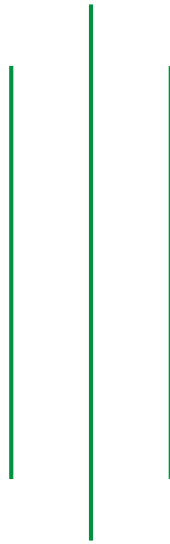


**Syllabus for Licensing Examination of
M.Sc. MLT/Medical/Clinical (Hematology &
Transfusion Medicine)
2021**



Nepal Health Professional Council

Bansbari, Kathmandu

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9	Cytogenetic and Molecular Analysis in Hematology	3%
10	Blood Group System	3%
11	Blood Donation and Blood Component	10%
12	Serological Test of Blood Transfusion	10%
13	Adverse Blood Transfusion Reaction	2%
14	Automation and Recent Advancement in Hematology and Transfusion medicine	6%
15	Quality assurance in Hematology and Transfusion Medicine	6%
16	Laboratory Organization and Management	4%
	Total	100%

Hemopoiesis

- Hematopoietic organ
- Hematopoietic stem cell and its development
- Erythropoiesis, Leukopoiesis, Thrombopoiesis
- Hemopoietic microenvironment and its regulation
- Hemopoietic growth factors

1. Red Blood Cells (RBC) , White Blood Cells (WBC) and Platelets

- Structure, physiology and Function
- RBC, WBC and platelet anomalies
- Physiological and pathological variation
- Synthesis, structure, composition and degradation of hemoglobin
- Extravascular and Intravascular hemolysis

2. Routine laboratory investigation in hematology

- Technique of blood collection and preservation of blood for hematology
- Total Red blood cell count, White blood cell count, Platelet count
- Hemoglobinometry: Different methods of hemoglobin estimation
- Erythrocyte sedimentation rate and Packed Cell Volume (PCV) /Hematocrit
- Red cell indices and its calculation
- Blood smear preparation and quality of good blood smear
- Romanowsky stain preparation and staining technique
- Differential leukocyte count
- Reticulocyte count
- Diagnostic test for hemoparasite

3. Bone marrow

- Normal bone marrow structure.
- Bone marrow Aspiration and biopsy
- Processing, Examination and reporting of bone marrow aspirate films.

4. Red cell disorder and investigation

- Clinical features of anemia and Morphological classification of anemia
- Approach to diagnosis of Anemia
- Iron deficiency anemia: Iron metabolism, causes, laboratory diagnosis

- Megaloblastic anemia: Vitamin B 12 and folate metabolism, causes, laboratory diagnosis
- Aplastic Anemia: Causes pathogenesis and laboratory diagnosis
- Sideroblastic anemia: Causes pathogenesis and laboratory diagnosis
- Congenital Dyserythropoietic anemia: Classification and laboratory diagnosis
- Hereditary spherocytosis: Molecular basis, Pathogenesis and laboratory diagnosis
- G6PD: Molecular basis, Pathogenesis and laboratory diagnosis
- Immune hemolytic anemia: Classification, pathogenesis and laboratory diagnosis
- Paroxysmal Nocturnal hemoglobinuria: Molecular basis, Pathogenesis and laboratory diagnosis
- Thalassemia: Classification, Molecular basis, Pathogenesis and laboratory diagnosis
- Sickle cell disorder: Classification, Molecular basis, Pathogenesis and laboratory diagnosis
- Hereditary persistence of fetal hemoglobin
- Other Hemoglobin Variant such as Hb C, Hb D, Hb E
- Prenatal diagnosis of thalassemia and sickle cell disease

