Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 19-May-2025

Time: Three Hours **Max. Marks: 100**

Clinical Cardiac Care Technology – I
Paper – I (RS2)
Q.P. CODE: 2920

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Explain the assessment of diastolic function in detail
2. Explain indications, procedure and cath position of Left heart catheterization
3. Explain Echo features of hypertrophic cardiomyopathy in detail

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Echo features in pericardial effusion
5. Echo features in Post MVR
6. Echo findings in Mitral regurgitation in detail. Add a note on PISA
7. Explain balloon pulmonary valvoplasty
8. What are the measures taken to avoid radiation in Cathlab?
9. Describe sterilization in cathlab
10. Describe LV segments in detail
11. Explain hardware used in coronary angiogram
12. Echo features of PDA. Add a note on Doppler measurements
13. **Echo in severe aortic stenosis.**
14. Treatment of Coarctation of Aorta
15. Describe primary percutaneous coronary intervention, procedure and complications
16. Explain indications and contraindications of peripheral angiogram
17. Classification of LA clot and role of TEE in diagnosis

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

18. Name three catheters used in of Right heart catheterization
19. Features of echo in tetrology of fallot (TOF)
20. **Ischemic MR**
21. **Acute MI**
22. Types of contrast media. Write two advantages of non ionic contrast
23. A V block – Types
24. M-mode echo findings in Mitral valve prolapse
25. Wilkin's score
26. Write three indications of coronary angiogram
27. **Echo features after bypass surgery**
28. Draw diagram of Temporary Pacemaker battery (TPI), what is sensitivity and output?
29. Write two uses of Amplatz Catheter

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 19-May-2025

Time: Three Hours **Max. Marks: 100**

CARDIAC CARE TECHNOLOGY - CLINICAL - PAPER – I (RS-3)

Q.P. CODE: 3276

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Discuss in detail echocardiographic assessment of mitral stenosis by M-Mode, 2D echo, colour doppler and doppler
2. Discuss right heart catheterization – procedure, oximetry at various levels and RV angiogram, step up in RA and RV

   OR

   Describe indications, hardware, procedure and complications of coronary angiogram and write two angiographic views (Rao caudal and Rao cranial)

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Echo in mitral regurgitation
4. Sterilization of material used in cath lab
5. Echo in PDA evaluation

   OR

   Echo in prosthetic valve thrombosis and pannus
6. Radiation hazards and its prevention
7. **Coronary guide wires**
8. Echo in aortic diseases
9. Assessment of diastolic dysfunction by Echo
10. Manjunath's classification of LA clot

    OR

    Write a note on PTCA balloons and types
11. Echo in infective endocarditis
12. **Apical 2D echocardiogram views and its uses**

SHORT ANSWER **10 x 3 = 30 Marks**

13. Components of TOF
14. Parasternal short axis view
15. M-mode echo and assessment of mitral valve in MVP
16. Echo in complications of myocardial infarction
17. LAO cranial and caudal views
18. Echo in ASD
19. Draw diagram of 17 echo cardiographic LV segments
20. Types of ASD
21. Echo features of sinus venosus ASD
22. TAPSE and MAPSE

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 23-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

ADVANCED CARDIAC CARE TECHNOLOGY – III (RS2)

Q.P. CODE: 2922

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. External defibrillator. Describe various shockable rhythms, paddle position, possible risks.
2. Single photon emission computed tomography (SPECT), principles, tracers, standard planes.
3. Rhythms in bradycardia. Classify and describe with electrocardiographic diagrams.

