Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Cardiac Care Technology Degree Examination – 22-May-2023

Time: Three Hours | Max. Marks: 100 Marks

INTRODUCTION TO CARDIAC CARE TECHNOLOGY (RS2)
Q.P. CODE: 1245
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. How will you perform Echocardiographic examination of the Heart? How do you select the Transducer for the Patient? What are the views commonly used and how they are obtained? What cardiac structures are imaged in each view? How do you examine and report?
2. Mention the methods of stress Echocardiography. How do you do pharmacological stress-echo? What are the observations done? How do you interpret the results?
3. What do mean by electrical Axis in a given ECG? What is normal Axis and What is abnormal axis?

SHORT ESSAYS (Answer any Twelve) 12 x 5 = 60 Marks

4. Mention the Emergency Equipment, Drugs and other materials to be Present in Treadmill Exercise test Lab.
5. Principle behind Pulse wave and Continuous wave Doppler-uses and Limitations.
6. Electrocardiographic measurements done in a normal ECG and their Normal values.
7. ECG patterns is Various types of Bundle branch Block.
8. Informed Consent form for Treadmill Exercise Test.
9. Criteria for Termination of Treadmill exercise Test.
10. Left Ventricular Hypertrophy.
11. 24 hour Holter ECG monitoring.
12. Left ventricular systolic function.
13. Morphology of Right and Left ventricle by ECHO.
14. Doppler Colour flow Imaging.
15. How do you Image Aortic Valve? How do you identify the aortic sinuses and Cusps?
16. How do you differentiate Right and Left Atria in 2D Echo?
17. Utility of M-mode Echocardiography.

SHORT ANSWERS (Answer any Ten) 10 x 2 = 20 Marks

18. How will you recognize Pulmonary artery by 2D Echo?
19. **Morris Index**
20. 2nd Degree A-V Block.
21. Defibrillator.
22. ECG in inferior wall MI.
23. ECG in atrial fibrillation.
24. Right atrial enlargement in ECG.
25. Right ventricular Hypertrophy: ECG recognition.
26. ECG in a patient with pacing.
27. Electrical alternans.
28. Clock-wise rotation.
29. Sinus Pauses.

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Cardiac Care Technology Degree Examination – 24-May-2023

Time: Three Hours | Max. Marks: 80 Marks

MEDICINE RELEVANT TO CARDIAC CARE TECHNOLOGY (RS2)

Q.P. CODE: 1246

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. Classify oral and intravenous antihypertensive medications. Add a note on mechanism of action of each
2. Describe the staging of chronic kidney disease. Add a note on renal replacement therapy
3. What are bleeding disorders? Describe laboratory tests used in their diagnosis

SHORT ESSAYS (Answer any Eight) 8 x 5 = 40 Marks

4. Pulmonary function tests
5. Emphysema and chronic bronchitis
6. Classification and staging of anemia
7. Acute coronary syndromes
8. Rheumatic mitral stenosis
9. Tetralogy of fallot
10. Hypertrophic cardiomyopathy
11. Critical limb ischemia
12. Paroxysmal **nocturnal** dyspnoea
13. Parasympathetic nervous system

SHORT ANSWERS (Answer any Ten) 10 x 2 = 20 Marks

14. Medications used to treat diabetes mellitus
15. Cardiovascular changes during pregnancy
16. Patent ductus arteriosus
17. Sclerotic aortic valve
18. Diastolic dysfunction and aging
19. Types of lipoproteins
20. Intracranial hemorrhage
21. Restrictive pulmonary disease
22. Types of aortic aneurysms
23. Bicuspid aortic valve
24. Causes of acute kidney injury
25. Baroreceptor reflex

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Rajiv Gandhi University of Health Sciences, Karnataka

Second Year B.Sc. Allied Health Sciences Degree Examination - 17-May-2023

Time: Three Hours Max. Marks: 50 Marks

APPLIED PATHOLOGY (RS-3)

(Cardiac Care Technology and Perfusion Technology)

Q.P. CODE: 3266

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary
(Note: Both QP Codes 3266 and 3267 are to be answered within total duration of 3 hours)

LONG ESSAYS 1 x 10 = 10 Marks

1. Discuss the causes, pathogenesis and complications of Valvular Heart diseases. Add a note on complications of artificial valves.

