



SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH
(A DEEMED TO BE UNIVERSITY)

B.Sc. Allied Health Sciences Second Year (Semester-III)

April 2023 Examination

B.Sc. Cardiac Perfusion Technology (CPT)

Time : 3 Hrs.

Paper – II

[Max. Marks : 100]

Introduction to Cardiac Perfusion Technology

Q.P Code : J3810

Your answers should be specific to the questions asked.

Draw neat labelled diagrams wherever necessary.

Long Essay

2 X 10 = 20 Marks

1. What is CPB? Write the basic principles of CPB. Draw a diagram of Extracorporeal Circuit
2. Explain various types of Arterial, Venous and Cardioplegia cannulation with various sites of cannulation.

Short Essay (Any ten)

10 X 5 = 50 Marks

3. Briefly explain Azygous flow principle
4. what is anticoagulation? Describe heparin, its dose and monitoring during CPB
5. Explain ECG with various waves and its intervals. Draw a neat labelled diagram of an ECG
6. what is Aseptic Technique? Explain how infection is transmitted and ways of controlling it
7. Explain Echocardiography
8. Describe cardiac cycle in detail with a diagram
9. Explain various safety devices in cardiopulmonary bypass
10. Describe the various circulatory system of the body
11. A 75 Kg Female patient with height 150 cms was posted for a cardiac procedure. Her hemoglobin was 12gm/dl and hematocrit 37%. The blood volume of the patient is 65ml/kg. The priming volume used for the CPB circuit is 1200ml. Calculate the following
a) BSA, b) patient blood volume, c) Flow rate for 2.2 and 2.4 Cardiac Index, d) Predicted hematocrit
12. Draw neat labelled diagram of Aorta and its branches. Briefly mention the area of the body to which it supplies blood
13. Explain controlled cross circulation
14. Explain the blood flow within the heart.

Short Answers (Any ten)

10 X 3 = 30 Marks

15. Name the piped gases and its use
16. Right Atrium
17. Draw a neat and labelled diagram of Fetal heart circulation
18. Gas blender
19. Normal ABG values
20. uses of echocardiography during Cardiopulmonary bypass
21. Causes of LAD and RAD
22. What is Roller Pump
23. Pericardium
24. Types of cardiac surgery which are performed under cardiopulmonary bypass
25. uses of venting in heart during CPB
26. Importance of creatinine in Cardiac surgery

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B.Sc. Allied Health Sciences Second Year (Semester-III)

April 2023 Examination

B.Sc. Cardiac Perfusion Technology

Time : 2 Hrs.

[Max. Marks : 40]

Subject : Applied Pharmacology

Q.P Code : J3820

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary.

LONG ESSAY

1 X 10 = 10 Marks

1. List sympathomimetics. Explain the uses and adverse effects of any three drugs
(2.5+2.5+2.5+2.5)

SHORT ESSAY (Answer any three)

3 X 5 = 15 Marks

2. Explain the mechanism of action, uses and adverse effects of neostigmine (2+2+1)
3. Explain the mechanism of action uses and adverse effects of frusemide (1+2+2)
4. Explain mechanism of action, uses and adverse effects of heparin (1.5+2+1.5)
5. List the properties of ideal plasma expander and write the uses of crystalloids (3+2)

SHORT ANSWERS (Answer any five)

5 X 3 = 15 Marks

6. List three uses and three adverse effects of losartan
7. Write the treatment for organophosphorus compound poisoning
8. List three uses and three adverse effects of nitrates
9. Write the treatment for myocardial infarction
10. Define bioavailability and plasma half-life with examples
11. List three differences between oral and intravenous route of drug administration



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B.Sc. Cardiac Perfusion Technology (CPT)

Time : 2.30 Hrs.

[Max. Marks : 80]

PAPER-IV

Medicine Relevant to Cardiac Perfusion Technology

Q.P Code : J3830

Your answers should be specific to the questions asked.

Long Essay

2X10=20 Marks

1. Describe Ischemic heart disease in detail
2. Explain cardiomyopathy, types, causes, signs and symptoms, complication, diagnosis and treatment

Short Essay (Answer any Six)

6X5=30 Marks

3. Classification of Aortic aneurysm and its management
4. Causes of Rheumatic fever, Its signs and symptoms, investigations and treatment
5. Write clinical signs and symptoms of PVD & risk factors for PVD
6. Ventricular Septal defect
7. Define COPD with its pathophysiology.
8. Define Hypertension & classify it
9. Explain Left heart failure and its complications
10. Pulmonary function test and its interpretation

Short Answers (Answer any ten)

10X3=30 Marks

11. Define Acyanotic heart disease and enlist few conditions of Acyanotic heart disease
12. Enlist various bleeding disorders
13. Risk factors of hypertension
14. What is myocardial infarction & classify it
15. what is anaemia. write its sign & symptoms
16. Cyanotic congenital heart diseases
17. Pathophysiology of Hypertrophic Cardiomyopathy
18. Antithrombotic therapy
19. what is Atrial septal defect and its treatment
20. Draw a neat labelled diagram of Coronary artery and its branches
21. Haemophilia
22. what are the 4 defects in Tetralogy of Fallot



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B.Sc. Allied Health Sciences Second Year Semester-III

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B.Sc. Cardiac Perfusion Technology

Time: 2.30 Hrs.