5. Leukocyte disorder and investigation

- Leukemia: Classification (FAB and WHO classification)
- Clinical features and Laboratory diagnosis of acute and chronic leukemia
- Cytochemical stains for leukocytic disorder
- Myelodysplastic syndrome: pathogenesis, FAB and WHO classification and Laboratory diagnosis
- Myeloproliferative disorder: classification, Clinical and laboratory diagnosis
- Chronic Myeloid leukemia: Molecular basis, classification, and laboratory diagnosis
- Lymphoma: Classification and laboratory diagnosis
- Multiple myeloma: Clinical and laboratory diagnosis
- Immunological marker for leukemia and lymphoproliferative disorder

6. Platelet disorders and investigation

- Qualitative platelet disorder
- Quantitative Platelet disorder: Thrombocytosis and Thrombocytopenia (Immune Thrombocytopenic Purpura, Heparin-Induced Thrombocytopenia, Thrombotic Thrombocytopenic Purpura, and the Hemolytic Uremic Syndrome)

7. Hemostasis and investigation

- Normal hemostasis and blood coagulation
- Coagulation factors

- Fibrinolysis
- Screening test of Bleeding disorder
- Special test for Bleeding disorder
- Laboratory monitoring of anticoagulant therapy
- Correction Studies and Coagulation factor assay
- Platelet function test
- Bleeding Disorders (Acquired and Inherited) and its laboratory diagnosis
- Thrombotic disorder(Acquired and Inherited) and its laboratory diagnosis

8. Cytogenetics and molecular analysis in Hematology

- Cytogenetic disorder and Cytogenetic technique
- Karyotyping and Banding technique
- Chromosomal Breakage syndrome
- Cytogenetic of leukemia and lymphoma
- Philadelphia Chromosome
- Molecular technique in benign and malignant hematological disease
- BCR-ABL1 analysis by RT PCR

9. Blood Group System

- Genetic, inheritance and molecular characterization of blood group system
- ABO Blood and Rh Blood group systems
- Other Blood group system (P, MNS, Kidd, Kell, Duffy, Lewis, Lutheran, Bombay)

10. Blood donation and Blood Components

- Donor selection and preparation
- Acceptable and rejection Criteria for Blood donation
- Adverse event of blood donation and its management
- Use of anticoagulant and preservatives
- Different types of Blood Component
- Storage , preparation, indication and administration of blood and blood components
- Quality control of Blood component
- Plasma fractionation
- Aphaeresis
- Blood substitutes

11. Serological test of blood transfusion

- ABO and Rh Typing
- Compatibility testing
- Cross matching methods (major and Minor)
- Antiglobulin tests (DCT and ICT)
- Antibody screening and identification
- Anti-D titration
- Column agglutination test and microplate technique
- Transfusion Transmitted Infection and its screening
- Nucleic acid amplification technique
- Compatibility testing in special transfusion situation

12. Adverse blood transfusion reaction

- Types of transfusion reaction
- Sign and symptoms of transfusion reaction
- Work up and management of transfusion reaction

13. Automation and recent advancement in hematology and blood bank

14. Quality assurance in Hematology and Transfusion Medicine

15. Laboratory organization and management

Recommended Text Book:

1. Saxena R, Pati HP, Mahapatra M. (2012) De Gruchy's Clinical Haematology in Medical Practice. Wiley
2. Hoffbrand AV, Catovsky D, Tuddenham E, Green AR. (2011). Post Graduate hematology Wiley-Bkackwell
3. Dacie and Lewis: Practical Haematology 2011, Elsevier Churchill Livingstone
4. SM Kawthalkar: Essential of Hematology (2013), Jaypee Brothers.
5. Benette ST, Lehman CM, Rodgers GM. (2007) Laboratory Hemostasis A Practical Guide for Pathologists, Springers
6. Mcpherson RA, Pincus MR. (23rd Edition) Henry's Clinical Diagnosis and Management by Laboratory Method
7. Saran RK. (2003). Transfuion Medicine Technical Manual. McGraw-Hill.
8. Rao GH, Eastlund T, Jagannathan L. (2006) Hand Book of Blood Banking and Transfusion Medicine. Jaypee
9. AABB, Technical Manual (20th Edition)