

**M.D. DEGREE EXAMINATION**

**BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION**

**PAPER II – IMMUNO-HAEMATOLOGY, IMMUNOGENETICS AND  
APPLIED SEROLOGY**

*Q.P. Code: 203012*

**Time: Three Hours**

**Maximum: 100 Marks**

**I. Essay Questions:**

**(2 x 15 = 30)**

1. Describe the range of tests and investigations required as part of the pre transfusion testing of blood samples sent for 'cross-matching'. Explain how the pre-transfusion tests differ between conventional cross-matched blood and units released by electronic cross match.
2. Discuss Mendel's laws of independent segregation and of dominance, correlate the latter with specific examples of the inheritance of blood group antigens.

**II. Short notes:**

**(10 x 7 = 70)**

1. a. Molecular structure of Rh antigen complex.  
b. Molecular mechanisms of RhD negative phenotype.
2. Reagent red cell panel – preparation and uses.
3. Transfusion support in a patients with warm autoimmune haemolytic anaemia
4. Mi<sup>a</sup> Antigen [Miltenberger (Mi)] and its clinical significance.
5. Polyagglutination: lab diagnosis and its clinical significance
6. a. HLA crossmatch. b. Methods to enhance sensitivity of identifying HLA antibodies.
7. List out the advantages and disadvantages between tube, gel and micro plate techniques in ABO blood grouping.
8. Types of hypersensitivity reactions and its applied importance in transfusion medicine.
9. Levey-Jennings (LJ) chart in transfusion transmitted disease testing.
10. "Grey zone" sample testing by Enzyme-Linked immunosorbent assay for transfusion transmissible infections screening.

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APPLIED SEROLOGY***Q.P. Code: 203012***Time: Three Hours****Maximum: 100 Marks****I. Essay Questions:****(2 x 15 = 30)**

1. Write about Major Histocompatibility Complex (MHC)? Role of HLA testing in transplantation. Add a note on ABO-Incompatible (ABO-I) transplantation in solid organ and hemotopoietic stem cell transplantation.
2. A 45 year old male patient had platelet count of 7000/cumm and requested 5 units of random donor platelets. During transfusion of 4<sup>th</sup> unit of platelet, patient developed fever, chills, rigor and tachycardia.  
What is the transfusion reaction? How will you classify the transfusion reaction? What are the investigations need to be done? How will you manage this patient? What is imputability of this reaction? Add a note on hemovigilance programme of India.

**II. Short notes:****(10 x 7 = 70)**

1. Describe about Kell blood group system and its significance.
2. A 30 year old male with pancreatic malignancy having a HGB – 5.2. In view of low HGB, 1 unit of packed red cells was requested. Blood grouping and Rh typing of the patient as follows:

Anti-A	Anti-B	Anti-D	A Cell	B Cell	O Cell
4+	0	4+	0	0	0

What is the type of this discrepancy? What is the reason for this type of discrepancy? How will you issue blood component to this request?

3. Describe about plasma fractionation in Indian setting.
4. Role of potentiators in immunohematology lab.
5. Passenger Lymphocyte Syndrome.
6. Electronic cross match.
7. How to investigate a case with concomitant autoantibody and alloantibody.
8. Testing of Heparin Induced Thrombocytopenia (HIT).
9. Uses of immunoglobulin in transfusion medicine.
10. Quality control blood group antisera.

**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[MD 0522]**

**MAY 2022**

**Sub. Code: 3012**

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**Maximum: 100 Marks**

**I. Essay Questions:**

**(2 x 15 = 30)**

1. Discuss ABO discrepancies and methods to resolve the same.
2. Discuss the role of HLA matching in stem cell transplantation, determination of unacceptable mismatches, the role of P and G groups and the different methodologies currently in use for determining HLA types.

**II. Short notes:**

**(10 x 7 = 70)**

1. Discuss – Acquired B antigen.
2. Role of MICA in solid organ transplantation.
3. Nucleic acid testing in blood donors – technologies available, pros and cons.
4. Types of Coombs antisera.
5. Determining of IgG subtypes – role in the context of transfusion medicine.
6. Briefly discuss the electronic crossmatch and pros and cons in the Indian setting.
7. Describe the immune adverse events that can occur following a transfusion.
8. Discuss briefly the genetics diagnosis and clinical impact of weak D.
9. Immunohaematological testing and choice of red cells for a patient with sickle cell anaemia.
10. Describe the different tests to diagnose heparin induced thrombocytopenia.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[MD 0723]**

**JULY 2023  
(MAY 2023 EXAM SESSION)**

**Sub. Code: 3012**

**M.D. DEGREE EXAMINATION**

**BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION**

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**I. Essay Questions:**

**(2 x 15 = 30)**

1. 56/ M with end stage renal disease had undergone dialysis recently. His blood sample was sent with a request to issue one unit of compatible packed RBC unit. Immunohaematological work-up on his blood sample revealed the presence of an antibody. Later it was found that the equipment in which he underwent dialysis was sterilized with formaldehyde.
  - a) What is the probable antibody identified in his blood sample?
  - b) Reason out the development of this antibody.
  - c) Explain in detail the associated blood group antigen system.
2. Describe pathogenesis of Antibody Mediated Rejection (AMR) of Solid Organ Transplants and the role of HLA testing in Hyper Acute Rejection.

**II. Short notes:**

**(10 x 7 = 70)**

1. Hardey-Weinberg Principle in Population Genetics of blood groups.
2. DNA-Based Typing for Patient and Donor Testing.
3. Platelet refractoriness.
4. Clonal deletion, Central and peripheral Tolerance.
5. DAT Negative Warm Autoimmune Hemolytic Anemia.
6. Indian Blood Group System
7. Applications of ZZAP, DTT and Proteolytic Enzymes (Papain / ficin) in red cell serology.
8. Tubeless methods for pretransfusion testing and add a note on validation of each method.
9. Variants of RhD. Interpretation of agglutination reaction in D VI+ and DVI- Gel Cards.
10. Pathophysiology of HDFN due to anti-K. Peculiar phenomenon one can observe in patients with AIHA due to autoantibody against a Kell antigen. Add a note on acquired loss of red cell Kell antigens.

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