

Reg. No.

**MANIPAL UNIVERSITY**

**MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)  
DEGREE EXAMINATION – APRIL 2016**

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

Monday, April 18, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

Health Sciences Library

✍ **Long Questions:**

1. Discuss the hemoglobin structure and function under following headings:

- 1A. Structure and synthesis of heme and globin chains
- 1B. Degradation of hemoglobin
- 1C. Functions

(6+3+6 = 15 marks)

2. Discuss the role of cytokines in transfusion medicine under following headings:

- 2A. Classification and functions
- 2B. Applications in transfusion medicine

(5+10 = 15 marks)

3. **Write short note on:**

- 3A. Factors regulating coagulation cascade
- 3B. Advantages of use of plastics and plasticizers in blood banking
- 3C. 2, 3 DPG and its relevance in red cell preservation
- 3D. Role of Colloids and Crystalloids in fluid resuscitation
- 3E. Oxygen dissociation curve
- 3F. Contributions of Karl Landsteiner to Transfusion Medicine
- 3G. Calibration and validation: Explain with examples
- 3H. How do you manage sharps in your transfusion center?
- 3I. Pathophysiology of anemia of chronic disease
- 3J. Metabolic patterns during platelet concentrate storage at 20 to 24°C

(7 marks × 10 = 70 marks)



**MANIPAL UNIVERSITY****MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)  
DEGREE EXAMINATION – APRIL 2016****SUBJECT: PAPER II: IMMUNOHAEMATOLOGY, IMMUNOGENETICS  
AND APPLIED SEROLOGY**

Tuesday, April 19, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

Health Sciences Library

✍ **Long Questions:**

1. Classify ABO discrepancy and discuss the reasons and methods of resolution of discrepancy. (15 marks)
2. Define platelet refractoriness. Enumerate the causes and discuss the management of patients with platelet refractoriness. (15 marks)
3. **Write short note on:**
  - 3A. Quality control of blood grouping reagents
  - 3B. Minor phenotype matched red cell transfusion
  - 3C. MNS blood group system and its clinical significance
  - 3D. ISBT 700 and 901 series
  - 3E. Serologic and molecular characterization of Rh D variants
  - 3F. Laboratory diagnosis of hemolytic disease of newborn
  - 3G. Blood groups and disease association
  - 3H. Mixed field agglutination
  - 3I. Passenger lymphocyte syndrome
  - 3J. Factors affecting the severity of hemolysis in autoimmune hemolytic anemia

(7 marks × 10 = 70 marks)



Reg. No.

**MANIPAL UNIVERSITY**

**MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)  
DEGREE EXAMINATION – APRIL 2016**

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

Wednesday, April 20, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

**Answer ALL the questions.**

Health Sciences Library

**Long Questions:**

1. Discuss Massive transfusion protocol. Compare and contrast with the conventional mode of managing the patient with massive bleeding.

(15 marks)

2. Describe the effects of freezing of red cells and role of cryo-protectants.

(15 marks)

**Write short note on:**

3A. Factors associated with the red cell hemolysis during processing and storage

3B. Transfusion therapy in thalassemia major

3C. Directed blood donation

3D. Prothrombin complex concentrate

3E. Granulocyte transfusion

3F. Process control of leuko-reduced components

3G. SDP versus RDP

3H. Automation in component separation

3I. Extended platelet storage

3J. Accreditation and certification

(7 marks × 10 = 70 marks)



**MANIPAL UNIVERSITY****MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)  
DEGREE EXAMINATION – APRIL 2016****SUBJECT: PAPER IV: RECENT ADVANCES AND TECHNOLOGY**

Thursday, April 21, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

Health Sciences Library

✍ **Long Questions:**

1. What are the emerging and reemerging transfusion transmissible infections?

(15 marks)

2. Describe the methodology of gene therapy and its application.

(15 marks)

3. **Write short notes on:**

3A. Potential complications of cell based immunoregulatory therapy

3B. Hemoglobin based oxygen carriers

3C. Role of biological response modifiers in transfusion medicine

3D. Indications for molecular typing of blood groups

3E. Public versus Private cord blood banking

3F. Pathogen reduction techniques for platelet components

3G. Applications of flow-cytometry in immunohematology

3H. Principle and advantages of microarray technique

3I. Accreditation in transfusion services

3J. Discuss the principle of different types of apheresis machines

(7 marks × 10 = 70 marks)