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Contraindications and complications of Treadmill testing (TMT).
5. Einthoven's triangle and limb leads in the electrocardiogram (ECG).
6. Steps in device closure of patient ductus arteriosus.
7. Materials used for percutaneous transluminal mitral commissurotomy (PTMC).
8. Indicators for an complications associated with electrophysiological (EP) studies.
9. List of abnormalities detected by Holter monitoring.
10. List of cardiac and non-cardiac conditions with abnormal oximetry.
11. Medicolegal aspects of cardiac evaluation during pregnancy.
12. Enumerate the differences of ''DDDR'' and ''VVI'' pacemaker by describing each letter.
13. Normal pressure in the cardiac chambers; abnormal pressures in mitral stenosis.
14. Effects of electrolytes on the ST-segment of QT interval.
15. Advanced facilities in an intensive coronary care unit (ICCU).

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

16. Complete Heart block – management.
17. Note on TAVI.
18. Indicators for aortic and pulmonary valvuloplasty.
19. Recognizing atrial fibrillation on the electrocardiogram.
20. Accelerated Idio Ventricular Rhythm (AIVR).
21. Differences between myocardial infarction and cardiac arrest.
22. Pressure tracing of left ventricle.
23. Metabolic equivalents (METs).
24. Chest compressions during cardiac arrest.
25. Complications of temporary pacemaker.
26. Types of ventricular septal defects NOT suitable for device closure.
27. Bundle of HIS.

Rajiv Gandhi University of Health Sciences, Karnataka

Third Year B.Sc. Cardiac Care Technology Degree Examination – 21-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

CARDIAC CARE TECHNOLOGY – APPLIED- PAPER-II (RS-3)

Q.P. CODE: 3277

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Explain stress echo in detail
2. Describe Intra Aortic Balloon Pump in detail
   OR
   Explain PTCA in detail

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Write a note on TEE views
4. Write a note on ECG changes in Cardiomyopathy
5. Describe ECG findings in pericardial diseases
   OR
   Role of IVC filter in detail
6. **Describe procedure and a few views on fetal echocardiogram**
7. Explain ECG in MI
8. Write a note on investigations in Coarctation of Aorta
9. **Write a note on types of Catheter**
10. Write a note on pulmonary thromboembolism
    OR
    Describe ASD in detail
11. Explain contrast echo and its findings
12. Classify and explain the pathophysiology of PDA

SHORT ANSWER **10 x 3 = 30 Marks**

13. How do you manage ASD?
14. Explain indications for myocardial contrast echo
15. Mention indications for peripheral angioplasty
16. Radiation hazards
17. Mention echo findings of PAH
18. Define DCM and its clinical findings
19. **What are the echo finding of aortic arch anomalies?**
20. **What are the ECG features of WPW Syndrome**
21. **Describe true vs Pseudo Dextro cardia on EGC**
22. Describe the embryology of ASD

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 23-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

CARDIAC CARE TECHNOLOGY – ADVANCED- PAPER-III (RS-3)

Q.P. CODE: 3278

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Discuss right heart catheterization – procedure, oxymetry at various levels and RV angiogram
2. 3D Echo.
   OR
   Speckle tracking.

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Briefly discuss about Nuclear Cardiology.
4. Alcohol septal ablation therapy.
5. IVUS
   (Intravascular ultrasound)
   OR
   ROTA
   (Rotational atherectomy)
6. What are the pregnancy precautions during Cathlab procedures?
7. Discuss on Anticoagulants and statins.
8. Temporary pacemakers.
9. ASD (Atrial septal defect) device closure.
10. BAV.(Baloonaortovaluvuloplasty)
    OR
    BPV.(Baloon pulmonary valuvuloplasty)
11. ECG in Bradyarrythmia.
12. Coronary Angio views.

