

Reg. No.

MANIPAL ACADEMY OF HIGHER EDUCATION
MD (IMMUNOHEMATOLOGY AND BLOOD TRANSFUSION)
DEGREE EXAMINATION – MAY 2021

PAPER I

Monday, May 03, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer all the questions.**

✍ **Long Essays:**

1. Explain in detail about the complement pathway and its role in transfusion medicine.
(15 marks)

2. Discuss the structure of platelet and its role in hemostasis.
(15 marks)

3. **Write short notes on:**

3A. Biological product deviation

3B. Reticulocyte index

3C. Thrombopoietin

3D. Hardy Weinberg law

3E. Refrigeration cycle in Blood bank refrigerator

3F. Basic chemistry and structure of Nucleic acids

3G. Pathophysiology of Transfusion related immunomodulation

3H. Structure of Hepatitis B and its applied aspects

3I. Structure of Immunoglobulin

3J. Event reporting in blood banking

(7 marks × 10 = 70 marks)



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PAPER II

Tuesday, May 04, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer all the questions.

✍ Long Essays:

1. Describe Warm auto immune hemolytic anemia (AIHA) under following headings

- i) The pathophysiology, Clinical presentation
- ii) Laboratory investigation and serological difficulties
- iii) Write a note on transfusion support for these patients

(5+5+5 = 15 marks)

2. Compare and contrast ABO versus Rh HDFN under following headings

- i) Incidence and pathogenesis and disease severity
- ii) Laboratory diagnosis and patient monitoring
- iii) Prevention and management

(5+5+5 = 15 marks)

3. **Write short notes on:**

- 3A. Red Cell Panels
- 3B. Elution techniques and applications
- 3C. Platelet antigen and antibodies
- 3D. Passenger lymphocyte syndrome
- 3E. Applications of flow cytometry in immunohematology
- 3F. Blood groups and Paternity testing
- 3G. Mixed field agglutination reaction in serology
- 3H. Describe the characteristics of Bombay phenotypes
- 3I. Lewis antigen system
- 3J. Enzymes in Immunohematology

(7 marks × 10 = 70 marks)



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PAPER III

Wednesday, May 05, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer all the questions.**

✍ **Long Questions:**

1. Describe the Leukoreduction under following headings

- i) Principle of leukofiltration, factors affecting the efficacy of leukofiltration.
- ii) Indications of leukoreduced blood products
- iii) Pros and cons of Universal leukodepletion

(15 marks)

2. 23 year old male patient admitted for hemarthrosis of Knee joint. He is a known case of Severe Hemophilia A and HBsAg reactive due to prior transfusions. His blood is O positive and he received one complete dose of Factor VIII concentrate one month back. His Factor VIII level is 3.4% and Hb is 6.8g/dL.

- i) How will you manage this patient?
- ii) Discuss the treatment options for sever Hemophilia patients with Inhibitors.

(15 marks)

3. **Write Short Note on:**

- 3A. Near miss events and its impact in Transfusion Medicine.
- 3B. Directed donations – advantages and disadvantages.
- 3C. Neonatal red cell transfusion guidelines.
- 3D. Hematopoietic stem cell mobilization regimens.
- 3E. Blood Bank Information System.
- 3F. Compare and contrast the centrifugal and membrane filtration based plasmapheresis
- 3G. Strategies to reduce iron deficiency in blood donors
- 3H. Management of massive obstetric hemorrhage
- 3I. Granulocyte collection and transfusion
- 3J. Thrombotic Microangiopathy; Types and mode of management

(7 marks × 10 = 70 marks)



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PAPER IV

Thursday, May 06, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer all the questions.

✍ Long questions:

1. Describe Solid Organ Transplantation under following subheadings:

- i) Organ donation scenario globally including India
- ii) Pathophysiology of ABMR and Role of Transfusion Specialist in management
- iii) Ethics in organ donation and recent trends

(15 marks)

2. Explain the methodology and the pros and cons of Pathogen inactivation of platelet concentrates

(15 marks)

3. **Write Short Notes on:**

3A. Extracorporeal photopheresis

3B. Freeze dried plasma

3C. Transfusion support to patients on ECMO (Extracorporeal membrane oxygenation)

3D. Zika virus and blood safety

3E. CAR-T Cells (CAR -Chimeric Antigen Receptor)

3F. Blood Time temperature Indicator

3G. Platelet additive solution

3H. Strategies for stem cell mobilization

3I. Platelet Rich Fibrin

3J. Role of transfusion medicine specialists in managing Tissue banking

(7 marks × 10 = 70 marks)

