

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

[AHS 0222]

**FEBRUARY 2022
(OCTOBER 2021 EXAM SESSION)**

Sub. Code: 1253

**M.Sc. MEDICAL LABORATORY TECHNOLOGY
FIRST YEAR**

(Candidates admitted from 2011-2012 & 2013-2014 onwards - Paper III)

(Candidates admitted from 2020-2021 onwards - Paper IV)

PAPER III & IV – HAEMATOLOGY AND CLINICAL PATHOLOGY

Q.P. Code : 281253

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Write a note on importance of bone marrow aspiration smear in haematological diagnosis and mention how it helps in anaemia, pancytopenia and leukaemia and mention few contradictions in bone marrow.
2. Classify Hypochromic microcytic anaemia with lab investigations. Explain the causes of macrocytic anaemia and their lab investigations.

II. Write notes on:

(10 x 6 = 60)

1. Describe the smear findings in pancytopenia and how will you investigate.
2. Describe the smear findings in Chronic myeloid leukaemia and how will you differentiate from leukemoid reaction.
3. How will you differentiate between hemoglobinuria and haematuria?
4. Write a note on lab investigations of Spherocytosis.
5. Classify Acute lymphoblastic leukemia and mention the criteria in bone marrow for diagnosis
6. What are the causes for isolated prolonged Prothrombin time and write about the INR.
7. Cerebrospinal fluid- Write the physical and chemical examination and few disease conditions in which it helps in diagnosis.
8. Describe lab and smear findings in Disseminated Intravascular Coagulation and mention few causes.
9. Mention the causes and lab investigations for a person having Black colour urine.
10. Write the applications of Flowcytometry.

THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY

[AHS 1022]

OCTOBER 2022

Sub. Code: 1253

M.Sc. MEDICAL LABORATORY TECHNOLOGY

FIRST YEAR (Regulation 2011-2012)

(Candidates admitted from 2013-2014 onwards – Paper – III)

(Candidates admitted from 2020-2021 onwards – Paper – IV)

PAPER III & IV– HAEMATOLOGY AND CLINICAL PATHOLOGY

Q.P. Code: 281253

Time: three hours

Answer ALL Questions

Maximum:100 Marks

I. Elaborate on:

(2 x20 = 40)

1. Write a brief note on automation in hematology with their principle. Mention their advantages and disadvantages.
2. Classify anemia based on the MCV indices with respective lab investigations.

II. Write notes on:

(10X6=60)

1. Write a detail note on estimation of platelet count and mention causes of thrombocytopenia.
2. Write a note on High Performance Liquid Chromatography in detail with emphasis on diabetes and hemoglobinopathy.
3. Write a note on APLA and their diagnostic criteria.
4. Write a note on chronic granulomatous disease and laboratory investigations in detail.
5. Describe a detail note on pathogenesis and lab investigations of immune thrombocytopenia.
6. Describe a detail note on collection and examination of seminal fluid.
7. Differentiate Leukamoid reaction and CML.
8. Write a note on causes and lab investigations of Eosinophilia.
9. Write a note on PNH and their Lab investigations.
10. Write a note on pathway of hemoglobin synthesis.

THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY

[AHS 0523]

MAY 2023

Sub. Code: 1253

**M.Sc. MEDICAL LABORATORY TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2020-2021 Batch onwards)
PAPER IV– HAEMATOLOGY AND CLINICAL PATHOLOGY**

Q.P. Code: 281253

Time: three hours

Answer ALL Questions

Maximum:100 Marks

I. Elaborate on:

(2 x20 = 40)

1. Classify Qualitative platelet disorders in detail with lab investigations.
2. Write a note on physical and chemical examination of urine in detail.

II. Write notes on:

(10X6=60)

1. Write a detail note on hemoglobin electrophoresis with suitable diagrams and write the normal and abnormal patterns seen in clinical samples.
2. Write a note on procedure, principle and the clinical significance of Activated partial thromboplastin time.
3. Explain Hemophilia A and their lab investigations.
4. Define hemochromatosis and their lab investigations.
5. Write a note on preparation and examination of bone marrow smear with staining.
6. Discuss MAHA their lab investigations.
7. Write a note on steps involved in primary hemostasis and their lab investigations.
8. Write the difference between hemolytic and hepatic jaundice with their lab investigations.
9. Explain smear findings, lab investigations and the causes for Megaloblastic anemia.
10. Classify autoimmune hemolytic anemia with their lab work up.

THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY

[AHS 1023]

OCTOBER 2023

Sub. Code: 1253

**M.Sc. MEDICAL LABORATORY TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER IV – HAEMATOLOGY AND CLINICAL PATHOLOGY**

Q.P. Code: 281253

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x20 = 40)

1. Describe the laboratory investigations and procedures used in the diagnosis and monitoring of platelet disorders, focusing on thrombocytopenia and thrombocythemia.
2. From a laboratory perspective, describe the diagnostic process used to confirm Chronic Myeloid Leukemia (CML). Discuss the role of hematologic tests, cytogenetic analysis, and molecular tests such as PCR and FISH in diagnosing CML.

