Curriculum
MCh Cardio-Vascular & Thoracic Surgery
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The infrastructure and faculty of the department of Cardio Vascular and Thoracic Surgery will be as per MCI guidelines.

1. Goals

The goal of MCh course is to produce a competent CVTS surgeon who:

- Recognizes the health needs of adults and carries out professional obligations in keeping with principles of National Health Policy and professional ethics;
- Has acquired the competencies pertaining to cardiothoracic surgery that are required to be practiced in the community and at all levels of health care system;
- Has acquired skills in effectively communicating with the patients, family and the community;
- Is aware of the contemporary advances and developments in medical sciences.
- Acquires a spirit of scientific enquiry and is oriented to principles of research methodology; and
- Has acquired skills in educating medical and paramedical professionals.

2. Objectives

At the end of the MCh course in Cardio Vascular and Thoracic Surgery, the student should be able to:

- Recognize the key importance of medical problems in the context of the health priority of the country;
- Practice the specialty of CVTS in keeping with the principles of professional ethics;
- Identify social, economic, environmental, biological and emotional determinants of adult Cardiothoracic disordes and know the therapeutic, rehabilitative, preventive and promotion measures to provide holistic care to all patients;
- Take detailed history, perform full physical examination and make a clinical diagnosis;
- Perform and interpret relevant investigations (Imaging and Laboratory);
- Perform and interpret important diagnostic procedures;
- Diagnose illnesses in adults based on the analysis of history, physical examination and investigative work up;
- Plan and deliver comprehensive treatment for illness in adults using principles of rational drug therapy;
- Plan and advise measures for the prevention of diseases;
- Plan rehabilitation of adults suffering from chronic illness, and those with special needs;
- Manage emergencies efficiently;

- Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation;
- Demonstrate empathy and humane approach towards patients and their families and respect their sensibilities;
- Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities.
- Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based medicine;
- Demonstrate competence in basic concepts of research methodology and epidemiology;
- Facilitate learning of medical/nursing students, practicing physicians, para-medical health workers and other providers as a teacher-trainer;
- Play the assigned role in the implementation of national health programs, effectively and responsibly;
- Organize and supervise the desired managerial and leadership skills;
- Function as a productive member of a team engaged in health care, research and education.

3. Syllabus

3.1. Theory

- **Critical Care and Post-operative Management**

  The management of critically ill cardio-vascular & thoracic surgical patients in the pre and post-operative periods

- **Cardiopulmonary Bypass, Myocardial Protection and Circulatory Support**

  The management of a patient undergoing cardiopulmonary bypass.

  The management of myocardial protection during cardiac surgery.

  The management of a patient requiring circulatory support.

- **Ischaemic Heart Disease**

  The assessment and management of patients with coronary heart disease, including elective and emergency presentations. To include competence in both primary and secondary procedures, and where appropriate to include off pump and on pump strategies and arterial revascularisation

  The preliminary assessment and initial management of patients with complications of myocardial infarction, including mitral regurgitation, aneurysm and septal defects. To include operative management in appropriate situations. Full competence in operative management of complex cases to be developed.

❖ **Heart Valve Disease**

The assessment and management of patients with valvular heart disease; including both isolated and combined aortic and mitral valve disease.

The assessment and management of patients with combined coronary and valvular heart disease, including operative management.

Full competence in operative management of complex cases including mitral valve repair and secondary procedures to be developed.

❖ **Aortovascular Disease**

The preliminary assessment and initial management of patients with acute dissection of the ascending aorta. To include operative management in appropriate situations.

Full competence in operative management of complex cases to be developed.

❖ **Cardiothoracic Trauma**

The assessment and management of patients with minor and major cardio-vascular & thoracic trauma. To include operative management in appropriate situations.

Full competence in the operative management of complex cases including great vessel injury to be developed.

❖ **General Management of a Patient Undergoing Thoracic Surgery**

Patient selection and determination of suitability for major thoracic surgery and the pre- and post-operative management of a thoracic surgical patient.

The assessment and management of a patient by bronchoscopy including foreign body retrieval.

The assessment and management of a patient by mediastinal exploration.

Competence in performing appropriate thoracic incisions.

❖ **Neoplasms of the Lung**

The assessment and management of lung cancer, including the scientific basis of staging systems and techniques used in the determination of stage and fitness for surgery.

