

Syllabus for the post of

**Associate Professor, T.B. and Chest(Tuberculosis and Respiratory Medicine/
Pulmonary Medicine), Class-I (Advt. No. 28/2023-24)**

Marks – 200

Questions – 200

Medium - English

A. Basic Sciences:

1. Anatomy and Histology of Respiratory System

Development and Anatomy of Respiratory System. Applied embryology of lungs, mediastinum and diaphragm. Developmental anomalies.

2. Physiology and Biochemistry

Assessment of pulmonary functions. Control of ventilation; pulmonary mechanics. Ventilation, pulmonary blood flow, gas exchange and transport. Non-respiratory metabolic functions of lung. Principles of electrocardiography. Inhalation kinetics and its implication in aerosol therapy, and sputum induction etc. Acid-base and electrolyte balance. Physiology of sleep and its disorders. Pulmonary innervation and reflexes. Pulmonary defence mechanisms. Principles of exercise physiology and testing. Physiological changes in pregnancy, high altitude, aging. Physiological basis of pulmonary symptoms.

3. Microbiology

Mycobacterium tuberculosis and other mycobacteria. Bacteria causing pulmonary diseases. Atypical organisms and respiratory tract infections. Anaerobes in pleuropulmonary infections. Laboratory diagnosis of non-tubercular infections of respiratory tract. Laboratory diagnosis of TB including staining, culture and drug sensitivity testing. Virulence and pathogenicity of mycobacteria. Respiratory viruses: Viral diseases of the respiratory system and diagnostic methods. Respiratory fungi: (i) Classification of fungal diseases of lung: candidiasis, Actinomycosis, Nocardiosis, Aspergillosis, Blastomycosis etc. (ii) Laboratory diagnostic procedures in pulmonary mycosis. Opportunistic infections in the immuno-ompromised individuals. HIV and AIDS. Virological aspects, immuno-pathogenesis, diagnosis. Parasitic lung diseases.

4. Pathology

Acute and chronic inflammation: Pathogenetic mechanisms in pulmonary diseases. Pathology aspects of Tuberculosis. Pathology aspects of Pneumonias and bronchopulmonary suppuration. Chronic bronchitis and emphysema, asthma, other airway diseases. Occupational lung diseases including Pneumoconiosis. Interstitial lung diseases including sarcoidosis, connective tissue diseases, pulmonary vasculitis syndromes, pulmonary eosinophilias. Tumours of the lung, mediastinum and pleura.

5. Epidemiology

Epidemiological terms and their definitions. Epidemiological methods. Epidemiology of tuberculosis, pneumoconiosis, asthma, lung cancer, COPD and other pulmonary diseases. National Tuberculosis Control Programme and RNTCP; Epidemiological aspects of BCG. Epidemiological aspects of pollution-related pulmonary diseases. Research methodology, statistics and study designs.

6. Allergy and Immunology

Various mechanisms of hypersensitivity reactions seen in pulmonary diseases. Diagnostic tests in allergic diseases of lung - *in vitro* and *in vivo* tests, bronchial provocation test. Immunology of tuberculosis, Sarcoidosis and other diseases with an immunological basis of pathogenesis.

7. Pharmacology

Pharmacology of antimicrobial drugs. Pharmacology of antitubercular drugs. Pharmacology of antineoplastic and immunosuppressant drugs. Bronchodilator and anti-inflammatory drugs used in pulmonary diseases. Drugs used in viral, fungal and parasitic infections. Other drugs pharmacokinetics and drugs interaction of commonly used drugs in pulmonary diseases. Pharmacovigilance.

B. Clinical Pulmonary Medicine

1. Infections

(i) Tuberculosis

- Aetiopathogenesis
- Diagnostic methods
- Differential diagnosis
- Management of pulmonary tuberculosis; RNTCP, DOTS, and DOTS-Plus; International Standards of TB Care
- Complications in tuberculosis
- Tuberculosis in children
- Geriatric tuberculosis
- Pleural and pericardial effusion and empyema
- Mycobacteria other than tuberculosis
- Extrapulmonary tuberculosis
- HIV and TB; interactions of antitubercular drugs with antiretrovirals
- Diabetes mellitus and tuberculosis
- Management of MDR and XDR tuberculosis

(ii) Non-tuberculous infections of the lungs

Approach to a patient with pulmonary infection. Community-acquired pneumonia. Hospital-associated pneumonia, ventilator-associated pneumonia. Unusual and atypical pneumonias including bacterial, viral, fungal and parasitic and rickettsial, anaerobic. Bronchiectasis, lung abscess and other pulmonary suppurations. Acquired immunodeficiency syndrome and opportunistic infections in immuno-compromised host. Principles governing use of antibiotics in pulmonary infections. Other pneumonias and parasitic infections, Zoonosis.

