

**DETAILED SYLLABUS FOR THE POST OF CATH LAB TECHNICIAN IN
MEDICAL EDUCATION SERVICE**

(CAT NO : 133/2024)

<p>MODULE - 1 Electrocardiography (12 Marks)</p>	<ol style="list-style-type: none"> 1) Basic and Principle 2) Electrode / Lead Placements 3) Normal ECG : Wave Form 4) Normal ECG : Intervals 5) ECG Machined : Functions, Frequency response, Recording Speed, Sensitivity, Standardisation, Stylus Lag (Heat Stylus) 6) ECG and Chamber Hypertrophy 7) ECG and Arrhythmia 8) ECG in Myocardial Infraction, Myocardial Ischemia 9) ECG in Miscellaneous Conditions: Metabolic, electrolyte changes 10) ECG for Technician: Summary <p align="center">*****</p>
<p>MODULE - 2 Exercise ECG (12 Marks)</p>	<ol style="list-style-type: none"> 1) Equipments / Types of Exercise ECG 2) Indication / Contradiction 3) Lead placement - Rationale, Limitation 4) Monitoring during EX.ECG: clinical / ECG / Parameters 5) Exercise ECG Protocol: Indications / Advantage and Disadvantage 6) Exercise Physiology 7) Exercise ECG: Preparation of Patient / Equipment / Defibrillators, Emergency Drugs 8) Exercise ECG : Detection of Various Arrhythmias, Ischemia and plan of action 9) Exercise ECG 10) Endpoints : Recognition and Action 11) Post Exercise ECG : Observation, Instructions <p align="center">*****</p>
<p>MODULE - 3 Echocardiography (10 Marks)</p>	<ol style="list-style-type: none"> 1) Principle of Echocardiography 2) Transducers 3) Anatomical Planes for viewing in Echocardiography 4) Normal m-Mode Echo Study: Anatomy / Function : Measurements. 5) Echo for Cardiac Function - systolic and diastolic 6) Echo in Heart Disease : Acquired 7) Echo in Heart Disease : Congenital 8) Contrast Echocardiography : Technique and Indications 9) Transesophageal Echocardiography 10) Echo Echocardiography : Technician's Role

Disposables
Archiving
Record Keeping
Stock - Indents, Stock Maintenance, Stock
Verification

MODULE - 4
Principle of Doppler
(12 Marks)

Measurement of Flows and Gradients
1) Assessment of gradients, shunts, valve areas, cardiac output
2) Assessment of valve regurgitations
Utility of Doppler in Assessment of Cardiac Disease
3) Tissue Doppler
Stress Echocardiography : Protocol, 2D Echo Views, Analysis
Trans - esophageal Echo
1) Indication / Contraindication
2) Patient Preparation
3) Transducer : Maintenance, Sterilization, Handling etc
4) Monitoring
5) Emergency Drugs
6) Utility
Intra Vascular Ultrasound, Intracoronary Doppler Wire

MODULE - 5
Holter Recording
(04 Marks)

1. Principles of Holter
2. Utility and indications
3 . Analysis of Holter

MODULE - 6
Cardiac
Catheterization
PART - I
(15 Marks)

1) Cardiac Catheterisation : Laboratory Setup / Types Procedures
2) Sterile Techniques in Cath Lab / Sterile Areas, Sterile
Procedure, Sterile trolley setting, Scrubbing, gowns and
Gloves, scrubbing and draping patients, handling sterile
disposables etc.
3) Sterilisation and re-use of hardware
4) Equipments : Cath - Lab equipments
5) Defibrillator / Pacemaker / IABP / Boyle's Apparatus /
Suction Machine / Oxygen
6) Infusion Pumps / Programmed Stimulators, Pacing
System Analysers
7) Equipments in Cath - Lab
8) Hemodynamic Recorders
9) Transducers
10) Recording of Pressure Wave Form
11) Range / Gain / Speed / Systolic / Diastolic and Mean Pressures
in Chambers and Vessels

