

21/2/26
PM

BLDE (DEEMED TO BE UNIVERSITY)

B.Sc. in Cardiac Perfusion Technology

[Time: 3 Hours]

[Max. Marks: 80]

IV SEMESTER

PAPER - I (Advanced Perfusion Techniques Paper I)

QP CODE: 8460

Your answer should be specific to the questions asked.

Write Question No. in left side of margin.

Long Questions

10X1 = 10 Marks

1. Explain monitoring during cardiopulmonary bypass.

Short Essays: (Any – 8)

5 X 8 = 40 Marks

2. Describe the principles of venous drainage in extracorporeal circulation and factors affecting it.
3. Discuss arterial flow dynamics during cardiopulmonary bypass and its clinical significance.
4. Explain cannulation techniques used in extracorporeal circulation
5. Describe the calculation of Body Surface Area (BSA) and Blood Flow Rate (BFR) in CPB with example.
6. Write an essay on oxygenators: types, selection, and complications.
7. Discuss the hazards of extracorporeal circulation (ECC) and their management.
8. Explain hemodynamic and hemostatic monitoring during cardiopulmonary bypass.
9. Describe the principles and methodology of conducting cardiopulmonary bypass.
10. Write about termination of cardiopulmonary bypass and weaning protocols.

Short Answers: (Any – 10)

3 X 10 = 30 Marks

11. Define cardioplegia and its types.
12. What is deep hypothermic circulatory arrest (DHCA)?
13. List drugs used during cardiopulmonary bypass.
14. Explain pulsatile vs non-pulsatile flow.
15. Write short notes on handling of blood and blood products during CPB.
16. What are the physics principles of oxygen transport?
17. Explain the role of carbon dioxide in CPB physiology.
18. What is the function of suction and venting systems in CPB?
19. List complications of oxygenator failure.
20. What are the indications of myocardial preservation techniques?
21. Write short notes on hypothermia in cardiopulmonary bypass.

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IV SEMESTER

PAPER - II (Advanced Perfusion Techniques Paper II)

QP CODE: 8461

Your answer should be specific to the questions asked.

Write Question No. in left side of margin.

Long Questions

10X1 = 10 Marks

1. Explain how blood gas (pH, oxygen, and carbon dioxide), electrolytes, hemoglobin, and glucose are managed during cardiopulmonary bypass.

Short Essays: (Any – 8)

5 X 8 = 40 Marks

2. What is limb ischemia? How is it caused by IABP?
3. How does temperature affect gases and metabolism during CPB?
4. What is cardiomegaly? How is it identified on a chest X-ray?
5. What is Systemic Inflammatory Response Syndrome (SIRS) during CPB? Write its causes and effects.
6. Write briefly about aseptic techniques used while setting up and handling the CPB circuit.
7. Explain the difference between AP and PA chest X-ray views.
8. What is oxygenator failure? Mention common troubleshooting steps.
9. What is hemodilution? Explain its effects on oncotic pressure during CPB.
10. Define a transducer and explain its importance in medical monitoring and CPB.

Short Answers: (Any – 10)

3 X 10 = 30 Marks

11. What is PaO₂ and why is it important during CPB?
12. List any three indications of chest X-ray.
13. What is the role of cardiopulmonary bypass during surgery?
14. What is cerebral oximetry (NIRS)?
15. What is the normal MAP target during CPB?
16. What problems can hyperglycemia cause during bypass?
17. What is hemodilution?
18. What does low SvO₂ indicate?
19. Why must the CPB circuit be primed using sterile technique?
20. Define hypothermia.
21. What is a gas embolism and how can it be avoided?

50
59
56
61
32

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[Time: 3 Hours]

[Max. Marks: 80]

IV SEMESTER

PAPER - III (PT Directed Clinical Education – II)

QP CODE: 8462

Your answer should be specific to the questions asked.

Write Question No. in left side of margin.

Long Questions

10X1 = 10 Marks

1. Describe the ECG changes in Ischemic Heart Disease and explain the different types of myocardial infarction with their ECG findings.

Short Essays: (Any – 8)

5 X 8 = 40 Marks

2. Explain ECG findings in right and left bundle branch blocks (RBBB & LBBB).
3. Describe ECG changes seen in valvular heart diseases involving the mitral and aortic valves.
4. Discuss the mechanisms of arrhythmogenesis and disorders of impulse formation.
5. Explain disorder of impulse conduction.
6. Describe ECG changes in electrolyte imbalance (hyperkalemia, hypokalemia, hypercalcemia, hypocalcemia).
7. Write a note on cardiomyopathies: types and echocardiographic findings.
8. Explain pericardial diseases and their echocardiographic features.
9. Discuss Transesophageal echocardiography (TOE).
10. Explain the role of echocardiography in assessment of LV systolic function.

Short Answers: (Any – 10)

3 X 10 = 30 Marks

11. Define fascicular block and its types.
12. ECG findings in tricuspid valve disease.
13. Atrial re-entry mechanism.
14. AVNRT.
15. Electrical remodeling of atria.
16. ECG findings in Hyponatremia.
17. Disk summation method .
18. Echocardiographic findings in myocardial infarction.
19. Types of artificial (prosthetic) heart valves.
20. Complications of prosthetic valve dysfunction.
21. Transesophageal Echo probe