

(Affiliated to the Tamil Nadu Dr M.G.R Medical University, Chennai)

B. Sc. CARDIOPULMONARY PERFUSION CARE TECHNOLOGY

1412 –PRINCIPLES OF PERFUSION II YEAR

UNIT V- PRIMING TECHNIQUE,CIRCUIT ASSEMBLY,CALCULATIONS,ANTICOAGULANTS

I.ELABORATE ON

10 MARKS

REFERENCE – THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY QUESTION PAPER

S.no	Questions	Reference	Bloom's Taxonomy
1	Classify Anticoagulants. Discuss in detail about the various types, mechanism of action, indications and contraindications, and dosage of Heparin.	APRIL 2024	Analyze
2	Discuss the principles and importance of Hemodilution during CPB. Detail the composition of an ideal Priming Solution and its effects on patient hemodynamics.	AUGUST 2017	Analyze
3	Describe the step-by-step procedure for Assembling and Priming the Cardiopulmonary Bypass (CPB) Circuit. Detail the safety checks required during the process.	FEBRUARY 2016	Apply
4	Explain in detail about the various alternatives to Heparin. Add a note on the Heparin Activity Test (e.g., ACT) and its role in CPB management.	APRIL 2024	Evaluate
5	Discuss the importance of the Perfusion Checklist before initiating CPB. Detail the mandatory checks related to the oxygenator, gas lines, and pump occlusion.	SEPTEMBER 2022	Apply
6	Describe the pharmacokinetics and pharmacodynamics of Heparin and discuss the	AUGUST 2018	Analyze

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S.no	Questions	Reference	Bloom's Taxonomy
	risks associated with Heparin-Induced Thrombocytopenia (HIT) .		
7	Discuss the Priming Volume Calculation for both adult and pediatric patients. Explain the methods used to minimize the priming volume.	FEBRUARY 2017	Analyze
8	Derive the formula for calculating Perfusion Flow Rate (Cardiac Index) and discuss the factors influencing the targeted flow rate during CPB.	AUGUST 2015	Analyze
9	Discuss the rationale for adding crystalloids, colloids, and blood products to the priming solution. Explain the concept of " Prime-Blood Ratio " and its significance.	FEBRUARY 2020	Understand
10	Describe the various Safety Devices and Monitors used to ensure the integrity of the assembled CPB circuit during the priming steps (e.g., Level Sensor, Bubble Detector).	AUGUST 2020	Apply

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S.no	Questions	Reference	Bloom's Taxonomy
1	Benefits of Hemodilution.	APRIL 2024	Understand
2	Write a note on Albumin and its uses in the priming solution.	APRIL 2024	Understand
3	ACT Test (Activated Clotting Time) and its limitations.	AUGUST 2018	Understand
4	Priming Solution Components (not less than 5 components).	FEBRUARY 2017	Remember
5	Steps for De-airing the Oxygenator and Arterial Line.	FEBRUARY 2016	Apply
6	Anticoagulants used in CPB other than Heparin.	MARCH 2021	Remember
7	Write a note on " Bio-line coated tubing " and its advantages.	APRIL 2024	Understand
8	List the Clotting factors that are inhibited by Heparin.	APRIL 2024	Remember
9	Describe the formula for calculating Body Surface Area (BSA) and its application in perfusion.	AUGUST 2015	Analyze
10	Discuss the importance of the bubble trap during the priming process.	AUGUST 2019	Understand

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S.no	Questions	Reference	Bloom's Taxonomy
1	Define Hemodilution .	FEBRUARY 2020	Remember
2	What is the ideal target ACT value for CPB initiation?	APRIL 2023	Remember
3	Name two Anticoagulants used in CPB.	SEPTEMBER 2022	Remember
4	What is the main purpose of Priming the circuit ?	AUGUST 2014	Understand
5	What is the formula for calculating Cardiac Index (CI) ?	AUGUST 2015	Remember
6	Name two crystalloids commonly used in the prime.	FEBRUARY 2019	Remember
7	Protamine Sulfate .	AUGUST 2017	Remember
8	Define Prime Volume .	APRIL 2024	Remember
9	What is the risk of excessive Hemodilution ?	MARCH 2021	Understand
10	Name one synthetic plasma expander used in prime.	AUGUST 2018	Remember
11	What is the primary function of Antithrombin III ?	APRIL 2023	Understand
12	Steps for De-airing the Venous Reservoir .	FEBRUARY 2016	Remember

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S.no	Questions	Reference	Bloom's Taxonomy
13	What is a Perfusion Checklist ?	SEPTEMBER 2022	Remember
14	State one disadvantage of Heparin .	AUGUST 2020	Remember
15	What is the target pump flow in an adult on CPB (in L/min/m ²)?	AUGUST 2019	Remember