(LG 187) **APRIL 2015** **Sub. Code:2097**

M.D. DEGREE EXAMINATION

BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

PAPER I – BASIC APPLIED ASPECTS RELATED TO IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

Q.P.Code: 202097

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Write in detail about the genetics, structure and immunological basis of ABO blood groups.

2. Role of the complement systems in transfusion practice.

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

1. Characteristics of antigen that affect immune response.
2. Immune Tolerance.
3. Immunodeficiency syndromes and their effect on blood bank testing.
4. Rh haemolytic disease of new born.
5. Haemoglobin structure.
6. Hepcidin and its role in iron metabolism.
7. Test for fibrin degradation products.
8. Interpreting the oxygen dissociation curve.
9. Growth factors involved in haemopoiesis.
10. Mendel's laws of inheritance.

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(LI 187) APRIL 2016 **Sub. Code:2097**

M.D. DEGREE EXAMINATION

BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

PAPER I – BASIC APPLIED ASPECTS RELATED TO IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

Q.P.Code: 202097

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Discuss and critically evaluate the role of coagulation testing in the pre-operative assessment of bleeding risk.

2. Enumerate the process and procedures to develop appropriate blood/blood product usage and transfusion safety.

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

1. Ensuring accuracy and precision in your immunohaematology laboratory.
2. The steps that can be taken within your hospital to minimize "Wrong Blood In Tube".
3. Quality control of Cryoprecipitate.
4. Jehovah witness and cardiac surgery.
5. Paroxysmal Nocturnal Hemoglobinuria.
6. Neonatal alloimmune thrombocytopenia (NAIT).
7. Coombs' (direct antiglobulin) test reagents.
8. Haemovigilance.
9. Point of care devices for haemostasis monitoring during prolonged surgeries.
10. Measures of stored red blood cell quality.

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(LJ 187) OCTOBER 2016 **Sub. Code:2097**

M.D. DEGREE EXAMINATION

BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

PAPER I – BASIC APPLIED ASPECTS RELATED TO IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

Q.P.Code: 202097

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. The basic tests of coagulation relevant to a transfusion setting.
2. The factors that affect antigen antibody reactions and methods for their detection.

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

1. Agglutination reactions.
2. Principle and types of leukocyte filters.
3. Monoclonal reagents – preparation, advantages, role in transfusion medicine.
4. Biochemistry of the ABO antigens.
5. Changes to platelets on storage at 22 deg c.
6. Briefly discuss differences between Cellular and humoral immunity.
7. Principle of flowcytometry.
8. The classic complement pathway.
9. Cytokines.
10. Compare innate and acquired immunity.

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(LK 187) MAY 2017 **Sub. Code:2097**

M.D. DEGREE EXAMINATION

BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

PAPER I – BASIC APPLIED ASPECTS RELATED TO IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

Q.P.Code: 202097

Time: Three Hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Changes in red cells with storage and it's impact on transfusion practice.
2. The concept of alloimmunisation and it's relevance to transfusion medicine and transplantation.

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

1. Platelet antigens of clinical significance.
2. Independent controls.
3. IgG subtypes.
4. Elution techniques.
5. The Duffy blood group system.
6. Fibrinolytic pathway and its products.
7. Monoclonal antibodies.
8. Potentiators of antigen antibody reactions.
9. Secretor status – and it's clinical relevance.
10. Different types of Rh Null syndrome.

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(LM 187) MAY 2018 **Sub. Code: 2097**

M.D. DEGREE EXAMINATION

BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

PAPER I – BASIC APPLIED ASPECTS RELATED TO IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

Q.P.Code: 202097

Time: Three Hours **Maximum: 100 Marks**

I. Essay Questions: **(2 x 15 = 30)**

1. Write in detail about the genetics, structure and immunological basis of ABO blood groups. Add a note on Cis AB, B(A) and A(B).

2. Draw and describe a normal thromboelastograph, its basic principle, interpretation of abnormal values in diagnosis and appropriate transfusion support available. Discuss briefly about ROTEM-FIBTEM, EXTEM, INTEM, HEPTEM. Add a note on advantages of TEG over Routine Coagulation Tests(RcoT).

II. Short notes: **(10 x 5 = 50)**

1. Blood Transfusion in the 21st century.
2. Plasticizers used in blood bags. Add a note on Leaching of phthalate esters in blood.
3. Pathophysiology of Blood Donation and Markers of Iron Deficiency in donors.
4. Red blood cell storage lesion.
5. Factors involved in Hemoglobin-Oxygen Dissociation Curve.
6. Bombay phenotype (hh).
7. CD 34.
8. Define and classify cytokines.
9. Clonal selection hypothesis.
10. Platelet function test.

III. Reasoning Out: **(4 x 5 = 20)**

1. A unit of RBCs is issued to the hospital ward and returned without being transfused. How long can the blood be out of the refrigerator and still be used for transfusion? Explain the rationale behind the returned component (whole blood or RBCs) is being acceptable for reissue. What are the prerequisite conditions to be followed for reissuing?

2. In Thalassemic patients on regular transfusion and chelation, what will be the ideal range of liver iron concentration (mg Fe/g dw) suggested to minimise iron deposition in non-storage parenchymal sites and significant toxicity? Explain various steps to minimize such deposition.

