Paper II: Technical Subject

1. **Clinical:** (20 Marks)
   (Definition, Pathophysiology, Epidemiology, Features of History, Examination findings, Differential Diagnosis, Investigations indicated, detailed initial management and principles of ongoing management and current practice guidelines)

   1.1 History taking and Clinical Subject Examination in cardiology
   1.2 Coronary artery Diseases
   1.3 Rheumatic Fever and Rheumatic Heart Diseases
   1.4 Congenital Heart diseases
   1.5 Vascular Disorders
   1.6 Pulmonary Thrombo-embolism and Pulmonary Hypertension
   1.7 Systemic Hypertension
   1.8 Systemic Diseases involving Heart and its Vessels
   1.9 Heart Muscle Diseases
   1.10 Tumors of Heart
   1.11 Heart Failure
   1.12 Sudden death
   1.13 Cardiopulmonary resuscitation (CPR)
   1.14 Geriatric heart diseases
   1.15 General Anaesthesia and non-cardiac surgery in heart patients
   1.16 Pregnancy and heart diseases
   1.17 Pericardial Disease
   1.18 Conduction disturbances of the Heart

2. **Epidemiology, Prevention of Cardiovascular Diseases and Cardiac Rehabilitation** (20 Marks)

   2.1 Epidemiology and Worldwide burden of cardiovascular diseases
   2.2 Cardiovascular risk factors:
      2.2.1 Age, Sex and Race
      2.2.2 Heredity
      2.2.3 Dietary imbalances
      2.2.4 Physical inactivity
      2.2.5 Obesity
      2.2.6 Abnormal lipids
      2.2.7 Hypertension
      2.2.8 Glucose intolerance and Diabetes Mellitus
      2.2.9 Tobacco use
      2.2.10 Alcohol consumption
      2.2.11 Adverse Psychological patterns
      2.2.12 Socioeconomic conditions
      2.2.13 Modernization
      2.2.14 Novel risk factors
2.3 Primordial, Primary and Secondary prevention of coronary heart disease
2.4 Prevention of Rheumatic fever/Rheumatic heart disease
2.5 Prevention of congenital heart diseases
2.6 International and national prevention policies
2.7 Advancement of epidemiological research for the prevention of cardiovascular diseases.
2.8 Cardiac Rehabilitation:
   2.8.1 Recommendation and guidelines
   2.8.2 Rationale
   2.8.3 Principles of cardiac rehabilitation
   2.8.4 Practical implementation of cardiac rehabilitation programs

3. Intervasional Cardiology (15 Marks)
   3.1 Basics of X–Ray
   3.2 Radiation hazard and protection from it
   3.3 Benefits and limitations of interventional cardiology
   3.4 Procedures done at the catheterization Laboratory
   3.5 Different imaging angles and their value
   3.6 Coronary anatomy
   3.7 Guidelines for different procedures : Indication, Principles and Techniques
      3.7.1 Percutaneous coronary Angioplasty Guideline
      3.7.2 Guideline for coronary angiography
      3.7.3 Percutaneous Mitral valvotomy guidelines
      3.7.4 Aortic and Pulmonary valvotomy guidelines
   3.8 Role of Catheterization study in structural heart disease
   3.9 Catheterization laboratory Complication and it management

4. Cardiac Electrophysiology (15 Marks)
   4.1 Normal electrical flow in the heart
   4.2 Atrial and ventricular ectopics
   4.3 When to and when not to treat atrial and ventricular ectopics
   4.4 Ventricular tachycardia
      4.4.1 Causes and Management (acute and long term)
   4.5 Supraventricular tachycardias
      4.5.1 Causes and Management (acute and long term)
   4.6 Indication and role of Electrophysiological study
   4.7 Different types of Brady arrhythmias
      4.7.1 Heart block, Etiology and Management
   4.8 Guidelines on the indication of pacemaker implantation
   4.9 Guidelines on the implantation of Intra cardiac Defibrillator (ICD),
   4.10 Guidelines on Cardiac resynchronization therapy (CRT)
5. **Non–invasive Cardiology** (15 Marks)

5.1 Electrocardiogram

5.1.1 Indication and role of EKG in Cardiology; Knowledge of normal and abnormal EKG

5.1.2 Holter or Ambulatory ECG and 24 Hrs Arterial Blood Pressure Monitoring

5.1.2.1 Indications and analysis

5.1.3 Exercise ECG Testing/ Trade mill test

Role of Treadmill test in patient with Coronary artery diseases.

5.1.3.1 Indications, Contraindications and Limitations

5.1.3.2 Exercise Protocols

5.1.3.3 Interpretation of exercise ECG and data

5.2 Chest X-Ray: Role of CXR in diagnosis and management of patients with cardiac disease

5.2.1 Indications, Advantages and Limitations

5.2.2 Interpretation of CXR findings

5.3 Echocardiography

5.3.1 Role of echocardiography in the management of patients with cardiac disease

5.3.2 Perform, interpret and report transthoracic and transoesophageal echocardiography for the diagnosis & assessment of cardiac patients

5.3.3 Indications, contraindications, limitations of basic and advanced echocardiography, tissue Doppler/strain analysis, contrast echo, 3D echocardiography, transoesophageal echocardiography, stress echocardiography, perioperative echocardiography

5.3.3.1 Contrast echocardiography

5.3.3.2 Three Dimensional Echocardiography

5.3.3.3 Transoesophageal echocardiography

5.3.3.4 Dobutamine Stress echocardiography

5.4 Nuclear cardiology

5.4.1 To be able to understand the nuclear Cardiology

5.4.2 To understand the clinical significance of the results of nuclear Cardiology

5.4.2.1 Types of nuclear scan

5.4.2.2 Role of PET Scanning in cardiology

5.4.2.3 Image interpretation and clinical applications of MPS (Myocardial Perfusion Scanning) and myocardial viability test

5.5 Cardiac Magnetic Resonance (CMR)

5.5.1 To know the basics of Cardiac MRI, its Indications and Contraindications

5.5.2 To have a basic understanding of procedures, image analysis, interpretation of MRI data for diagnosis and management of the cardiac diseases

5.6 Cardiac CT Scan

5.6.1 Basics of Cardiac CT, its Indications and Contraindications

5.6.2 To have a basic understanding of procedures, Image Analysis, interpretation of Cardiac CT data for diagnosis and management of the cardiac diseases
6. **Research and Recent Advances in cardiology** (15 Marks)

6.1 Importance of research in cardiology

6.2 To be able to define the research in health and diseases

6.3 To be able to do the independent research.
   - 6.3.1 Research proposal writing
   - 6.3.2 Research methodology
   - 6.3.3 Types of researches
   - 6.3.4 Clinical trials
   - 6.3.5 Case and control study
   - 6.3.6 Sampling
   - 6.3.7 Different methods of data collection
   - 6.3.8 Data processing, tabulation and analysis
   - 6.3.9 Final Report writing

6.4 Recent Advances in cardiology

6.4.1 To be able to do the safe and up to date cardiology practice according to the latest recommendation

6.4.2 Recent trend and advances in the field of cardiology, and the latest recommendation in global scenario
   - 6.4.2.1 ACC/AHA guidelines and their updates
   - 6.4.2.2 European society of cardiology recommendation
   - 6.4.2.3 National recommendation
   - 6.4.2.4 Any ongoing major trials and meta-analysis