SHORT ANSWER **10 x 3 = 30 Marks**

13. Amiodarone
14. Mention any two indications for BMV (Baloon Mitral valuvuloplasty).
15. Describe Crab view in Echo.
16. Mention any two complex CHDS (Congenital heart disease).
17. Mention any two coronary Anomalies.
18. Draw and label any two parasternal Echo views.
19. Cardiac output calculation.
20. Crash cart / Emergency kit
21. **ECG in VT (**Ventricular tachcycardia)
22. **Describe the oxygen saturations and pressures in aorta and LV**

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. (Allied Health sciences) Examination – 21-May-2025

Time: Three Hours **Max. Marks: 100 Marks**

CARDIAC CARE TECHNOLOGY
APPLIED TECHNOLOGY PAPER – II (RS2)
Q.P. CODE: 2921

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Discuss the Indications, Procedure, Usefulness and Complications of Transesophageal echocardiography.
2. Describe the various components of Tetralogy of Fallot (TOF). Discuss in detail the ECG features in TOF.
3. Draw a neat labelled diagram showing the blood supply to the heart. Describe the various angiographic views required for Coronary Angiography. Discuss the complications of Coronary angiography.

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Myocardial contrast echo-basics
5. Indications and contraindications for Dobutamine stress echo
6. Interpretation of Pharmacological stress echo
7. Utility of peripheral arterial Doppler in various diseases
8. Angioplasty of Coarctation of Aorta-mention materials used
9. ECG in Coarctation of Aorta
10. Non ST elevation MI
11. True posterior wall MI
12. Technical Dextrocardia
13. Materials used in coronary angioplasty
14. Severe Aortic stenosis with low aortic pressure gradients
15. RWMA in lateral wall MI
16. **RWMA in inferior and RVMI**
17. ECG in various types of ASD

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

18. Materials used in peripheral Angioplasty
19. **Define, list the Causes of Spontaneous Echo contrast**
20. How to record blood pressure
21. **ECG in LBBB with MI**
22. ECG in Severe AR
23. ECG in Severe MR
24. Procedure of foetal ECHO
25. Hyper acute ECG changes in MI
26. **QTc measurement and its importance**
27. Left posterior fascicular block
28. ECG changes in LAE
29 ECG changes in Severe AS

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 27-Oct-2025

Time: Three Hours **Max. Marks: 100**

Clinical Cardiac Care Technology – I
Paper – I (RS2)
Q.P. CODE: 2920

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Describe in detail about Echocardiographic features of pericardial disease
2. Explain indications, procedure and complications of coronary angiogram
3. Explain Rheumatic heart disease, Discuss echo findings in severe Mitral stenosis and severe aortic stenosis in detail

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Explain Right heart catheterization. Write a note on step up in RA
5. Describe various method used for assessment of systolic function
6. Echo features of RCM
7. Echo features of LV aneurysm
8. Describe Echo features pulmonary stenosis
9. Echo features in prosthetic valve malfunction
10. Explain peripheral angiogram
11. Describe diagnostic catheters used in coronary angiogram in detail
12. Echo features of Myxoma
13. Describe echo features in perimembranous VSD
14. Echo features in ostium primum and sinus venosus atrial septal defect
15. Echo features of coarctation of aorta in detail
16. Explain left ventricular diastolic dysfunction
17. Echo changes in pulmonary hypertension

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

18. Echo findings in Dextrocardia
19. Write three echo findings in infective endocarditis
20. ECG in left atrial enlargement. Write a note on macruz index
21. Types of PDA
22. Write three advantages of radial angiogram
23. Write different colours of sheaths used in cathlab
24. Echo findings in Dilated cardiomyopathy
25. Indications for RV angiogram
26. TAPSE
27. Temporary pacemaker implantation indications
28. EPSS
29. Segments of LV in inferior wall

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 27-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

CARDIAC CARE TECHNOLOGY - CLINICAL - PAPER – I (RS-3)

Q.P. CODE: 3276

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Describe Left Heart catheterization, procedure, oxymetry at various levels and LV angiogram.
2. Describe radiation hazards and safety in the Cathlab.
   OR
   Briefly describe the coronary angiogram views.

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Echo in HOCM.
4. Echo features of pericarditis.
5. ARVD.
   OR
   Non compaction LV.
6. Echocardiographic assessment of RV function.
7. Non ionic contrast.
8. Sterilization techniques in the Cathlab.
9. Describe the Indications, contraindications for peripheral angiogram.
10. Temporary pacemakers.
    OR
    ICD.
11. Discuss normal ECG.
12. Echocardiographic assessment of LV diastolic function.

