

**Syllabus for the Preliminary test for the Recruitment on the post of  
Professor, Class-I in Cardio Vascular and Thoracic Surgery (Medical  
Education)**

**Marks – 200**

**Questions – 200**

**Medium - English**

**1. Applied Basic Sciences:**

Embryology of the Vascular System, Molecular Biology, Physiology and pathophysiology of blood vessels, Hemodynamics and Atherosclerosis , Peptide growth factors, Endothelial cells, Vascular smooth muscle cells, Macrophages Platelets, Response of the arterial wall to injury and Intimal Hyperplasia, Atherosclerosis: Theories of etiology and pathogenesis , Histopathologic features of non-arteriosclerotic diseases of the Aorta and arteries, Regulation of Vasomotor tone and Vasospasm, Venous system of the Lower extremities: Physiology and pathophysiology, Structure and function of the Lymphatic system, Diabetic vascular disease, Plasma Lipoproteins and Vascular disease, Cigarette smoking and Vascular diseases, Coagulation and disorders of Hemostasis, Blood rheology and the microcirculation, Drugs in Vascular disease, Scientific basis for Balloon Angioplasty, Basic principles underlying the function of Endovascular devices, Vascular grafts, Statistics for the Vascular Surgeon

**2. Clinical Competencies- Knowledge in subject:**

Aneurysmal disease : Aneurysm involving aortic arch, Descending thoracic and thoraco-abdominal aorta, Abdominal aorta, Peripheral arterial, Peripheral vascular occlusive disease, Renal artery disease, Visceral ischemia, Carotid artery disease Innominate, subclavian and vertebrobasilar arterial disease, Thoracic outlet syndrome, Acute arterial occlusion, Complications of vascular therapy, Management of vascular trauma, Venous thrombo-embolic disease, chronic venous insufficiency, Diagnostic techniques, Vascular grafts, Endovascular therapy in management of peripheral vascular disease,

Endovascular therapy for aneurismal disease : Basic evaluation and concepts of Endovascular Aneurysm Repair, Techniques and specifications at various aortic avenues, Complications, long term surveillance of Endovascular repair of Aneurysms, Risk stratification and risk factors, Coagulation disorders, anticoagulants, anti-platelets , Miscellaneous vasculogenic problems, Diagnosis and management of Non- atherosclerotic vasculogenic problems, Arteriovenous malformations and arteriovenous fistulae, Varicose vein n , Endovenous laser /RF ablation for varicose veins – concepts & Techniques, Vascular access, Diabetic foot problems, Lymphodema, Sympathectomy, Amputation, Tissue engineering - current status

**3. Applied Anatomy:**

Chest wall, diaphragm, trachea, bronchi, lungs, mediastinum, oesophagus, pericardium, heart & great vessels etc.

**4. Applied physiology:**

Respiration, gas exchange, pulmonary function tests, assisted ventilation, Heart sounds, murmurs, cardiac cycle, regional circulation, cardiac metabolism, acid base as well as fluid and electrolyte balance, extra corporeal circulation, hypothermia, Oesophageal function and motility disorders including gastro oesophageal reflux.

**5. Applied pathology:**

Thoracic trauma, chest wall tumors, mediastinal tumors, pleural disorders, disorders of trachea, Bronchus, disorders of lung: pulmonary suppuration, pulmonary tuberculosis, benign and malignant lesions of lung, benign and malignant lesions of oesophagus, diaphragmatic hernia, reflux oesophagitis, pericarditis, pericardial effusion, diseases of Heart and great vessels, pulmonary embolism

6. **Applied microbiology:**  
Pulmonary infections, infective endocarditis, infection following cardiovascular-thoracic surgery.
  
7. **Pharmacology :**  
Knowledge of medicines used in this specialty
  
8. **Cardiovascular Engineering:**  
Concept of flow, pressure, gradients, heart as a pump, Efficiency of heart and valves, haemodynamic assessment, prosthetic and bioprosthetic heart valves, extra corporeal circulation, hypothermia, IABP, ECMO, Ventricular assist devices, materials in cardiovascular application and bio compatibility, pacemakers, defibrillation, implantable cardioverter de-fibrillator,
  
9. **Basics of General Surgery:**  
Inflammation, Abscess, Cellulitis, Sepsis, Shock, Haemorrhage, Wound healing  
Tumors – Benign and Malignant, Systemic General Surgery - Overview (Abdominal Wall, GI, Hepato -Biliary – Pancreatic, Genito – Urinary, Thyroid, Breast, regional lymph node, upper and lower limbs).
  
10. **Critical Care Medicine:**  
Cardiac arrest, Cardiopulmonary and cardio cerebral resuscitation, Ventilators, cardiac monitors, Swan - Ganz catheter and cardiac output measurement, Inotropes, Renal failure and dialysis.
  
11. **Imaging:**  
X-Ray, USG, CT, MRI, PET, etc. Nuclear Medicine

**12. Cardiology:**

Noninvasive – ECG, Echocardiography, Invasive - Cardiac Cath and Angiography.

**13. Cardiac Surgery:**

Congenital Cardiac Surgery, Heart Valve Surgery, Coronary artery bypass surgery, Pediatric and neonatal cardiac surgery, Re-Do cardiac surgery

**14. General Thoracic Surgery:**

Surgery of chest wall, diaphragm, mediastinum, trachea and bronchus, pleura and lungs, Oesophagus, Chest Trauma, Neonatal cardiovascular–thoracic emergencies, General management of a patient undergoing Thoracic surgery.

**15. Inter costal drainage (ICD)**

**16. Vascular Surgery:**

Surgery of great vessel, Peripheral Vascular Surgery, Diseases of veins - Varicose veins, DVT, Vascular Trauma

**17. VATS (Video assisted thoracic surgery) Basics:**

Diagnostic and Therapeutic Procedures


**18. Thoracic Endoscopies:**

Bronchoscopy (Rigid and Fibre optic), Oesophagoscopy (Rigid and Fibre optic), Mediastinoscopy

**19. Diseases/ Disorders related to Cardio vascular and thoracic surgery:**



20. **Pacing and Electrophysiology:**
21. **Cardio thoracic anesthesia:**  
Anesthesia techniques, Single lung anesthesia, Pediatric & Neonatal cardiac anesthesia, Peri operative analgesia and sedation, Intra operative TEE
22. **Critical Care Management:**  
Peri-operative low cardiac output, Peri operative fluid and electrolyte balance, Peri operative Arrythmia management, Peri operative Nutrition, Peri operative Pharmacological management, Ventilatory management, Cardiopulmonary and cardio cerebral resuscitation;
23. **Allied specialties:**  
Reasonable exposure of the following clinical areas: Clinical Cardiology, Pulmonary Medicine, Medical Oncology, Radiational oncology, Invasive Cardiology - Cardiac Cath and Angiography
24. **RESEARCH METHODOLOGY.**
25. **MEDICO LEGAL ASPECTS RELEVANT TO THE DISCIPLINE.**
26. **INDIAN MEDICAL COUNCIL (PROFESSIONAL CONDUCT, ETIQUETTE AND ETHICS) REGULATIONS, 2002.**
27. **CURRENT TRENDS AND RECENT ADVANCEMENTS IN THE FIELD OF CARDIO VASCULAR AND THORACIC SURGERY.**

  
(Prasan Patel)  
DEPUTY SECRETARY  
GUJARAT PUBLIC SERVICE COMMISSION