SHORT ESSAYS (Question No. 4 choice) 5 x 5 = 25 Marks

2. Define leukocytosis, enumerate the causes and classify leukemias.
3. Explain in detail the causes, effects and diagnosis of pleural effusion.
4. Describe briefly the basic defects and effects of important types of congenital heart diseases.
   OR
   Clinical manifestation of renal diseases.
5. Discuss in detail the laboratory diagnosis of Iron deficiency anaemia.
6. Briefly discuss the pathogenesis of Emphysema.

SHORT ANSWER (Question No.9 choice) 5 x 3 = 15 Marks

7. Mention three types of Pneumoconiosis.
8. Urine findings in **nephritic** syndrome
9. Microcytic hypochromic **anaemia** blood picture.
   OR
   List causes of increased bleeding time.
10. **Classify Bronchial asthma with appropriate example.**
11. Mention three types of anemia.

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Rajiv Gandhi University of Health Sciences, Karnataka

Second Year B.Sc. Allied Health Sciences Degree Examination - 17-May-2023

Time: Three Hours | Max. Marks: 50 Marks

APPLIED MICROBIOLOGY (RS-3)
(Cardiac Care Technology and Perfusion Technology)

Q.P. CODE: 3267

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary
(Note: Both QP Codes 3266 and 3267 are to be answered within total duration of 3 hours)

LONG ESSAYS — 1 x 10 = 10 Marks

1. Describe in detail catheter related urinary tract infections. Add a note on laboratory diagnosis and prevention of urinary tract.

SHORT ESSAYS (Question No. 4 choice) — 5 x 5 = 25 Marks

2. Nosocomial infections – modes of transmission and prevention.
3. Principles and working of autoclave.
4. Laboratory diagnosis of Human immunodeficiency virus.
   OR
   Prophylaxis of Hepatitis B virus.
5. Cytomegalovirus – modes of transmission and prevention.
6. Central sterile supply department.

SHORT ANSWER (Question No.9 choice) — 5 x 3 = 15 Marks

7. List three multidrug resistant bacteria.
8. Mention three clinical manifestations of Salmonella species.
9. Define sterilization and disinfection.
   OR
   Alcohols as disinfectants.
10. Name thee blood borne infections.
11. List the organisms causing ventilator associated pneumonia.

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Rajiv Gandhi University of Health Sciences, Karnataka

Second Year B.Sc. Cardiac Care Technology Degree Examination – 22-May-2023

Time: Three Hours Max. Marks: 100 Marks

Introduction to Cardiac Care Technology (RS-3)

Q.P. CODE: 3274

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 generation of X-ray, hazards and protection from X-ray in the Cathlab.
2. Discuss about different 2D Echo view and its uses.
   OR
   Explain Knobology in Echo machine.

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

3. Write a note on how a 2D Echo image is **Formed.**
4. Write a note on ASE guidelines for 2D Echocardiography.
5. Write a note on M-mode Echocardiography.
   OR
   Describe colour Doppler with examples.
6. Describe Cathlab machine in detail.
7. Bernoulli's Equation.
8. Write a note on standard limb leads.
9. Describe left Bundle branch blocks in detail.
10. Write a note on termination of TMT.
    OR
    Describe stepwise Holter monitoring.
11. Explain Biventricular Hypertrophy in detail.
12. Write a note on PW vs CW Doppler.

SHORT ANSWER 10 x 3 = 30 Marks

13. Mention any three ways to measure Heart rate on ECG.
14. Describe abnormal axis deviation on ECG in detail.
15. Mention normal changes on ECG waveforms during exercise.
16. Mention any three causes for BAE.
17. Describe ECG paper speed in detail.
18. Mention any three features of a normal QRS complex in an ECG.
19. What are the causes of an abnormal P wave?
20. What are the uses of anterior leads in an ECG?
21. Describe any three ECG features for Sinus nodal dysfunction.
22. Describe **the use of standardization on an ECG paper.**

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Cardiac Care Technology Degree Examination – 24-May-2023

Time: Three Hours Max. Marks: 100 Marks

Medicine Relevant to Cardiac Care Technology (RS-3)

Q.P. CODE: 3275

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 any two types of congenital heart disease – clinical features, ECG changes and management
2. Describe the three types of Cardiomyopathy
   OR
   Classification of myocardiac infarction