An understanding of the role of surgical treatment in the multidisciplinary management of lung cancer and other intrathoracic malignant diseases, including an appreciation of the principles of other treatment modalities and their outcomes

- **Disorders of the Pleura**

  The assessment and management of patients with pleural disease; including pneumothorax and empyema, and including both VATS and open strategies.

- **Disorders of the Chest Wall**

  The assessment and management of patients with chest wall abnormalities, infections and tumours.

- **Disorders of the Diaphragm**

  The assessment and management of patients disorders of the diaphragm, including trauma to the diaphragm.

- **Emphysema and Bullae**

  The assessment and management of patients with emphysematous and bullous lung disease; including surgical management if appropriate and utilising both VATS and open strategies.

  Full competence in operative management of complex cases, including lung reduction surgery, to be developed.

- **Disorders of the Pericardium**

  The assessment and management of patients with disorders of the pericardium and pericardial cavity; including surgical management if appropriate and utilising both VATS and open strategies.

- **Disorders of the Mediastinum**

  The assessment and management of patients with mediastinal tumours and masses; including surgical management if appropriate and utilising both VATS and open strategies.

- **Disorders of the Airway**

  The assessment and management of patients with disorders of the major airways. Including operative management in suitable cases.

  Full competence in operative management of complex cases, including tracheal resection, to be developed.

3.2. Practical:

History, examination and writing of records:

- History taking should include the background information, presenting complaints and the history of present illness, history of previous illness, family history, social and occupational history and treatment history.

- Detailed physical examination should include general physical and CVS examination

- Skills in writing up notes, maintaining problem-oriented medical records (POMR), progress notes, and presentation of cases during ward rounds, planning investigation and making a treatment plan should be taught.

- The resident should fortify the skills of hemodynamic monitoring in emergency situations and should learn procedures like arterial line insertion, temporary venous pacing, central line insertion, pericardiocentesis, re-exploration for bleeding, intra aortic balloon pump insertion, swan ganz catheter insertion, knowledge of ventilators etc.

- The resident should assist in procedures like coronary artery bypass grafting, valve replacements, congenital heart surgeries, aortic surgeries, thoracic surgeries and closed procedures etc.

- Other CVTS procedures like Peripheral Vascular Surgery, Thymectomy, and Trauma Surgery.

3.3. Clinical Teaching

General physical and CVS examination should be mastered. The resident should be able to analyse the history and correlate it with clinical findings with the assistance of basic investigations like ECG, X-Ray, Echocardiography, CT Scans, Coronary and CT Angiography etc. Besides, during the bed side rounds he/she should learn to improvise on management skills, haemodynamic monitoring, fluid balance, arterial blood gas analysis and identification of cardiac emergencies like tamponade, arrhythmias etc. Add CVTS procedures

4. Teaching Programme

4.1 General Principals

Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training is skills oriented.

Learning in postgraduate program is essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

4.2 Teaching Sessions

The teaching methodology consists of bedside discussions, ward rounds, case presentations, clinical grand rounds, statistical meetings, journal club, lectures and seminars. Along with these activities, trainees should take part in inter-departmental meetings i.e clinico-pathological and clinico-radiological meetings that are organized regularly.

Trainees are expected to be fully conversant with the use of computers and be able to use databases like the Medline, Pubmed etc.

They should be familiar with concept of evidence based medicine and the use of guidelines available for managing various diseases.

4.3 Teaching Schedule

Following is the suggested weekly teaching programme in the Department of CVTS:

Sr. No.	Description	Frequency
1.	Bedside clinical case	Once a week
2.	Seminar / Journal club	Once a week
3.	Grandround	Once a week
4.	Cath conference	Once a week
5.	Session on ECG's/ X-ray's / CT Scan/MRI	Once a month
6.	Session on Histopathology Reports	Once a month
7.	Session on echocardiography / TMT/ Holter	Once a month
8.	There should be 3 teaching sessions at least of one hour per week duration.	Once a week

- Each unit should have regular teaching rounds for residents posted in that unit. The rounds should include bedside case discussions, file rounds (documentation of case history and examination, progress notes, round discussions, investigations and management plan), interesting and difficult case unit discussions.

- Central hospital teaching sessions will be conducted regularly and M.Ch residents would present interesting cases, seminars and take part in clinico-pathological case discussions.

4.4 Conferences & Papers

- A resident must attend at least one conference per year.
- One paper must be presented in at least 3 years.