Paper – I

[Max. Marks: 80]

Applied Pathology & Microbiology

(Use separate answer booklet for Section A & B)

Section – A

Applied Pathology (40 Marks)

Q.P Code : K3705

Your answers should be specific to the questions asked.

Draw neat labelled diagrams wherever necessary.

LONG ESSAY

1 X 10 = 10 Marks

1. Define cardiomyopathy-Definition, types, causes and its pathophysiology

SHORT ESSAY

3X 5 = 15 Marks

2. Aneurysm – Definition , classification and pathophysiology
3. Classify leucocytes. Describe microscopic morphology of leucocytes with a diagram
4. Pathophysiology of left heart failure

SHORT ANSWERS

5 X 3 = 15 Marks

5. Causes for mitral valve prolapse
6. Classify hypertension
7. Write three causes for lymphocytosis
8. What is Leukemoid reaction and 3 causes
9. Name the clotting factors

Section – B

Applied Microbiology (40 Marks)

Q.P Code : K3706

(Use separate answer booklet for Section-B)

LONG ESSAY

1 X 10 = 10 Marks

1. Enumerate the microorganisms, risk factors and infection control practises to prevent the infection in health care workers through respiratory route (3+3+4)

SHORT ESSAY

3 X 5 = 15 Marks

2. Discuss the importance of infection control in ICU
3. List five moments and steps in hand washing
4. Indications and methods of microbiological surveillance and sampling of high-risk areas in health care settings

SHORT ANSWERS

5 X 3 = 15 Marks

5. Name any three infections transmitted through body fluids
6. Name three multidrug resistant organism
7. Name three infections transmitted through direct contact
8. Mention the Colour coded bins used in biomedical waste management
9. Name three vaccines recommended for health care worker



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B.Sc. Cardiac Perfusion Technology

Paper –II

[Max. Marks : 80]

Time: 2.30 Hrs.

Introduction to Cardiac Perfusion Technology

Q.P Code: K3710

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

LONG ESSAY

2 X 10 = 20 Marks

1. Explain what are the different equipment's used during Cardiac surgery and its uses
2. Write in detail history of CPB

SHORT ESSAY

6 X 5 = 30 Marks

3. Different types of monitoring during Cardiopulmonary bypass
4. Explain ECG in detail with a neat, labelled diagram
5. Explain fatal circulation with a neat, labelled diagram
6. Explain in detail various phases in cardiac cycle
7. Explain Neurological monitoring in cardiac surgery
8. What is hypothermia and its uses

SHORT ANSWERS

10 X 3 = 30 Marks

9. What are the various heart valves in the heart
10. Uses of heater cooler machine
11. Different sites of temperature monitoring in Cardiopulmonary bypass
12. What are the different layers of the heart
13. Gross Well Technique
14. What are the characteristics of QRS complex
15. Formula for calculating Body Surface Area
16. Uses of vents in Cardiopulmonary bypass
17. Uses of bubble detector
18. Types of pumps used during CPB

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B.Sc. Cardiac Perfusion Technology

Time : 2 Hrs.

[Max. Marks : 40]

Subject : Applied Pharmacology

Q.P Code : K3720

Your answers should be specific to the questions asked.

Draw neat labeled diagrams wherever necessary.

Long essay

1x10=10 Marks

1. Classify drugs used in hypertension, Explain mechanism of action, uses and adverse effects of angiotensin converting enzyme (ACE)

Short essay

3 x 5 = 15 Marks

2. Explain mechanism of action, uses and adverse effects of nitrates.
3. Explain mechanism of action, uses and adverse effects of amlodipine
4. Explain the mechanism and uses of Low molecular weight Heparin

Short answer

5 x 3 = 15 Marks

5. Explain mechanism of action, and uses of streptokinase.
6. Mention three anti-cholinesterase drugs
7. Mention three inhalational anesthetic drugs and their adverse effects
8. Mention three antiplatelet agents with their uses
9. Write the treatment of organophosphate poisoning



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Time : 2.30 Hrs.

Paper –IV

[Max. Marks : 80]

Medicine Relevant to Cardiac Perfusion Technology

Q.P Code : K3730

Your answers should be specific to the questions asked.

Draw neat labelled diagrams wherever necessary.

LONG ESSAY

2 X 10 = 20 Marks

1. Explain risk factor, pathophysiology, and clinical manifestation of peripheral vascular disease in detail
2. Explain the classification, pathophysiology, clinical presentation, diagnosis and treatment of HCM

SHORT ESSAY

6 X 5 = 30 Marks

3. Explain classification of anemia in detail
4. Explain types of TAPVC in detail
5. Diagnosis of HF in detail
6. Describe the pathophysiology and clinical presentation of RCM
7. Describe TOF in detail
8. Describe ASD in detail

SHORT ANSWERS

10 X 3 = 30 Marks

9. write a note on management of thoracic aortic aneurysm
10. Angina pectoris
11. Cardiac amyloidosis
12. Classification of HTN
13. Classification of pulmonary edema
14. Pathophysiology of COPD
15. Hemophilia
16. Write a note on RBC
17. Classification of ASD and VSD
18. Write a note on target organ damage in HTN

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