

SYLLABUS FOR THE POST OF ASSISTANT PROFESSOR IN CARDIO VASCULAR AND THORACIC SURGERY

TOTAL : 100 MARKS

Module 1 (Marks 10)

Cardiac surgery- General considerations

Anatomy, Dimensions, Terminology of

-Cardiac chambers and Major vessels, Atrial septum, Ventricular septum, Conduction system, Cardiac valves, coronary arteries, terminology and classification of heart diseases

Hypothermia, Circulatory arrest and Cardiopulmonary Bypass

1. Hypothermic circulatory arrest
2. Whole body perfusion during Cardiopulmonary Bypass
3. Clinical methodology of Cardiopulmonary Bypass
4. Clinical Methodology of Hypothermic circulatory arrest and its Alternat

Myocardial Management during Cardiac Surgery with Cardiopulmonary Bypass

Anesthesia for Cardiovascular Surgery

1. Anesthetic Consultation for Adult Cardiovascular Surgery
2. Anesthesia for Neonates and Child

Postoperative Care

1. Subsystem during Early Convalescence after Cardiac surgery

Cardiovascular subsystem, Pulmonary subsystem, Renal subsystem, Neuropsychological subsystem, Gastrointestinal subsystem, Endocrine subsystem, Hematologic subsystem, Immune subsystem

2. Special considerations after cardiac surgery

Fluid, Electrolyte, and Caloric intake, body temperature, Cardiac tamponade, Infection, Chylothorax, Postperfusion and post cardiectomy syndrome

Module2 (10 marks)

ISCHEMIC HEART DISEASE

STENOTIC ARTERIOSCLEROTIC CORONARY ARTERY DISEASE

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, indication for operation, Technique of operation, special features of postoperative care, Special situation and controversies

LEFT VENTRICULAR ANEURYSM

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

POSTINFARCTION VENTRICULAR SEPTAL DEFECT

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

MITRAL REGURGITATION FROM ISCHEMIC HEART DISEASE

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

MODULE 3 (10 marks)

ACQUIRED VALVAR HEART DISEASE

MITRAL VALVE DISEASE WITH OR WITHOUT TRICUSPID VALVE DISEASE

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

MITRAL VALVE SURGERY WITH COEXISTING TRICUSPID VALVE DISEASE

MITRAL VALVE SURGERY WITH COEXISTING ISCHEMIC HEART DISEASE

AORTIC VALVE DISEASE

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

COMBINED AORTIC AND MITRAL VALVE DISEASE WITH OR WITHOUT TRICUSPID VALVE DISEASE

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

TRICUSPID VALVE DISEASE

Definition, History, Morphology, Clinical features and Diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

INFECTIVE ENDOCARDITIS

Definition, History, Pathogenesis and Morphology, Clinical features and Diagnostic criteria, Natural history, Therapy and Technique of operation, Special features of Postoperative Care, Results, Indications for Operation, Special Situations and Controversies

MODULE 4 (10 marks)

OTHER CARDIAC CONDITIONS

CARDIAC RHYTHM DISTURBANCE

Bradycardia

Tachycardia

Wolff-Parkinsons-White Syndrome

Atrial Fibrillation and Flutter

Ventricular Tachycardia and ventricular Fibrillation in Ischemic Heart Disease

Intractable Ventricular Tachycardia

CARDIAC TRAUMA

Penetrating Cardiac Trauma

Non-Penetrating Cardiac Trauma

CARDIAC TUMOR

Myxoma

Papillary Fibroelastoma

Rhabdomyoma

Fibroma

Lipoma

Pheochromocytoma

Teratoma

Sarcoma

Carcinoid Heart disease

HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY

MODULE 5 (10 marks)

CARDIOMYOPATHY

HEART FAILURE

Dilated Cardiomyopathy.

Cardiac Transplantation and Mechanical circulatory Support

Ischemic Cardiomyopathy

Hypertrophic Cardiomyopathy

Restrictive Cardiomyopathy

Arrhythmogenic Right Ventricular Dysplasia

CARDIAC TRANSPLANTATION

Cardiac Transplantation in Adult without Congenital heart disease

Cardiac Transplantation for Congenital heart Disease and Pediatric Patients

Heart lung Transplantation

MECHANICAL CIRCULATORY SUPPORT

PERICARDIAL DISEASE

Chronic Constrictive Pericarditis

Chronic effusive Pericarditis

MODULE 6 (10 marks)

DISEASE OF THE THORACIC ARTERIES AND VEIN

ACUTE TRAUMATIC AORTIC DISRUPTION

ACUTE AORTIC DISSECTION

CHRONIC AORTIC AND THORACOABDOMINAL AORTIC DISEASE

DISEASE OF THE PULMONARY ARTERIES

Acute Massive Pulmonary Embolism

Chronic Pulmonary Thromboembolic disease

Pulmonary Artery Aneurysm

Pulmonary Artery Dissection

Pulmonary Artery Tumors

ACQUIRED DISEASE OF THE SYSTEMIC VEINS

CONGENITAL HEART DISEASE IN THE ADULT

MODULE 7 (10 marks)

