

**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)**  
**DEGREE EXAMINATION – APRIL 2018**

**SUBJECT: PAPER I: BASIC APPLIED ASPECTS RELATED TO TRANSFUSION MEDICINE**

Monday, April 02, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Describe Red Blood Cell membrane under the following headings:

1A. Its Membrane structure

1B. Functions

1C. Different membrane abnormalities and associated conditions

(5+5+5 = 15 marks)

2. Describe the transfusion transmitted Syphilis under following headings:

2A. Natural course of the disease and pathophysiology

2B. Laboratory diagnosis and testing strategy

(5+10 = 15 marks)

3. **Write short notes on:**

3A. Bernard-Soulier Syndrome

3B. Advantages and disadvantages of different methods of hemoglobin estimation

3C. G-CSF

3D. Accreditation in Blood Banking

3E. Product Recall

3F. Management of Blood spillage

3G. Pathophysiology of thrombophilia

3H. Structure of HCV

3I. Blood warmer and its applications

3J. Pathophysiology of Transfusion Related Acute Lung Injury

(7 marks × 10 = 70 marks)



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**SUBJECT: PAPER II: IMMUNOHAEMATOLOGY, IMMUNOGENETICS  
AND APPLIED SEROLOGY**

Tuesday, April 03, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Discuss the role of HLA in transfusion medicine under following subheadings:

- 1A. Genetics, Biochemistry and Structure
- 1B. Biologic functions including clinical significance of HLA system
- 1C. HLA antibody detection techniques

(5 marks × 3 = 15 marks)

2. Discuss the fundamentals of antigen antibody reactions and explain the pro-zone phenomenon.

(15 marks)

3. **Write short notes on:**

- 3A. Pre-transfusion testing in Neonates
- 3B. Differences between intravascular and extravascular hemolysis
- 3C. Weak A Subgroups
- 3D. D variants
- 3E. Donath- Landsteiner test
- 3F. Kidd blood group system
- 3G. Selection of blood for a patient with anti E alloantibody
- 3H. Proteolytic enzymes in immunohematology
- 3I. Guidelines on antenatal blood grouping and antibody screening
- 3J. Passenger Lymphocyte Syndrome

(7 marks × 10 = 70 marks)



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**DEGREE EXAMINATION – APRIL 2018**

**SUBJECT: PAPER III: BLOOD DONOR ORGANIZATION, TECHNOLOGY OF  
COMPONENTS, CLINICAL HEMOTHERAPY**

Wednesday, April 04, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Describe the principle of therapeutic plasma exchange and enumerate the current indications for TPE. (15 marks)
  
2. Discuss various blood sparing strategies and alternatives to blood transfusion. (15 marks)

3. **Write Short Note on:**

- 3A. Complications of massive blood transfusion
- 3B. Specification of blood components for intrauterine transfusion
- 3C. Chelation therapy for multiply transfused thalassemia patients
- 3D. Inhibitors in hemophilia
- 3E. Types of leukofilters and its working principle
- 3F. Rare Donor Program
- 3G. Transfusion support in liver transplantation
- 3H. Different methods of cryopreservation of red blood cells
- 3I. Platelet rich fibrin
- 3J. Guidelines on establishing a blood storage center

(7 marks × 10 = 70 marks)



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**DEGREE EXAMINATION – APRIL 2018**

**SUBJECT: PAPER IV: RECENT ADVANCES AND TECHNOLOGY**

Thursday, April 05, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe the dendritic cell therapy under following headings:

- 1A. Different types and the role of dendritic cells
- 1B. Collection and processing of dendritic cells
- 1C. Current applications of dendritic cell therapy

(5+5+5 = 15 marks)

2. Describe the flow-cytometry under following headings:

- 2A. Working principle
- 2B. Cell sorting, gating and data presentation
- 2C. Applications in transfusion medicine

(5+5+5 = 15 marks)

3. **Write Short Notes on:**

- 3A. Non hemostatic role of platelets
- 3B. Extended storage of platelet components
- 3C. Blood less surgery
- 3D. Hematopoietic growth factors; Mention the source and function
- 3E. Pre-test clinical scoring for the diagnosis of heparin induced thrombocytopenia
- 3F. Real time PCR and its applications in transfusion medicine
- 3G. RFID in transfusion medicine
- 3H. Collection and processing of stem cells from cord blood
- 3I. Rheopheresis
- 3J. Mobilization of peripheral blood stem cells

(7 marks × 10 = 70 marks)