II. Write notes on:

(10X6=60)

1. Leukamoid reaction.
2. Chediak higashi syndrome, clinical and lab investigations.
3. Myelodysplastic anemia, WHO criteria and lab investigations.
4. Pancytopenia, differential diagnosis and lab tests.
5. How can laboratory tests aid in the diagnosis and characterization of Beta Thalassemia?
6. Identify and investigate potential serologic discrepancies caused by autoimmune and drug-induced hemolytic anemias.
7. What is a coagulation analyzer and how does it assist in the evaluation of the coagulation process?
8. What is the role of a freezer in a hematology laboratory?
9. How is radioactivity utilized in diagnostic and therapeutic applications in Medical Laboratory Technology?
10. What is the Polymerase Chain Reaction (PCR) and how is it utilized in molecular biology and hematology laboratory tests?

THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY

[AHS 0524]

MAY 2024

Sub. Code: 1253

**M.Sc. MEDICAL LABORATORY TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER IV – HAEMATOLOGY AND CLINICAL PATHOLOGY**

Q.P. Code: 281253

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x20 = 40)

1. Discuss the routine stain used in peripheral smear and what are the various diagnosis that can be made from peripheral smear?
2. Classify the various molecular techniques and discuss their clinical applications in molecular diagnostics.

II. Write notes on:

(10X6=60)

1. Mention the major parts of a centrifuge and its applications in haematology.
2. Define acute myeloid leukaemia and laboratory tests for diagnosis.
3. Lab investigations in a child with smear showing RBC fragments.
4. Two Neutrophil functional disorders and lab tests.
5. Platelet aggregometry method and applications.
6. Differential diagnosis of hypochromic microcytic anemia and lab tests for each.
7. Thromboelastography.
8. Autoimmune haemolytic anaemia and lab tests.
9. Pre analytical errors in haematology.
10. Types of microscopy and its applications.

THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY

[AHS 1024]

OCTOBER 2024

Sub. Code: 1253

**M.Sc. MEDICAL LABORATORY TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER IV – HAEMATOLOGY AND CLINICAL PATHOLOGY**

Q.P. Code: 281253

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2x20=40)

1. How is bright-field microscopy used to examine peripheral blood smears in hematology? Can you outline the procedure and explain what haematological parameters can be evaluated with this technique?
2. Why is the choice of anticoagulant crucial during blood collection for hematology tests? How can it affect the results of common tests like the complete blood count and coagulation studies?

II. Write notes on:

(10x6=60)

1. What's the difference between point mutations, frame shift mutations, and chromosomal aberrations? Can you give examples of diseases associated with each?
2. How do chromosomal aberrations such as deletions, duplications, inversions, and translocations occur and what are their effects? How can we detect these in the lab?
3. Describe the function of a calorimeter and its key components.
4. How automated blood cell counters help in hematology? How do they assist in diagnosing and monitoring haematological disorders?
5. Which RBC membrane proteins and enzymes are important and what disorders are they associated with? What lab tests are relevant for these?
6. What is hemopoiesis and why is it important for maintaining normal blood cell levels? What happens if this process is disrupted?
7. How is a thromboelastogram different from traditional coagulation tests?
8. What is the role of a peripheral smear in diagnosing haemolytic anemias?
9. Describe the structure of a platelet and list five disorders associated with it.
10. Role of mutation and Next generation sequencing in acute myeloid leukaemia.

THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY

[AHS 0525]

MAY 2025

Sub. Code:1253

**M.Sc. MEDICAL LABORATORY TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER IV – HAEMATOLOGY AND CLINICAL PATHOLOGY**

Q.P. Code: 281253

Time: Three hours

Answer ALL Questions

Maximum:100 Marks

I. Elaborate on:

(2x20=40)

1. Classification and lab diagnosis of Acute Myeloid Leukemia.
2. Discuss functional Neutrophil disorders and its lab findings.

II. Write notes on:

(10x6=60)

1. Myelophthisic anaemia.
2. Write a note on the lab investigation for spherocytosis.
3. Discuss the different types of Haematology analyzers.
4. RBC Histograms, flags and applications.
5. Myelodysplastic anaemia - classification and lab diagnosis.
6. Write a note on haemoglobin synthesis.
7. How is high-performance liquid chromatography (HPLC) used in the diagnosis of Thalassemia?
8. Paroxysmal Nocturnal Hemoglobinuria (PNH) causes and lab investigation.
9. Discuss the diagnostic criteria and lab test for Polycythemia Vera.
10. Write about stool examination.

THE TAMIL NADU Dr.M.G.R MEDICAL UNIVERSITY

[AHS 1025]

OCTOBER 2025

Sub. Code:1253

**M.Sc. MEDICAL LABORATORY TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER IV – HAEMATOLOGY AND CLINICAL PATHOLOGY**

Q.P. Code: 281253

Time: Three hours

Answer ALL Questions

Maximum: 100Marks

I. Elaborate on:

(2x20=40)

1. Classify Hypochromic microcytic anaemia with lab investigations.
2. Chronic Myeloid leukemia, pathophysiology and lab diagnostic criteria.

II. Write notes on:

(10x6=60)

1. Anaemia of chronic disease and lab diagnosis.
2. Discuss the smear findings in megaloblastic anaemia and mention its causes.
3. Write about the principle of staining used in routine blood smears.
4. Alpha Thalassemia and its lab diagnosis.
5. Flow cytometry and its application.
6. Microangiopathic haemolytic anaemia – Thrombotic thrombocytopenic purpura (TTP).
7. Discuss the collection, preservation and analysis of semen samples.
8. Leukemoid reaction versus chronic myeloid leukemia (CML).
9. Discuss how Cerebrospinal fluid (CSF) helps in differentiating between bacterial and viral meningitis.
10. Bone marrow aspiration and its application.
