitivity
 - Autoimmune diseases.

v. Oral Pathology:

- Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws.

vi. Physical and Social Anthropology:

- Introduction and definition
- Appreciation of the biological basis of health and disease
- Evolution of human race, various studies of different races by anthropological methods.

vii. Applied Pharmacology:

- Definition, scope and relations to other branches of medicine, mode of action, bioassay, standardization, pharmacodynamics, pharmacokinetics.
- Chemotherapy of bacterial infections and viral infections – sulphonamides and antibiotics.
- Local anesthesia
- Analgesics and anti-inflammatory drugs
- Hypnotics, tranquilizers and antipyretics
- Important hormones-ACTH, cortisone, insulin and oral antidiabetics.
- Drug addiction and tolerance
- Important pharmacological agents in connection with autonomic nervous system-adrenaline, noradrenaline, atropine
- Brief mention of antihypertensive drugs
- Emergency drugs in dental practice
- Vitamins and haemopoietic drugs,
- Effect of drugs on oral health.

viii. Research Methodology and Biostatistics:

- **Health Informatics**– basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge. Operative skills in analyzing the data.
- **Research Methodology** – definitions, types of research, designing written protocol for research, objectivity in methodology, quantification, records and analysis.
- **Biostatistics** – introduction, applications, uses and limitations of bio – statistics in Public Health dentistry, collection of data, presentation of data, measures of central tendency, measures of dispersion, methods of summarizing, parametric and non parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques – types, errors, bias, trial and calibration.

PART-II (60 Marks)

1. Public Health

i. Public Health:

- Definition, concepts and philosophy of dental health
- History of public health in India and at international level
- Terminologies used in public health.

ii. Health:

- Definition, concepts and philosophy of health
- Health indicators
- Health determinants
- Community and its characteristics and relation to health.

iii. Disease:

- Definition, concepts
- Multifactorial causation, natural history, risk factors
- Disease control and eradication, evaluation and causation, infection of specific diseases
- Vaccines and immunization.

iv. General Epidemiology:

- Definition and aims, general principles
- Multifactorial causation, natural history, risk factors
- Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
- Duties of epidemiologist
- General idea of method of investigating chronic diseases, mostly non-infectious nature, epidemic, endemic, and pandemic.
- Ethical conversation in any study requirement
- New knowledge regarding ethical subjects
- Screening of diseases and standard procedures used.

v. Environmental Health:

- Impact of important components of the environment of health
- Principles and methods of identification, evaluation and control of such health hazards
- Pollution of air, water, soil, noise, food
- Water purification, international standards of water
- Domestic and industrial toxins, ionizing radiation
- Occupational Hazards,
- Waster disposal- various methods and sanitation.

vi. Public Health Education:

- Definition, aims, principles of health education
- Health education, methods, models, contents, planning health education programs.

vii. Public Health Practice and Administration System in India.

viii. Ethics and Jurisprudence:

- Basic principles of law

- Contract laws- dentist – patient relationships & Legal forms of practice
- Dental malpractice
- Person identification through dentistry
- Legal protection for practicing dentist

- Consumer protection act.

xi. Nutrition in Public Health:

- Study of science of nutrition and its application to human problem
- Nutritional surveys and their evaluations
- Influence of nutrition and diet on general health and oral health, dental caries, periodontal disease and oral cancers
- Dietary constituents and cariogenicity
- Guidelines for nutrition.

xii. Behavioral Sciences:

- Definition and introduction
- Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health.
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist-patient relationship, modeling and experience.

xiii. Hospital Administration:

- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management.

xiv. Health Care Delivery System:

- International oral health care delivery systems – Review
- Central and state system in general and oral health care delivery system if any
- National and health policy
- National health programmes
- Health Planning and Evaluation
- Primary health care – concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1928, Dental council of India, Ethics, Indian Dental Association
- Role of W.H.O. and Voluntary organizations in Health Care for the Community.

xv. Oral Biology and Genetics:

- A detailed study of cell structure
- Introduction to Genetics, Gene structure, DNA, RNA
- Genetic counseling, gene typing

- Genetic approaches in the study of oral disorders
- Genetic Engineering - Answer to current health problems.

xvi. Demography & Family Planning:

- Demographic trends, family planning methods, milestones in population control in India.

xvii. Health Economics:

- Health benefit analysis and Cost effective analysis.

2. Dental Public Health:

i. Dental Public Health:

- History
- Definition and concepts of dental public health
- Differences between clinical and community dentistry
- Critical review of current practice
- Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group.

ii. Epidemiology of Oral Diseases and Conditions:

- Dental caries, gingival, periodontal disease malocclusion, dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

iii. Oral Survey Procedures:

- Planning
- Implementation
- WHO basic oral health methods 1997
- Indices for dental diseases and conditions
- Evaluation.

iv. Delivery of Dental Care:

- Dental person power – dental auxiliaries
- Dentist – population ratios,
- Public dental care programs
- School dental health programs- Incremental and comprehensive care
- Private practice and group practice
- Oral health policy – National and international policy.

v. Payment for Dental Care:

- Prepayment
- Post-payment
- Reimbursement plans
- Voluntary agencies
- Health insurance.

vi. Evaluation of Quality of Dental Care:

- Problems in public and private oral health care system program

- Evaluation of quality of services, governmental control.

vii. Preventive Dentistry:

- Levels of prevention
- Preventive oral health programs screening, health education and motivation
- Prevention of all dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies
- Role of dentist in prevention of oral diseases at individual and community level.
- Fluoride
 - History
 - Mechanism of action
 - Metabolism
 - Fluoride toxicity
 - Fluorosis
 - Systemic and topical preparations
 - Advantages and disadvantages of each
 - Update regarding Fluorosis
 - Epidemiological studies
 - Methods of fluoride supplements
 - Defluoridation techniques
 - Antifluoridation lobby.
- Plaque control measures
 - Health Education
 - Personal oral hygiene
 - Tooth brushing technique
 - Dentifrices, mouth rinses
- Pit and fissure sealant, ART, Preventive resin restoration
- Preventive oral health care for medically compromised individual
- Update on recent preventive modalities
- Caries vaccines
- Dietary counselling.

viii. Practice Management:

- Definition
- Principles of management of dental practice and types
- Organization and administration of dental practice
- Ethical and legal issues in dental practice
- Current trends
- Infection control in dental practice.

ix. Tobacco Counseling:

- Health Consequences
- Tobacco dependence
- Benefits of intervention
- Tobacco cessation

- Role of dentist.

x. **Health Man Power Planning.**