1. Discuss the potentiators of antigen antibody reaction in blood banking serology and describe their uses. 5+5

2. Enumerate the human platelet antigens. Discuss their role in platelet refractoriness and ways to minimize the same. 3+5+2

3. Discuss the principles of flow cytometry using diagrams and flow charts. What are the uses of flow cytometry in current transfusion medicine practice? 5+5

4. Discuss the Hardy Weinberg principle and its application in blood banking. 5+5

5. Discuss in brief the complement system. Describe any two processes in blood banking involving the complement system. 5+5

6. Discuss neutrophil antigens and antibodies and its clinical significance. 5+5

7. Discuss the current standards of practice in bio-waste management of blood banks. 10

8. What are the current views on “homing” of stem cells and scientific evidence supporting the same? 5+5

9. Describe the molecular structure of HIV1 and 2 viruses using diagrams. Correlate the same to evolution of screening tests for HIV virus. 3+3+4

10. Discuss the cellular model of coagulation using diagrams and how charts. Describe its effect on current management of bleeding disorders. 2+3+5

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At the heart of a 300 bedded tertiary care hospital is the neonatal intensive care unit (NICU). To design a blood and component centre for this unit, one must consider the specific needs of neonates and infants. The centre should be equipped to handle both routine and emergent transfusions, ensuring the availability of compatible blood components.

Pre-transfusion testing is crucial in managing a patient with a positive auto control. This includes obtaining a thorough history, physical examination, and laboratory tests to determine the etiology of the positive control. Furthermore, the patient's crossmatch should be performed, and the compatibility of the donor blood is assessed.

Exchange transfusion is a critical intervention in managing certain conditions, such as hyperbilirubinemia and hemolytic disease of the newborn. The current protocols for exchange transfusion include careful planning, proper laboratory testing, and monitoring of the patient's vital signs.

Peripheral blood stem cell mobilization is a common technique used in hematopoietic stem cell transplantation. The protocols for mobilization involve the use of growth factors, and the side effects can range from mild to severe, depending on the individual.

TAGvHD, or transfusion-associated graft-versus-host disease, is a serious complication associated with allogenic stem cell transplantation. It occurs when the donor's immune cells attack the recipient's tissues. Minimizing TAGvHD involves careful selection of the donor and the use of immunosuppressive therapies.

Donor deferral is a critical concern in blood banks. The conditions requiring permanent deferral are based on medical or infectious risk factors. Understanding these conditions helps ensure the safety of the blood supply.

The MNS blood group system is a fascinating aspect of immunohematology. Understanding its genetics and clinical implications is essential for blood banking.

Rh variants are rare but clinically significant. Their recognition and management are crucial in preventing hemolytic disease of the newborn.

A rare blood donor is someone whose blood type is not commonly found in the general population. Establishing donor registries is a complex but essential task, especially in countries with diverse populations.

Molecular blood grouping offers a more precise and accurate method of blood typing compared to serological techniques. Its advantages and disadvantages should be critically evaluated.

Each question is designed to test a deeper understanding of transfusion medicine, requiring detailed knowledge and critical thinking.
IMMUNOHEMATOLOGY AND TRANSFUSION MEDICINE

PAPER- III

Time : 3 hours
Max. Marks : 100

Attempt all questions in order.
Each question carries 10 marks.

Write short notes on:-

1. a. What is intrauterine transfusion? 2+4+4
   b. How will you select unit of blood for intrauterine transfusion?
   c. Discuss its current status in management of Rh immunized patients.

2. What are the current guidelines for stem cell research in India? 10

3. Enumerate alternatives to plasma transfusion. What are their clinical uses? 3+7

4. Describe the identification, characterization and clinical uses of Mesenchymal Stem Cells (MSC's) 3+3+4

5. Stealth RBC's. 10

6. a. Describe principles of rapid tests for screening of transfusion transmitted infections. 6+4
   b. Discuss its uses in blood banking.

7. Discuss the processes to improve the efficiency and quality assurance of component laboratories. 5+5

8. Discuss transfusion support in a neonate undergoing corrective surgery for a congenital heart disease. 10

9. Enumerate the complications of factor replacement therapy in a patient of Hemophilia A. How can you diagnose and overcome the same? 3+3+4

10. Define massive transfusion. What are Massive Transfusion Protocols (MTP'S)? How can you minimize the common side effects of massive transfusion? 2+4+4

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POSSESSION/USE OF CELL PHONES OR ANY SUCH ELECTRONIC GADGETS IS NOT PERMITTED INSIDE THE EXAMINATION HALL
IMMUNOHEMATOLOGY AND TRANSFUSION MEDICINE

PAPER- IV

Time : 3 hours
Max. Marks : 100

Attempt all questions in order.
Each question carries 10 marks.

Write short notes on:

1. Uses of recombinant Monoclonal Antibodies (MCA's) in current transfusion medicine practice.  
2. Discuss class 1 and 2 indications of therapeutic plasma exchange (TPE).  
3. Discuss red cell substitutes.  
4. Discuss various points of care tests to reduce transfusion requirements in elective surgery. Enumerate the equipments used for the same.  
5. Discuss the clinical and molecular biology criteria currently used to assess engraftment of stem cell products in recipients.  
6. Use of plasticizers in modern blood banking.  
7. Discuss ABO incompatible renal transplantation. Enumerate strategies to improve graft survival in the same.  
8. a. What are dendritic cells?  
   b. Discuss deridritic cell therapy in malignancies of head and neck area?  
    b. Discuss its feasibility in our country.

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