5. SCHEDULE OF POSTING

1. **Ward & OPD Duties : 12 months**

Duties should include diagnostic case workup and day to day management of pre & post operative cases. The resident should acquire the experience in the management of post surgical patients on the critical care, high dependency and post operative wards and to be able to managed such patients with appropriate supervision.

2. **Recovery posting : 6 months**
To gain experience in aspects of the management of surgical patients, the resident should learn prompt diagnosis and management of cardiac emergencies. He should fortify the skills of hemodynamic monitoring in emergency situations and should learn procedures like arterial line insertion, temporary venous pacing, central line insertion, pericardiocentesis, intra aortic balloon pump insertion, timing and management. Swan ganz catheter insertion, use of defibrillator and should learn to do the tracheostomy, chest aspiration, chest drain insertion and management.

3. **Operation Theatre Posting : 6 months**
During this stage, the trainee will gain competence in a number of technical skills and procedures. He should gain experience in the practical applications of cardio-pulmonary bypass , myocardial protection and circulatory support. To understand the science and technology that underpins these disciplines. He should learn Saphenous vein harvest, Median sternotomy, Surgical re-explorations for bleeding or temponade and heart valve replacement. He should also get exposure of the thoracic and vascular procedures.

4. **Cardiology Posting : 2 months**
The resident should acquaint himself with invasive and non invasive procedures. He should learn the principles and fundamentals of echocardiography. He should observe trans-esophageal echo and also masters the skills of interpreting TMT, Stress Test and Holter monitoring.
In the cath lab, he should learn procedures like Coronary Angiography, PTCA, Balloon Valvoloplasty, Cardiac Catheterization Data, Insertion of Temporary and Permanent Pacemaker.

5. **Operation Theatre Posting : 6 months**
The resident should develop the ability to function as a competent assistant at commonly performed cardio-thoracic operations including CABG, Valve Replacement and Lung Resection. He should learn to harvest the arterial grafts, preparation for and management of cardio-pulmonary bypass, proximal aorto-venous coronary anastomosis, thoracic incisions and surgery for benign and malignant conditions of the lungs.
He should also gain experience in the management of vascular surgical procedures and chest trauma.

6. Recovery posting : 6 months

The resident should work as a part of multi-professional, multi-disciplinary team in the management of a patient requiring complex critical care. He should be able to manage the haemodynamics of post surgical patients, cardiac arrythmias, haemostasis, acid base balance, ventilatory support, GIT renal and hepatic physiology, nutrition and temperature regulation.

He should also have good knowledge of the drugs used like inotropes, vaso-dilators, vaso-constrictors, anti-arrythmics drugs, haemostatic drugs, anti-platelets, anti-coagulants, thrombolytic drugs, antibiotics and anaesthetic agents.

He should also be well aware of the anti-microbial treatment and policies. He should be able to analyze and interpret the post operative and critical care charts with documentation.

❖ **LOG BOOK**

- The student will maintain a log book of all the procedures.
- The student will be graded as per his clinical & technical skill performance.
- The student has observed the procedures as an assistant.
- The part of the procedures performed under direct supervision.
- The procedure performed with assistance.
- The purpose of training is to grade the skills and evaluate the ability to take decisions.

6. RESEARCH PROJECTS

- ❖ Every candidate shall carry out work on an assigned research project under the guidance of a recognized postgraduate teacher, the project shall be written and submitted in the from of a Project.
- ❖ Every candidate shall submit project plan to university within time frame set by university
- ❖ Thesis shall be submitted to the University within 9 months of joining the course.
- ❖ The student will (i) identify a relevant research problem, (ii) conduct a critical review of literature, (III) formulate a hypothesis, (iv) determine the most suitable study design, (v) state the objectives of the study, (vi) prepare a study protocol, (viii) undertake a study according to the protocol, (viii) analyze and interpret research data, and draw conclusion, (ix) write a research paper.

7. Assessment

All the PG residents are assessed daily for their academic activities and also periodically.

7.1. General Principles

- The assessment is valid, objective and reliable
- It covers cognitive, psychomotor and affective domains.
- Formative, continuing and summative (final) assessment is also conducted in theory as well as practical. In addition, research project is also assessed separately.

7.2. Formative Assessment

- The formative assessment is continuous as well as end of term.
- The former is based on the feedback from the consultants concerned.
- Formative assessment will provide feedback to the candidate about his/her performance and help to improve in the areas they lack.
- Record of internal assessment should be presented to the board of examiners for consideration at the time of final examination.