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

3. What are the clinical presentation – signs and symptoms of ischemic heart disease
4. Mention any five clotting factors and any three diseases of the clotting system
5. What is PFT? What are the indications and interpretations?
   OR
   Types of cardiomyopathies
6. Pregnancy and heart disease
7. What are the common heart diseases affecting children? mention any five
8. Dialysis types and indications
9. Types of anemia and briefly mention treatment of anemia
10. Clinical evaluation of bronchial asthma
    OR
    COPD in detail
11. Mention two types of heart failure and the method to identify LV function
12. Mention five echo features of rheumatic mitral stenosis

SHORT ANSWER 10 x 3 = 30 Marks

13. Risk factors for atherosclerosis, mention any three
14. Which type of **foods** are to be avoided in a healthy diet ?
15. Mention three clinical features of acute renal failures
16. Management of tachycardia – mention three drugs
17. How do you manage malnutrition in children? Mention any three steps
18. Mention three lab tests used to measure coagulation ability of blood
19. Mention any four complications of diabetes
20. Mention the arteries supplying blood to brain
21. Mention any three types of ASD
22. Mention three drugs used in COPD

Rajiv Gandhi University of Health Sciences, Karnataka

Second Year B.Sc. Allied Health Sciences Degree Examination - 23-Nov-2023

Time: Three Hours Max. Marks: 50

APPLIED PATHOLOGY (RS-3)

(Cardiac Care Technology and Perfusion Technology)

Q.P. CODE: 3266

Your answers should be specific to the questions asked

Draw neat labeled diagrams wherever necessary

(Note: Both QP Codes 3266 and 3267 are to be answered within total duration of 3 hours)

LONG ESSAYS 1 x 10 = 10 Marks

1. Define and classify the causes of acute kidney injury. Describe the clinical course and common laboratory tests done to identify causes of acute kidney injury

SHORT ESSAYS (Question No. 4 choice) 5 x 5 = 25 Marks

2. Classify hemolytic anemia with appropriate examples
3. Classify Infarcts. Enumerate the laboratory diagnosis of Myocardial infarction
4. Define atherosclerosis. Describe the risk factors of atherosclerosis
   OR
   Classify types of transplants and describe the pathogenesis of hyper acute transplant rejection
5. Mention the differences types of embolism with examples
6. Define and describe the etiopathogenesis of Bronchiectasis

SHORT ANSWER (Question No.9 choice) 5 x 3 = 15 Marks

7. Mention three causes of thrombocytopenia
8. Classify Shock
9. List the different types of kidney stones
   OR
   Enumerate the causes of obstructive uropathy
10. Mention causes of leucocytosis
11. Mention three causes of left sided heart failure

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Rajiv Gandhi University of Health Sciences, Karnataka

Second Year B.Sc. Allied Health Sciences Degree Examination - 23-Nov-2023

Time: Three Hours Max. Marks: 50 Marks

APPLIED MICROBIOLOGY (RS-3)

(Cardiac Care Technology and Perfusion Technology)

Q.P. CODE: 3267

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary
(Note: Both QP Codes 3266 and 3267 are to be answered within total duration of 3 hours)

LONG ESSAYS 1 x 10 = 10 Marks

1. Define nosocomial infections. Describe catheter associated urinary tract infections in detail and add a note on the diagnosis and prevention.

SHORT ESSAYS (Question No. 4 choice) 5 x 5 = 25 Marks

2. Laboratory diagnosis of Human Immuno deficiency Virus.
3. Working principle, uses and controls of Autoclave.
4. Catheter related blood stream infections.
   OR
   Structure and laboratory diagnosis of Hepatitis B virus.
5. CSSD.
6. Vancomycin resistant enterococci.

SHORT ANSWER (Question No.9 choice) 5 x 3 = 15 Marks

7. List three infections caused by Salmonella species.
8. List three gaseous disinfectants.
9. Alcohols as disinfectants.
   OR
   Cytomegalovirus.
10. Name three drug resistant bacteria in the hospital setting.
11. Streptococcus pneumoniae.

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Cardiac Care Technology Degree Examination – 02-Dec-2023

Time: Three Hours | Max. Marks: 100 Marks

INTRODUCTION TO CARDIAC CARE TECHNOLOGY (RS2)

Q.P. CODE: 1245

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 the applications of Doppler principles with examples.
2. Draw and explain Echo machine and its parts.
3. Stepwise approach to a normal ECG.