SHORT ANSWER **10 x 3 = 30 Marks**

13. Doppler principles, CW and PW
14. Pressure Half time in MS and AR.
15. Describe any 1 type of transducer in detail.
16. Wall motion score index.
17. LA - CLOT
18. Step up in RA (oxymetry).
19. MVP.
20. Classify cardiomyopathy types and define them.
21. Guidewires.
22. M – Mode features in Mitral stenosis.

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. (Allied Health sciences) Examination – 29-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

CARDIAC CARE TECHNOLOGY
APPLIED TECHNOLOGY PAPER – II (RS2)
Q.P. CODE: 2921

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Draw a neat labelled diagram of the blood supply to the heart. Discuss indications, procedures and complications of Coronary angiogram. Describe the views taken for Left Coronary Artery.
2. Dobutamine stress ECHO-Indications, Procedure, Complications and Reporting
3. TEE-preparation, procedure, indications, usefulness

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. ECG changes in NSTEMI
5. ECHO and hemodynamic changes in TOF
6. Mechanical complications in MI-ECHO features
7. RWMA involved in RCA occlusion
8. ECHO in severe AR
9. Myocardial contrast ECHO
10. Low flow-low gradient AS
11. ECG in complete heart block
12. ECHO in severe AS
13. ECG and ECHO in sinus venosus ASD
14. ECG criteria for LVH
15. Peripheral Arterial Doppler
16. IABP
17. Cardiac defibrillator

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

18. Right axis deviation
19. ECG in RVMI
20. ECG in pulmonary embolism
21. Junctional rhythm
22. Hemodynamic data in TAPVC
23. Parachute mitral valve
24. Acute stent thrombosis
25. ECHO in VSD
26. M-mode of aortic valve, pulmonary valve, mitral valve
27. Femoral arterial puncture-indications and complications
28. ECG in TOF
29. ECG in Ebsteins anomaly

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 31-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

ADVANCED CARDIAC CARE TECHNOLOGY – III (RS2)

Q.P. CODE: 2922

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Explain in detail about basic and advance cardiac life support
2. Describe ECG changes in bradyarrythmias in detail
3. Explain stepwise approach to ASD and PFO device closure

SHORT ESSAYS (Answer any Ten) **10 x 5 = 50 Marks**

4. Explain indications for valvuloplasties
5. TMT Protocols
6. Cardioversion
7. TMT-indications and contra-indications
8. Describe 3D Echo briefly
9. CD recording and storage in echo labs/Cath labs
10. Describe pressures and saturations in LV and its wave form
11. EP study-indications
12. Myocardial contrast Echocardiography
13. **Describe indications for ICD, CRTD implantation**
14. Echo artifacts
15. Write a short note on pacemaker types

SHORT ANSWERS (Answer any Ten) **10 x 3 = 30 Marks**

16. Define any two properties of Ultrasound
17. Mention any four complications of valvuloplasties
18. Uses of advance echo
19. Mention any two hardware's used in Balloon Aortic Valvuloplasty (BAV)
20. Mention any two echo features of cardiac synchrony
21. What is defibrillation?
22. Define ventricular Ectopics
23. Describe any two indications of Holter Monitoring
24. Describe a few work related injury for cardiac sonographers
25. Mention a few knobs used to improve the brightness in 2D Echo
26. Define continuous wave doppler
27. Describe sinus pause in an ECG

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 29-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

CARDIAC CARE TECHNOLOGY – APPLIED- PAPER-II (RS-3)

Q.P. CODE: 3277

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. What is MI (Myocardial Infarction)? What are different types of MI? Write ECG findings in each.