7.3. Internal Assessment

The performance of the resident during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as followed.

Sr. No.	Items	Marks
1.	Personal Attributes	20
2.	Clinical Work	20
3.	Academic activities	20
4.	End of term theory examination	20
5.	End of term practical examination	20

7.3.1 Personal attributes:

- **Behavior and Emotional Stability:** Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.
- **Motivation and Initiative:** Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.
- **Honesty and Integrity:** Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.
- **Interpersonal Skills and Leadership Quality:** Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

7.3.2 Clinical Work:

- **Availability:** Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- **Diligence:** Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- **Academic ability:** Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- **Clinical Performance:** Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

7.3.3 Academic Activity: Performance during presentation at Journal club/ Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.

7.3.4 End of term theory examination conducted at end of 1st, 2nd year and after 2 years 9 months

7.3.5 End of term practical/oral examinations after 2 years 9 months.

Marks for **personal attributes** and **clinical work** should be given annually by all the consultants under whom the resident was posted during the year. Average of the three years should be put as the final marks out of 20.

Marks for **academic activity** should be given by the all consultants who have attended the session presented by the resident.

The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations.

7.4. Summative Assessment

- Ratio of marks in theory and practical will be equal.
- The pass percentage will be 50%.
- Candidate will have to pass theory and practical examinations separately.

A. Theory examination

Sr. No..	Title	Marks

Paper –I	Basic Sciences as related to CVTS		100
Paper-II	Surgical Skills in CVTS		100
Paper-III	Investigative CVTS		100
Paper-IV	Recent advances in CVTS		100
		Total	**400**

B. Practical & Viva-Voce Examination

S. no		Marks
1.	Long Case (1)	100
2.	Short Cases (2) 75 marks each	150
3.	Procedure	50
4.	Grand Viva including Instruments/Radiology/Pathology	100
	Total	**400**

8. Job Responsibilities

❖ **Outdoor Patient (OPD) Responsibilities**

- The working of the residents in the OPD should be fully supervised.
- They should evaluate each patient and write the observations on the OPD card with date and signature.
- Investigations should be ordered as and when necessary using prescribed forms.
- Residents should discuss all the cases with the consultant and formulate a management plan.
- Patient requiring admission according to resident's assessment should be shown to the consultant on duty.
- Patient requiring immediate medical attention should be sent to the casualty services with details of the clinical problem clearly written on the card.
- Patient should be clearly explained as to the nature of the illness, the treatment advice and the investigations to be done.
- Resident should specify the date and time when the patient has to return for follow up.

❖ **In-Patient Responsibilities**

- Each resident should be responsible and accountable for all the patients admitted under his care. The following are the general guidelines for the functioning of the residents in the ward:
- Detailed work up of the case and case sheet maintenance:
- He/She should record a proper history and document the various symptoms. Perform a proper patient examination using standard methodology. He should develop skills to ensure patient comfort/consent for examination. Based on the above evaluation he/she should be able to formulate a differential diagnosis and

prepare a management plan. Should develop skills for recording of medical notes, investigations and be able to properly document the consultant round notes.

- To organize his/her investigations and ensure collection of reports.
- Bedside procedures for therapeutic or diagnostic purpose.
- Presentation of a precise and comprehensive overview of the patient in clinical rounds to facilitate discussion with senior residents and consultants.
- To evaluate the patient twice daily (and more frequently if necessary) and maintain a progress report in the case file.
- To establish rapport with the patient for communication regarding the nature of illness and further plan management.
- To write instructions about patient's treatment clearly in the instruction book along with time, date and the bed number with legible signature of the resident.
- All treatment alterations should be done by the residents with the advice of the concerned consultants and senior residents of the unit.

❖ **Admission day**

Following guidelines should be observed by the resident during admission day.

Resident should work up the patient in detail and be ready with the preliminary necessary investigations reports for the evening discussion with the consultant on duty. After the evening round the resident should make changes in the treatment and plan out the investigations for the next day in advance.

❖ **Doctor on Duty**

- Duty days for each Resident should be allotted according to the duty roster.
- The resident on duty for the day should know about all sick patients in the wards and relevant problems of all other patients, so that he could face an emergency situation effectively.
- In the morning, detailed over (written and verbal) should be given to the next resident on duty. This practice should be rigidly observed.
- If a patient is critically ill, discussion about management should be done with the consultant at any time.
- The doctor on duty should be available in the ward through out the duty hours.

