

MANIPAL ACADEMY OF HIGHER EDUCATION
MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)
DEGREE EXAMINATION – APRIL 2022

PAPER I

Friday, April 01, 2022

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer all the questions.**

✍ **Long Essays:**

1. What are the emerging and re-emerging infections related to transfusion safety? Explain the steps of emergence of new pathogen and the strategies for prevention. (15 marks)

2. What are the causes associated with acute hemolytic transfusion reaction? How do you investigate and manage a case of hemolytic transfusion reaction? (15 marks)

3. **Write short notes on:**

3A. Platelet metabolism

3B. Biological inhibitors of coagulation cascade

3C. Primary & Secondary Humoral Response

3D. Post Exposure Prophylaxis

3E. Point of Care Testing in Transfusion Medicine

3F. Erythropoietin and its applications

3G. Disinfection and sterilization in blood banking

3H. Use of Cause and effect diagram in root cause analysis, with an example

3I. Anticoagulants used in laboratories and their mechanism of action

3J. Guidelines on safe laboratory work practices

(7 marks × 10 = 70 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)
DEGREE EXAMINATION – APRIL 2022

PAPER II

Saturday, April 02, 2022

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer all the questions.**

✍ **Long Essays:**

1. Describe the drug induced hemolytic anemia under following headings:

1A. Serologic and clinical classification with examples

1B. Laboratory investigation

(10+5 = 15 marks)

2. Write a standard operating procedure for antibody titration technique. What is the importance of scoring and grading of agglutination reaction?

(15 marks)

3. **Write short notes on:**

3A. Factors affecting the Antiglobulin test

3B. Lectins in immunohematology

3C. Kidd blood group system

3D. Differentiate between paroxysmal cold hemoglobinuria and cold hemagglutinin disease

3E. Role of enhancement media in antibody detection

3F. Anti-IH and its characteristics

3G. Compare and contrast Gel technology and solid phase adherence assay

3H. Methods of estimation of feto-maternal hemorrhage

3I. MAIPA (monoclonal antibody immobilization of platelet antigens) principle and applications

3J. Blocked D phenomenon and relevance of maternal serologic testing.

(7 marks × 10 = 70 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)
DEGREE EXAMINATION – APRIL 2022

PAPER III

Monday, April 04, 2022

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer all the questions.**

✍ **Long Questions:**

1. Discuss blood donor reaction under following headings:

1A. Classification and pathophysiology

1B. Clinical management

(10+5 = 15 marks)

2. How do you implement blood irradiation program at your center?

(15 marks)

3. **Write Short Note on:**

3A. Reasons for permanent deferral of blood donors

3B. Citrate toxicity and its management

3C. Labeled indications of IVIG

3D. Indications for transfusion in patients with sickle cell anemia

3E. Draft a plan for an outdoor blood donation camp of 500 donors

3F. Red blood cell substitutes

3G. Pathogenesis of disseminated intravascular coagulation

3H. Applications of barcode technology in transfusion medicine

3I. Medical event reporting system (MERS-TM)

3J. Factor replacement therapy for patient with Hemophilia A.

(7 marks × 10 = 70 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)
DEGREE EXAMINATION – APRIL 2022

PAPER IV

Tuesday, April 05, 2022

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

☞ **Long questions:**

1. As a medical director of the blood transfusion services, you were approached to develop an alternative for platelet transfusion since the requirement cannot be met during seasonal epidemics. Considering this scenario discuss the following:

- 1A. Describe briefly about the platelet alternatives
- 1B. Cryopreservation of platelets and recent developments transfusion practices
- 1C. Write a note on Platelet additive solution

(5+5+5 = 15 marks)

2. Describe the following aspects about tumor immunotherapy

- 2A. Mechanism of immunotherapy and different types
- 2B. CAR T cell therapy and latest developments

(10 + 5 = 15 marks)

3. **Write Short Notes on:**

- 3A. Role of NK cells in transplantation
- 3B. Cultured red blood cells
- 3C. Platelet micro particles and its role in health and disease
- 3D. Immunological factors affecting graft uptake and rejection
- 3E. Discuss a recent Randomized Clinical Trial in the field of Transfusion Medicine
- 3F. Pathogen inactivation methods for platelet components
- 3G. Newer strategies for prevention of wrong blood to wrong patient
- 3H. Current concepts on donor iron depletion
- 3I. Transcription-mediated amplification (TMA) technique
- 3J. Adverse events associated with infusion of Hematopoietic Stem Cell Products

(7 marks × 10 = 70 marks)