CONGENITAL HEART DISEASE

Definition, Historical note, Morphology, Clinical features and diagnostic criteria, Natural history, Technique of operation, Special features of Postoperative care, Result

ATRIAL SEPTAL DEFECT AND PARTIAL ANOMALOUS PULMONARY VENOUS CONNECTION

TOTAL ANOMALOUS PULMONARY VENOUS CONNECTION

COR TRIATRIATUM

UNROOFED CORONARY SINUS SYNDROME

ATRIOVENTRICULAR SEPTAL DEFECT

VENTRICULAR SEPTAL DEFECT

CONGENITAL SINUS OF VALSALVA ANEURYSM AND AORTICO-LEFT VENTRICULAR TUNNEL

PATENT DUCTUS ARTERIOSUS

VENTRICULAR SEPTAL DEFECT WITH PULMONARY STENOSIS OR ATRESIA

PULMONARY STENOSIS AND INTACT VENTRICULAR SEPTAM

PULMONARY ATRESIA AND INTACT VENTRICULAR SEPTAM

TRICUSPID ATRESIA AND SINGLE-VENTRICLE PHYSIOLOGY

EBSTEIN ANOMALY

TRUNCUS ARTERIOSUS

AORTOPULMONARY WINDOW

ORIGIN OF THE RIGHT OR LEFT PULMONARY ARTERY FROM THE ASCENDING AORTA

CONGENITAL ANOMALIES OF THE CORONARY ARTERIES COMPLETE

CONGENITAL AORTIC STENOSIS

COARCTATION OF THE AORTA AND INTERRUPTED AORTIC ARCH

AORTIC ATRESIA AND OTHER FORMS OF HYPOPLASTIC LEFT HEART PHYSIOLOGY

CONGENITAL MITRAL VALVE DISEASE

VASCULAR RING AND SLING

COMPLETE TRANSPOSITION OF THE GREAT ARTERIES

DOUBLE OUTLET RIGHT VENTRICLE

DOUBLE OUTLET LEFT VENTRICLE

CONGENITALLY CORRECTED TRANSPOSITION OF THE GREAT ARTERIES

DOBLE INLET VENTRICLE AND ATRETIC ATRIOVENTRICULAR VALVE
ANATOMICALLY CORRECTED MALPOSITION OF THE GREAT ARTERIES

MODULE 8 (10 marks)

GENERAL THORACIC SURGERY

THE LUNG, PLEURA, DIAPHRAGM, AND CHEST WALL

STRUCTURE AND FUNCTION OF THE CHEST WALL AND LUNGS

Anatomy of the Thorax, Surface anatomy of the thorax, cutaneous innervation, superficial chest wall musculature, the intercostal space, the intercostal muscles, Neurovascular bundle, intercostal vessels, interactions between the components of the chest wall during respiration,

Embryology of the lung

Ultrastructure and Morphometry of the Human Lung

Cellular and Molecular Biology of the Lung

Surgical Anatomy of the Lungs, lymphatics of the Lungs

Mechanics of Breathing and Pulmonary gas Exchange

Thoracic Imaging - Standard Radiographic evaluation, Computed tomography, Magnetic Resonance imaging, Radionuclide studies of the lung, Thoracic PET CT

DIAGNOSTIC PROCEDURES

Laboratory investigations in the diagnosis of pulmonary disease

Molecular diagnostic studies and Genomic studies in pulmonary disease

Bronchoscopic evaluation of the lung and tracheobronchial tree

Ultrasound and endoscopic Bronchoscopic ultrasound in the evaluation of the Lungs , Mediastinum and Pleura

Mediastinoscopy

Invasive diagnostic procedures

Preoperative assessment of the Thoracic Surgical patients

PULMONARY RESECTIONS

Technical aspect of Lobectomy
Pneumonectomy and its modifications
Sleeve lobectomy
Tracheal sleeve pneumonectomy
Segmentectomy and lesser pulmonary resections
Robotic -Assisted surgery in pulmonary diseases
Video-Assisted Thoracoscopic surgery
Uniport VATS Lobectomy
Awake, Non-Intubated Trans pleural Surgery
Post operative management of the General Thoracic Surgery patient
Complications of Thoracic surgical patients

MODULE 9 (10 marks)

THE CHEST CAGE

Chest wall deformities
Hernias of the chest wall
Infections of the chest wall
Thoracic outlet syndrome
Chest wall tumors
Chest wall reconstruction

THE DIAPHRAGM

Embryology and anatomy of the diaphragm
Physiology of the diaphragm and Surgical approaches to the Paralyzed diaphragm
Diaphragmatic hernia
Primary tumors of the diaphragm