❖ **Care of Sick Patients**

Care of sick patients in the ward should have precedence over all other routine work for the doctor on duty.

Patients in critical condition should be meticulously monitored and records maintained.

If patient merits ICU care then it must be discussed with the senior residents and consultants for transfer to ICU.

❖ **Resuscitation skills**

At the time of joining the residency programme, the resuscitation skills should be demonstrated to the residents and practical training provided at various work stations.

Residents should be fully competent in providing basic and advanced cardiac life support.

They should be fully aware of all advanced cardiac support algorithms and be aware of the use of common resuscitative drugs and equipment like defibrillators and external cardiac pacemakers.

The resident should be able to lead a cardiac arrest management team.

❖ Discharge of the Patient

- Patient should be informed about his/her discharge one day in advance and discharge cards should be prepared 1 day prior to the planned discharge.
- The discharge card should include the salient points in history and examination, complete diagnosis, important management decisions, hospital course and procedures done during hospital stay and the final advice to the patient.
- Consultants and M.Ch Residents should check the particulars of the discharge card and counter sign it.
- Patient should be briefed regarding the date, time and location of OPD for the follow up visit.

❖ In Case of Death

In case it is anticipated that a particular patient is in a serious condition, relatives should be informed about the critical condition of the patient beforehand.

Residents should be expected to develop appropriate skills for breaking bad news and bereavements.

Follow up death summary should be written in the file and face sheet notes must be filled up and the sister in charge should be requested to send the body to the mortuary with respect and dignity from where the patient's relatives can be handed over the body.

In case of a medico legal case, death certificate has to be prepared in triplicate and the body handed over to the mortuary and the local police authorities should be informed.

Autopsy should be attempted for all patients who have died in the hospital especially if the patient died of an undiagnosed illness.

❖ Bedside Procedures

The following guidelines should be observed strictly:-

- Be aware of the indications and contraindications for the procedure and record it in the case sheet. Rule out contraindications like low platelet count, prolonged prothrombin time, etc.
- Plan the procedure during routine working hours, unless it is an emergency. Explain the procedure with its complications to the patient and his/her relative and obtain written informed consent on a proper form. Perform the procedure under strict aseptic precautions using standard techniques. Emergency tray should be ready during the procedure.
- Make a brief note on the case sheet with the date, time, nature of the procedure and immediate complications, if any.

- Monitor the patient and watch for complications(s).

❖ **OT responsibilities**

The 1st year resident observes the general layout and working of the OT, understands the importance of maintaining sanctity of the OT, scrubbing, working and sterilization of all the OT Instrument, know how of cardio-pulmonary bypass pump. He/ She is responsible shifting of OT patients, for participating in surgery as 2nd assistant and for post operative management of patient in recovery and in ward. The 2nd year resident is responsible for pre op work up of the patient, surgical planning and understanding the rationale of surgery. He/she is the first assistant in surgery and is responsible for anticipating intra op and post op complications and managing them. The final year resident should be able to perform minor/medium surgeries under observation and assist in medium/major/extra major surgeries. He/she should be able to handle all emergencies and post op complications under observations / independently and is responsible for supervision and guidance of his/her juniors.

❖ **Medico-Legal Responsibilities of the Residents**

- All the residents are given education regarding medico-legal responsibilities at the time of admission in a short workshop.
- They must be aware of the formalities and steps involved in making the correct death certificates, mortuary slips, medico-legal entries, requisition for autopsy etc.
- They should be fully aware of the ethical angle of their responsibilities and should learn how to take legally valid consent for different hospital procedures & therapies.
- They should ensure confidentiality at every stage.

9. SUGGESTED BOOKS and JOURNALS

9.1 Books

❖ Cardiac Surgery in the Adult by Lawrence H. Cohn, MD.

❖ Sabiston and Spencer's Surgery of the Chest: Expert Consult - Online and Print (2-Volume Set) (Surgery of the Chest (Sabiston)) by Frank Sellke MD, Pedro J. del Nido MD, Scott J. Swanson MD.

❖ Rutherford's Vascular Surgery, 2-Volume Set: Expert Consult: Print and Online (Vascular Surgery (Rutherford)(2 Vol.)) by Jack L. Cronenwett MD, Wayne Johnston.

❖ Kirkllin / Barrat-Boyes : Cardiac Surgery, 2 Vols. 2003.

