

**B.Sc. CARDIO PULMONARY PERfusion CARE TECHNOLOGY**  
**SECOND YEAR**  
**PAPER II – PRINCIPLES OF PERfusion TECHNOLOGY – PART – I**

*Q.P. Code: 801412*

**Time: Three Hours**

**Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. History and development of cardiopulmonary bypass. Till date and also elaborate on Gibbons contribution to CPB in clinical practice.
2. Write a note on IABP with diagram. Indications, contraindications and complication of it.
3. Myocardial preservation strategies and techniques involved in cardiac surgery till date.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Ideal characteristics of a pump and oxygenator.
2. Differences between roller pump and centrifugal pump.
3. Draw a extracorporeal circuit with all parts and label it and perfusion pre bypass checklist chart.
4. What is priming? What is static priming? Aims of it and mention various types of priming solutions?
5. What is CAD? Risk factors of CAD? And draw coronary artery anatomy.
6. Adult and paediatric perfusion differences in all Aspects.
7. How to choose an arterial and venous cannula? Temperature based flow rates chart?
8. What is membrane oxygenator? Write some characteristic's of an oxygenator and its history till date.

**III. Short answers on:**

**(10 x 3 = 30)**

1. What are the sources of cerebral Emboli during CPB?
2. Mention the formula for the following: circulating Haematocrit, amount of RBC to be added in prime, heparin to be added in prime.
3. Mention all the parameters monitored during CPB.
4. Advantage of blood cardioplegia over crystalloid cardioplegia.
5. Correction of hyperkalaemia and bicarbonate.
6. What is MUF? When and where it is done? Formula for volume to be removed during this process.
7. Address this case : 1 yr old child with VSD, having weight of 5.3 kg, Height 120 cm, Hb 10.1%. What oxygenator, packs, cannula, prime will you choose and manage the case? Also calculate circulating haematocrit.
8. Renal protocol in CPB.
9. Describe the principles of venous drainage and causes of poor venous return?
10. Describe the principles of heat exchangers and tubing used in CPB.

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