THE PLEURA

Anatomy of the Pleura

Absorption of Gases in the pleural space

Pneumothorax

Mechanics and Fluid dynamics of Lung and Pleural space

Benign pleural effusion

Parapneumonic Effusion, Empyema and Fibrothorax

Post surgical empyema

Tuberculous and Fungal Infections of the Pleura

Thoracoplasty. Indications and Surgical considerations

Anatomy of the Thoracic duct and Chylothorax

Pleural neoplasm - Surgical approaches for malignant pleural mesothelioma, Chemotherapy

Malignant pleural Effusion

THE TRACHEA AND BRONCHI

Tracheostomy

Therapeutic Bronchoscopic Procedures

Surgical anatomy of the Trachea and Techniques of Resection and Reconstruction

Benign and Malignant tumors of the Trachea

Compression of the Trachea by Vascular Rings

CONGENITAL, STRUCTURAL, AND INFLAMMATORY DISEASES OF THE LUNG

Congenital parenchymal Lesions of the lung

Pulmonary complication of Cystic Fibrosis

Congenital vascular lesions of the lung

Chronic pulmonary emboli

COPD for CT surgery

Bullous and bleb diseases of the lung

Bacterial infections of the lungs and Bronchial Compressive disorders

Surgical management of Tuberculous and Non-tuberculous Mycobacterial infections of the lung

Thoracic Mycotic and Actinomycotic Infections of the Lung

LUNG TRANSPLANTATION

CARCINOMA OF THE LUNG

Epidemiology and carcinogenesis, Lung cancer screening, Investigation and management of indeterminate Pulmonary Nodule, Pathology of Carcinoma of the Lung, Ex Vivo diagnosis of Lung Cancer, Staging of Lung Cancer, Results of Surgical treatment of Non-Small cell Lung Cancer, Mediastinal lymph node dissection, Adjuvant chemotherapy for Lung cancer, Radiation for Lung Cancer, Multimodality Therapy for Non-small cell Lung Cancer, Novel therapeutic strategy for Non-small cell Lung Cancer, Small cell Lung Cancer

THORACIC TRAUMA

Blunt and Penetrating injuries of the Chest Wall, Pleura, Diaphragm, and Lungs

Barotrauma and inhalation injuries

Acute Respiratory Distress Syndrome

Managements of Foreign bodies of the Aerodigestive Track

Blunt and Penetrating injuries of the Esophagus

Esophageal Perforation

THE ESOPHAGUS

Structure of the Esophagus, Physiology of the Esophagus

Diagnostic Studies of the Esophagus.

Operative procedures in the Management of Esophageal disease

Malignant lesions of the esophagus

MEDIASTINUM

Structure and function of the Mediastinal contents

Noninvasive investigations

Invasive Diagnostic Investigations and Surgical Approaches

Mediastinal Infections, Mass lesion in the Mediastinum, control of Vascular Obstructing Symptomatology

Primary Mediastinal Tumors and Syndromes Associated with Mediastinal Lesions

Mediastinal Cysts

MODULE 10 (10 marks)

VASCULAR SURGERY AND ENDOVASCULAR THERAPY

Embryology and Developmental Anatomy, Vessel wall Biology, Atherosclerosis

Intimal hyperplasia, ischemia reperfusion, Alterio genesis and Angio genesis, Arterial hemodynamics, Venous Pathophysiology, Lymphatic Pathophysiology,

Atherosclerotic risk factors

Clinical and Vascular laboratory evaluation

Vascular imaging- Arteriography, Venography, Computed Tomography, Magnetic Resonance Imaging and Arteriography, Vascular PET/CT and SPECT/CT, Intra Vascular Ultra sound,

Preoperative evaluation and management

Intraoperative management

Post operative management

Hospital Readmission in Vascular Surgery

Normal coagulation, coagulopathy and hemorrhage, Hypercoagulable state

Anticoagulant drugs, Antiplatelet agents, Thrombolytic agent,

Graft thrombosis, Graft infection Anastomotic aneurysms

Local endovascular complication and their management

Venous complications

Thoracic and Thoracoabdominal vascular exposure, abdominal vascular exposure,

Cerebrovascular exposure, Lower extremity vascular exposure, Upper extremity vascular exposure, Spinal operative exposure

Endovascular diagnostic technique

Endovascular Therapeutic technique

Laparoscopic and Robotic Aortic Surgery

Grafts and Devices- Autogenous grafts, Prosthetic grafts, Biological Grafts, Bioengineered vascular grafts, Nonaortic Stents and Stent grafts,

Novel and Evolving Aortic Endovascular devices

Abdominal Aortic and Iliac Aneurysm

Endovascular Aneurysm repair technique

Ruptured Aortoiliac aneurysm and their Management

Thoracic and Thoracoabdominal Aortic aneurysm and Dissection

Fenestrated and Branched Endograft treatment of Juxta renal, Para visceral, Thoracoabdominal and Aortic arch Aneurysm

Peripheral and splanchnic aneurysm

Cerebrovascular disease

Acute limb ischemia

Lower extremity Chronic arterial disease

Thoracic outlet syndrome

Renovascular disease

Thrombo angiitis obliterans

Venous thromboembolic disease

Pulmonary embolism

Vascular malformation

Vascular trauma

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.