3. A -30-year-old-female weighing 71-kg in DIC has an haematocrit of 30% and a fibrinogen level of 90 mg/dL. How many units of cryoprecipitated AHF should be administered to achieve a fibrinogen level of 200 mg/dL?

4. A suspected hepatitis B infected blood donor donates blood during the time of disappearance of HBsAg and the appearance of anti-HBs, which would be the ideal viral marker implicated in such scenario to prevent "transfusion-associated hepatitis B"?

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[LO 187] MAY 2019 **Sub. Code: 2097**

M.D. DEGREE EXAMINATION

BRANCH XXI – IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

PAPER I – BASIC APPLIED ASPECTS RELATED TO IMMUNOHAEMATOLOGY AND BLOOD TRANSFUSION

Q.P. Code: 202097

Time: Three Hours **Maximum: 100 Marks**

I. Essay Questions: **(2 x 15 = 30)**

1. Pathophysiology of acute blood loss.
2. Process of setting up an in house 3-cell panel for antibody screening in your blood bank.

II. Short notes: **(10 x 5 = 50)**

1. Functional differences between Naive and memory B cells.
2. Heparin analogues and implication for a blood bank.
3. Drugs that interfere with compatibility testing.
4. Cryopreservation of blood cells.
5. Enzyme linked immunosorbent assay in the blood bank.
6. Platelet crossmatch.
7. Pathogen inactivation system for platelets.
8. National plasma policy.
9. List the essential records for a blood bank and discuss the principles of document control.
10. Solution to avoid blood transfusion in a patient who professes to being a Jehovah's witness.

III. Reasoning Out: **(4 x 5 = 20)**

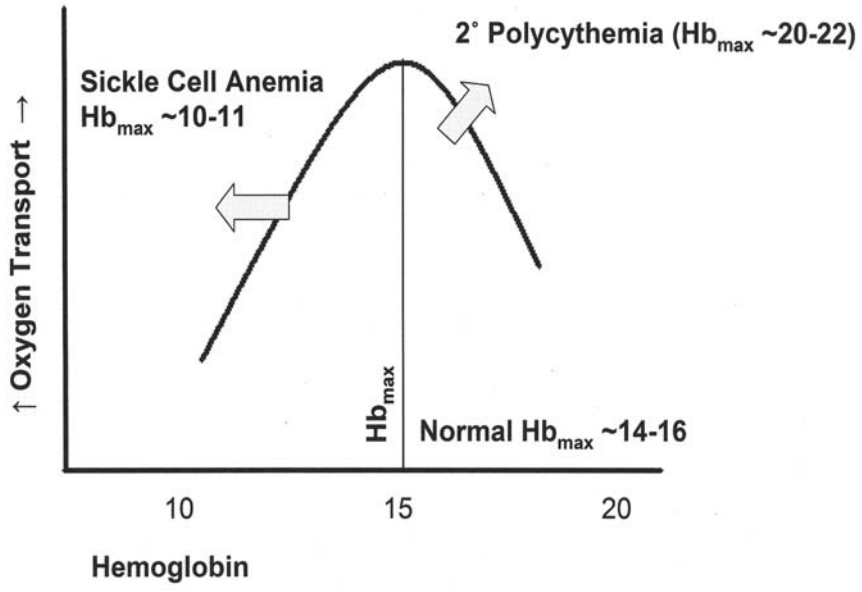
1. A 50 year old male patient, smoker was admitted with community acquired pneumonia. He was moved to ICU for ventilator support. On day 2 he continued to be febrile and peripheral blood showed moderate leucocytosis and left shift with thrombocytopenia. Haemoglobin remained at 10g/dL.

   a) What is the likely reasons for new onset thrombocytopenia?

   b) What additional tests would you like to do to confirm and what are the expected results?

   c) What blood products will you recommend?

2. See the Oxygen dissociation curve below: Oxygen transport increases with increasing haemoglobin until viscosity effects reduce flow and transport. Transfusing normal red blood cells to patients with sickle cell disease increases the viscosity. As the haemoglobin increases there is an initial increase in oxygen transport, but as viscosity effects take hold, transport decreases.



   a) How would you manage transfusion in patient with sickle cell crisis?

   b) How do we perform adult manual red cell exchange in a sickle cell patient?

3. Informed consent for transfusion means a conversation has occurred between the patient and the doctor. The significant risks benefits and alternatives to transfusion must be discussed. Blood products must be prescribed by doctor and every transfusion must be documented.

   a) List 5 items that must be included in the medical order for blood transfusion?

4. Twenty days after receiving an autologous transplant for non-Hodgkin's lymphoma, a 46-year old male has a platelet count of 13,000/cumm. He requires drainage of pleural effusion; hospital transfusion guideline mandates that the platelet count should be at least 50,000 /cumm before the procedure. He is transfused a unit of pooled, ABO-matched platelets; an hour after the transfusion, the platelet count is 21,000/cumm.

   a) What may be the reasons for the modest platelet increment in this case?

   b) Assuming a body surface area of 2.0 m^2 and an average content of 5.5*10^10 platelets per donor in a pool of platelets, what is the 1-h corrected count increment (CCI)?

   c) In a hypothetical alloimmunized patient who continues to bleed, and no matched platelets are available, what other strategies may be attempted?

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[LO 187]