2. Non-infectious Lung Diseases

(i) Immunological disorders

Immune defence mechanisms of the lung. Sarcoidosis. Hypersensitivity pneumonitis and lung involvement. Eosinophilic pneumonias and tropical eosinophilia. Pulmonary vasculitides. Connective tissue diseases involving the respiratory system. Interstitial lung disease of other etiologies. Reactions of the interstitial space to injury, drugs. Occupational and environmental pulmonary diseases.

(ii) Other non-infectious disorders of the lungs and airways

Aspiration and inhalational (non-occupational) diseases of the lung. Drug induced pulmonary diseases. Bullous lung disease. Uncommon pulmonary diseases

(metabolic, immunological, unknown etiology), pulmonary haemorrhagic syndromes. Other pulmonary diseases of unknown etiology including PLCH, LAM, PAP, alveolar microlithiasis. Cystic fibrosis and disorders of ciliary motility. Obesity-related pulmonary disorders. Upper airways obstruction syndromes. Occupational lung diseases and pneumoconiosis. Air-pollution induced diseases, toxic lung and other inhalational injuries. Health hazards of smoking. Drug-induced lung diseases.

(iii) Pulmonary Circulatory disorders

Pulmonary hypertension and cor pulmonale. Pulmonary edema. Pulmonary thromboembolic diseases and infarction. Cardiac problems in a pulmonary patient and pulmonary complications produced by cardiac diseases.

(iv) Obstructive diseases of the lungs

Asthma including allergic bronchopulmonary aspergillosis, specific allergen immunotherapy and immunomodulation. Chronic obstructive lung disease and diseases of small airways. Special aspects of management including Long term oxygen therapy, Inhalation therapy and Pulmonary rehabilitation.

(v) Tumors of the lungs

Comprehensive knowledge of neoplastic and non-neoplastic diseases of lung including epidemiology, natural history, staging, and principles of treatment (medical, surgical, and radiation). Solitary pulmonary nodule.

(vi) Diseases of the mediastinum

Non-neoplastic disorders. Benign and malignant (primary and secondary) neoplasms and cysts.

(vii) Disorders of the pleura

Pleural dynamics and effusions. Non-neoplastic and neoplastic pleural diseases. Pneumothorax. Pyothorax and broncho-pleural fistula. Fibrothorax.

(viii) Critical Care Pulmonary Medicine

Management of emergency problems of different pulmonary diseases. Adult respiratory distress syndrome. Respiratory failure in the patient with obstructive airway disease. Respiratory failure in other pulmonary diseases. Management of sepsis.

Respiratory and haemodynamic monitoring in acute respiratory failure. Non-invasive and Mechanical ventilation. Principles of critical care, diagnosis and management of complications; severity of illness scoring systems. Ethical and end-of-life issues in critical care.

(ix) Extrapulmonary manifestations of pulmonary diseases

(x) Sleep-related pulmonary diseases

Polysomnography, Sleep apneas, Other sleep-disordered breathing syndromes

(xi) Miscellaneous aspects

Diseases of the diaphragm. Disorders of chest wall. Obesity-related pulmonary disorders. Oxygen therapy. End-of-life care. Aerospace Medicine. Pulmonary problems related to special environments (high altitude, diving, miners). Assessment of quality of life using questionnaires. Health impacts of global warming.

(xii) Preventive Pulmonology

Principles of smoking cessation and smoking cessation strategies. Cardiopulmonary rehabilitation. Preventive aspects of pulmonary diseases. Vaccination in pulmonary diseases.

C. SURGICAL ASPECTS OF PULMONARY MEDICINE

Pre- and post-operative evaluation and management of thoracic surgical patients. Chest trauma/trauma related lung dysfunction. Lung transplantation

D. RESEARCH METHODOLOGY

E. MEDICO LEGAL ASPECTS RELEVANT TO THE DISCIPLINE.

F. Indian Medical Council (Professional Conduct ETIQUETTE and Ethics) Regulations, 2002.

G. Current Trends and Recent Advancements in the field of Tuberculosis and Respiratory Medicine /Pulmonary Medicine.