- Shield : Genral Thoracic Surgery, 2 Vols. 7th /2009.
- Khonsari : Cardiac Surgery, 4th / 2008
- Drugs for the heart by Lionel H. Opie.
- Shamroth's An Introduction to Electrocardiography.
- Jonas, Richard A : Comprehensive surgical management of congenital heart disease, 2004.
- Kaiser : Mastery of cardiothoracic surgery, 2nd /2007.
- Manual of Peri-operative Care In Adult Cardiac Surgery Fourth Edition by Robert M. Bojar.

9.2 JOURNALS

- Annals of Thoracic Surgery.
- European Journal of Cardiothoracic Surgery
- Journal of Thoracic & Cardiovascular Surgery
- Asian Cardiovascular & Thoracic Annals
- Seminars in Thoracic and Cardiovascular Surgery
- Circulation

10. Model Test Papers

MODEL TEST PAPERS

MCh (Cardio-Vascular & Thoracic Surgery) Course

Paper - I

Basic Sciences

Maximum Marks : 100 Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

1. Describe the development of pulmonary venous system and left atrium?

2. What are the various organisms responsible for Nosocomial infections in recovery rooms and intensive care units?

3. Discuss the surgical anatomy of the normal conduction system and outline its importance in various cardiac surgical procedures?

4. Discuss the anatomy of the aortic root.

5. Describe briefly the regulation of thrombosis by the endothelium?

6. Describe the anatomy and surgical exposure of the carotid bifurcation and internal carotid artery?

7. Describe the pathology of lung cancer?

8. Describe in brief development of inter-ventricular septum?

9. Discuss the anatomy of diaphragm with special reference to different diaphragmatic hernias?

10. Describe Broncho-pulmonary segments?

MODEL TEST PAPERS

MCh (Cardio-Vascular & Thoracic Surgery) Course

Paper - II

Surgical Skills In Cardio-Vascular & Thoracic Surgery

Maximum Marks : 100 Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

1. Describe the various posterior mediastinal masses and their surgical treatment?

2. Describe the atrial septal defect surgery using thoracotomy approach?

3. Discuss the closure of ventricular septal defect?

4. Discuss the etiopathology of myasthenia gravis and outline the management of a patient admitted with myasthenic crisis?

5. Enumerate the causes of continuous cardiac murmur?

6. Discuss the various surgical options in management of DORV?

7. Discuss the management of anomalous left coronary artery from pulmonary artery?

8. Discuss the management options in tight mitral stenosis?

9. Discuss different types of arterial conduits used during coronary artery bypass grafting?

10. Discuss the factors affecting the haemodynamic performance of mechanical heart valves?

MODEL TEST PAPERS

MCh (Cardio-Vascular & Thoracic Surgery)

Paper - III

Investigative In Cardio-Vascular & Thoracic Surgery

Maximum Marks : 100 Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

1. Describe the digital plethesmography?
2. Discuss the synthetic patches and grafts used in cardiac surgery?
3. Discuss the role of “Blood Components” in open heart surgery?
4. Discuss the virtual bronchoscopy?
5. Discuss the diagnosis and management of prosthetic valve endocarditis?
6. Describe the evolution of porcine xenografts?
7. Describe the atrial naturitic peptide?
8. Discuss the oncogenes in lung cancer?
9. Discuss the types of vena caval filters and their indicators?
10. Discuss the diagnostic tools for the dissection of the aorta?

MODEL TEST PAPERS

MCh (Cardio-Vascular & Thoracic Surgery) Course

Paper - IV

Recent Advances In Cardio-Vascular & Thoracic Surgery

Maximum Marks : 100 Time : 3 Hours

- Attempt **ALL** questions.
- Answer each question and its parts in **SEQUENTIAL ORDER**.
- **ALL** questions carry equal marks.
- Illustrate your answer with **SUITABLE DIAGRAMS**.

1. Describe the valve conduits in cardiac surgery?

2. Describe the role of free radicals in heart disease?

3. Describe the role of blood conservation techniques?

4. Discuss early detection of lung cancer and role surgery in Small-cell lung cancer?

5. Describe the advantages of early correction of various congenital defects?

6. Discuss the various factors governing the early and late patency of different conduits used in coronary bypass grafting?

7. Discuss the role of intra aortic balloon pump in cardiac surgery?

8. Describe newer methods of treating ischemic cardiomyopathy?

9. Discuss in detail the advantages and disadvantages of Off-pump Coronary Artery Bypass Grafting?

10. Describe the role of Phosphodiesterase inhibitors in cardiac surgery?