- 12) Hazard management
- 13) Radiation Protection
- 14) Infection Prevention
- 15) Injury Prevention : Electrical / Mechanical
- 16) Wastes Management
- 17) Plastics
- 18) Biological Wastes
- 19) Glass / Needle / Syringes
- 20) Technician's Role
- 21) Patient Monitoring
- 22) Procedure Related : Data Collection
- 23) Acquisition and entry of Data, Procedure Books, Log Books, Registers etc.
- 24) Stock of all disposables Eg. Catheters etc.
- 25) Stores (Disposable Items)
- 26) Accounting (Used Items)
- 27) Equipment Maintenance
- 28) Cine Angiography: Cine Filming, Cine Film Processing and Cine Film Viewing, Cine film library
- 29) Contrast Media

- 1) Cardiac Catheterisation Procedure: Diagnostic Studies.
- 2) Cardiac Catheterisation Procedures: Therapeutic / Interventional Procedures
- 3) Acquisition of Cath Data: Cardiac Output / Oximetry and Shunts
- 4) Acquisition of Cath Data: Pressures and Wave Forms; Recording Technique, Analysis
- 5) Angiography: Technique / Views / Contrast Media
- 6) Cardiac Catheterisation
- 7) Hardware: Catheters / Connections / Sheaths / Stopcocks / Wires / Angioplasty Catheters
- 8) Complication of Cardiac Catheterisation: Recognition and Management
- 9) Cardiopulmonary Resuscitation
- 10) Special Procedures:
- 11) Pericardial Tap
- 12) Atrial Septostomy
- 13) Endomyocardial Biopsy
- 14) Balloon Angioplasty (Valve)
- 15) Coronary Angioplasty
- 16) Case Study of Simple Cardiac Disease
- 17) ASD, MS, Tetralogy of Fallot
- 18) Hardware of Cardiac Catheterisation And Interventions
- 19) Venous and Arterial Check Flow Sheaths, Mainfolds, 3 - way Stock Cocks etc
- 20) Guide Wires and Dilators
- 21) Puncture Needles (Vascular Access Needles)
- 22) Woven Darcon Catheters: GL, NIH, Lehman, Woven, Darcon Electrode Catheters.
- 23) Flow Directed Catheters (Swan Ganz Type) Balloon Angio Catheters

MODULE - 7
Cardiac
Catheterization
PART - II
(15 Marks)

<p style="text-align: center;">MODULE - 8</p> <p style="text-align: center;">Cardiac Catheterisation Part III Pacing and Electrophysiology</p> <p style="text-align: center;">(10 Marks)</p>	<p>24) Polyurethane Catheters: Pig Tail, Judkins, Coronary, Amplatz Coronary, Brachial Coronary. Sones Catheters.</p> <p>25) Guide Wires: Short, Normal Length, Exchange Length 'J' Tipped Movable Core, Tips, Deflectable Types.</p> <p>26) Valvuloplasty Catheters, Atrial Septostomy Catheters</p> <p>27) Coronary Angioplasty: Guide Catheters, Guide Wire, Balloon Dilatation Catheters, Inflators, Y Connectors.</p> <p>28) Stents: Bare Stents, Mounted Stents, Other Types of Stents.</p> <p style="text-align: center;">*****</p> <p>1) Arrhythmias: Brady and Tachy Arrhythmias</p> <p>2) Indication for Temporary / Permanent Pacing Technique: Temporary Pacing</p> <p>3) Permanent Pacing : VVI AAI Pacing (Single Chamber Pacing)</p> <p>4) Permanent Pacing : DDD, other Modes of Pacing</p> <p>5) Pacemaker Clinic: Management of Pacemaker Patients, Programmers.</p> <p>6) Intracardiac Electrogram - Technique</p> <p>7) Electrophysiological Studies</p> <p>8) Radio Frequency Ablation for arrhythmias</p> <p>9) Implantable Cardioverter Defibrillator</p> <p style="text-align: center;">*****</p>
<p style="text-align: center;">MODULE - 9</p> <p style="text-align: center;">(10 Marks)</p>	<p>1) Cardiac Arrest</p> <p>2) Cardio Respirator Resuscitation</p> <p>3) Hypotension / Hypertensive Crisis</p> <p>4) Cardiac Tamponade</p> <p>5) Anaphylaxis</p> <p>6) Emergency Drugs</p> <p>7) Intra - aortic Balloon Pump</p> <p>8) Records Keeping: Indents, Stocks, Log Books, Procedure Books etc.</p> <p style="text-align: center;">*****</p>

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.