SHORT ESSAYS (Answer any Twelve) — 12 x 5 = 60 Marks

4. Tissue Doppler imaging.
5. TTE views – subcostal.
6. Indications and complications of TEE.
7. X-Ray generation in Cathlab mechanics and radiation hazards.
8. Explain electrical axis and causes of left axis deviation.
9. Describe any five knobs on the echo machine
10. Mention the colour codes of chest leads and describe the positioning.
11. Describe any two artifacts on ECG.
12. Properties of ultrasound waves.
13. Describe the TMT procedure and ECG lead connections.
14. RBBB.
15. LPHB.
16. BAE (Biatrial enlargement).
17. QRS genesis.

SHORT ANSWERS (Answer any Ten) — 10 x 2 = 20 Marks

18. TGC – Time gain compensation.
19. Dextrocardia on ECG
20. Normal standardization and ECG paper speed.
21. T wave in ECG.
22. Plax view.
23. Describe any two types of transducers.
24. Mention any two indications for Holter monitoring.
25. Name any two protocols used in TMT.
26. SA node.
27. Define stroke volume and cardiac output.
28. Describe any two methods to calculate heart rate on ECG.
29. Describe lead V 1

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Cardiac Care Technology Degree Examination – 05-Dec-2023

Time: Three Hours | Max. Marks: 80 Marks

MEDICINE RELEVANT TO CARDIAC CARE TECHNOLOGY (RS2)

Q.P. CODE: 1246

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 the types, aetiology, clinical presentation and echo features of dilated cardiomyopathy.
2. Describe the major and minor risk factors for coronary artery disease.
3. Which are the types of renal failure? Describe the etiology, clinical presentation and complications.

SHORT ESSAYS (Answer any Eight) — 8 x 5 = 40 Marks

4. What are the types of ASD? Mention the clinical features of ASD.
5. What are the indications and type of interpretation of pulmonary function test?
6. What are the types of dialysis and describe hemodialysis in detail.
7. Describe clinical features and etiology of heart failure with preserved ejection fraction.
8. What are the acute and long term complications of hypertension?
9. What are the clotting factors? Mention any three diseases of clotting factors.
10. What are the components of the lipid profile? Write a note on the importance of LDL cholesterol.
11. Congenital aortic stenosis types and echo features.
12. What are the complications of diabetes?
13. How do you prevent renal failure?

SHORT ANSWERS (Answer any Ten) — 10 x 2 = 20 Marks

14. Mention six water soluble vitamins.
15. What is prothrombin time and when do we measure it?
16. What are the clinical features of malnutrition in children?
17. How do you manage ostium secundum ASD?
18. Mention three types of Tachyarrhythmias.
19. Mention any three complications of hypertension.
20. What are the types of anemia?
21. Mention any three echo features of hypertrophic cardiomyopathy?
22. What are the clinical features of right ventricular failure?
23. What are the types of heart failure?
24. What are the types of stroke?
25. Mention any four complications of obesity.

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Rajiv Gandhi University of Health Sciences, Karnataka

Second Year B.Sc. Cardiac Care Technology Degree Examination – 02-Dec-2023

Time: Three Hours | Max. Marks: 100 Marks

Introduction to Cardiac Care Technology (RS-3)

Q.P. CODE: 3274

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 the different waves of ECG, their causes and abnormalities
2. Discuss the ECG changes of RBBB and LBBB
   OR
   Exercise stress test – procedure, indication and contraindications

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

3. ST segment changes
4. X-ray generation in cath lab-mechanics and radiation hazards
5. Evaluation of RV & LV chamber dilatation on echo
   OR
   Athero sclerotic plaque
6. How do you perform contrast echo and evaluate?
7. Regional wall motion on echo
8. QT interval
9. Standard and precordial limb leads
10. Discuss the various types of doppler on Echo
    OR
    ECG features of bundle branch blocks
11. Indications for TMT test
12. Electrical axis

SHORT ANSWER 10 x 3 = 30 Marks

13. ECG changes in Dextrocardia
14. Mention the types of hemiblocks
15. Mention the measurements taken during M mode of LV
16. Indications for TEE
17. Uses of colour Doppler
18. Mention the exercise protocols of TMT
19. ECG changes in LA enlargement
20. Mention any four views used in echo
21. Mention various views and angulations used in cathlab during angiography
22. Mention any two ECG changes during strongly positive TMT

Rajiv Gandhi University of Health Sciences, Karnataka