2. ECG findings of RBBB, LBBB, LAFB, LPFB, WPW syndrome with diagram

   OR

   What is Hypertension? What are different types of Hypertension? Write about various methods to record Blood Pressure in hypertension and Echocardiographic changes in hypertension

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Dobutamine stress Echo : Indications, contraindications and procedure.
4. Contrast Echocardiogram: Indications, contraindications and procedure.
5. What is IABP? Write three indications and three contraindications.

   OR

   What is Rotablation? Uses and complications of ROTA.
6. ECG findings in LVH. Write any three named criteria for LVH.
7. Peripheral Doppler – Mention various sites and their uses.
8. What is FFR? What are its uses in coronary artery disease?
9. What is coronary angioplasty? Name various steps in coronary angioplasty.
10. What are different types of Atrioventricualr blocks (AV blocks)? Write with diagram.

    OR

    Write in brief about myocardial contrast echocardiogram.
11. What are different types of ASD? Write ECG changes in ASD (Atrial Septal Defect).
12. What are different types of VSD? Write ECG changes in VSD (Ventricular Septal Defect).

SHORT ANSWER **10 x 3 = 30 Marks**

13. What is Dextrocardia? What are ECG changes in it?
14. ECG findings in apical hypertrophic cardiomyopathy.
15. What is ACS (Acute Coronary Syndrome)? What are different types of ACS?
16. Mention various levels at which TEE is done and one importance at each level.
17. What is IVUS? Write any two uses of it.
18. What are different types of balloons used in coronary angioplasty?
19. What is coarctation of aorta? Two types of treatment for it.
20. Name any three hardwares used during coronary angioplasty (Except stent and balloon).

21. ECG findings in mitral stenosis (MS).
22. What is OCT? write two uses of it.

*****

RGUHS THEORY EXAMINATION OCTOBER-2025

NODAL CENTRE:CAUVERY INSTITUTE OF HEALTH SCIENCES, MYSORE

Date: 29-10-2025 **Session: Morning**

CORRECTIONS

Subject:CARDIAC CARE TECHNOLOGGY-APPLIED **QP Code:3277**

Q. No	QUESTION Appeared As	QUESTION CORRECTED As	REASON FOR CORRECTIONS
2	What is Hypertension? What are different types of Hypertension? Write about various methods to record hypertension and infective Echocardiographic changes in hypertension	What is Hypertension? What are different types of Hypertension? Write about various methods to record Blood Pressure in hypertension and Echocardiographic changes in hypertension	Spelling mistake

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Cardiac Care Technology Degree Examination – 31-Oct-2025

Time: Three Hours **Max. Marks: 100 Marks**

CARDIAC CARE TECHNOLOGY – ADVANCED- PAPER-III (RS-3)

Q.P. CODE: 3278

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Second Question Choice) **2 x 10 = 20 Marks**

1. Advance cardiac life support.
2. ECG in Electrolyte Imbalance.
   OR
   ASD device closure.

SHORT ESSAYS (Question No 5 & 10 choice) **10 x 5 = 50 Marks**

3. Describe coil closure of PDA
4. BMV – Indications, Hardware used.
5. Cardioversion.
   OR
   TMT – indications and contra-Indications.
6. Speckle tracking.
7. CD recording and storage in Echo labs/Cath lab.
8. Pressure in LA.
9. EP study – Indications.
10. PET scan.
    OR
    Myocardial contrast Echocardiography.
11. ICD.
12. 2D Echo artifacts.

SHORT ANSWER **10 x 3 = 30 Marks**

13. Define any two properties of Ultrasound.
14. Complications of septal ablation therapy.
15. Uses of 2D Echo.
16. Mention any two hardwares used in EP study.
17. Mention any two Echo features of cardiac synchrony.
18. What is CRT?
19. Components of Temporary pacemaker.
20. Precautions to be followed when you perform CAG for a pregnant woman.
21. Work related injury for cardiac Sonographers.
22. Knobs used to improve the brightness in 2D Echo.