REFERENCE BOOKS:

01 Text Book of Medical Laboratory Technology, P.B.Godkar, 1994, Bhalani Publishing House,Mumbai

02. Medical Laboratory Technology,Vol I & II, 1999, K.L.Mukharjee.Tata MacGraw Hill.

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09. District laboratory practice in tropical countries VOL-2, Monica Cheesbrough, Cambridge University Press.

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VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

REVISED SYLLABUS FOR DIPLOMA OF MEDICAL TECHNOLOGY (EFFECTIVE FROM JULY-2014)

Paper III: HAEMATOLOGY AND BLOOD BANKING

SECTION –I HAEMATOLOGY

1) PHYSIOLOGY OF BLOOD

(i) Normal Erythropoesis.
(ii) Leucopoesis.
(iii) Formation & Function of Blood Platelets.

2) A. INTRODUCTION

(i) Collection of Blood samples for Haematological studies.
(ii) Types of Anticoagulants.
(iii) Capillary Blood, Venous blood & Storage of Samples.

B. HAEMATOLOGICAL TEST

(i) Hemoglobin and its estimation.
(ii) Red blood cell, White blood cell count, Platelet count-counting fluids preparation, Function.
(iii) Study of Peripheral smear, Differential WBC count, Morphology of red Blood Cells,
(iv) Romanowasky stains, Staining procedures, preparation of Stains, Artifacts & troubleshooting.
(v) Haematocrit (PCV)
(vi) Absolute Blood Indices.RDW, PDW, PCT.

(vii) Erythrocyte sedimentation rate.
(viii) Osmotic Fragility test-fluid preparation.

3) ANAEMIAS

(i) Definition & Classification of Anaemias.
(ii) Iron & B-12 deficiency anaemia.
(iii) Anaemias of Chronic disorders & Aplastic anaemia.
(iv) Haemolytic anaemia / Sideroblastic anaemia.
(v) R.B.C. Metabolism & G-6PD deficiency anaemia.
(vi) Polycythemia.

4) HAEMOGLOBINOPATHIES

(i) Structure of Haemoglobin Molecule.
(ii) Types of normal Haemoglobins.
(iii) Abnormalities of Haemoglobin Molecule.
(iv) Sickle Cell Anaemia.
(v) Thalassemia
(vi) Tests for Haemoglobinopathies: 1. Screening test (i)Sickling test
(ii) NESTROF
2. Confirmative test (i) Electrophoresis
(ii)HPLC

6) LEUKAEMIAS

(i) Defination, Classification of Leukaemias.
(ii) Cytochemical reaction.
(iii) Acute & Chronic Myeloid Leukaemias.

7) BLOOD COAGULATION

(i) Mechanism of Blood Coagulation.
(ii)Bleeding time/ Clotting time/ Clot Retraction.
(iii)Thrombin time/ Prothrombin time
(iv)Coagulation disorders, Haemophilia A & Haemophilia B.
(v)Platelet disorders.

8) Automation in hematology- Analyser- a) Principle, b) procedure, c) drawbacks & Advantages, d) trouble shooting.

9) Quality control and standard preparation in Hematology.

SECTION – II BLOOD BANKING

1) PRINCIPLES OF IMMUNOHAEMATOLOGY.

2) BLOOD GROUP SYSTEM –I

(i) ABO blood Group system, subgroup of ABO, Variants of ABO blood group system.
(ii) Rh blood group system.
(iii)Serological techniques for detection of ABO & Rh antigens.
(iv)Gel technique for blood grouping and serological Techniques.
(v) AHG test.

3) BLOOD GROUP SYSTEM – II

(i)Other Blood Group systems
(ii)Importance of Atypical antibodies, their detection and clinical significance

4) BLOOD COLLECTION

(i)Screening of Donor,
(ii)Blood Collection,
(iii)Storage and transportation of blood,
(iv)Component preparation:
a)Red cell concentrate
b)Washed red cells
c)FFP
d)Cryoprecipitate
e)Platelet concentrate

5) COMPATIBILITY TESTING

(i)Compatibility testing and special methods of routine and emergency crossmatch
(ii)Trouble shooting in grouping and crossmatching

6) TRANSFUSION REACTION

(i)Types of Transfusion reaction,
(ii)Investigation of Transfusion reaction.

7) HAEMOLYTIC DISEASE OF NEWBORN

Haemolytic disease of the New born due to
(i)ABO incompatibility,
(ii)Rh incompatibility
(iii)Other blood group incompatibility.

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8) AUTOMATION & BIOSAFETY IN BLOOD BANKING.

9) QUALITY CONTROL IN BLOOD BANKING.

REFERENCE BOOKS :

1. Clinical Haematology. M.M.Wintrobe. Kothari's Indian Edition.
2. Practical Haematology. J.A.Dacei & S.M.Lewis The English Language Book Society. 8th ed., ELBS
3. Handbkook of Medical Laboratory Technology. Bharucha, Meyerm, Moody, Carman, Vellore.
4. Technical Manual, Americal Association of Blood Banks.1996.
5. Compendium Transfusion Medicine, Dr. R.N. Makroo, J. Mitra.

6. A Hand Book of Clinical Pathology,Chakraborthy & Bhattacharya, Academic Publishers.

7. Parasitology, K.D.Chatterjee,Cheterjee Medical publishers.

8. Collection and Handling of Laboratory Specimens – A Practical Guide, 1988 Editor T.M.Slockbower & T.A.Bhumenfeld, J.B.Lippincott Company,USA.

9. Basic laboratory Method in Medical Parasitology, WHO, 1991.

PRACTICAL BASED ON PAPER III

SECTION – 1 HAEMATOLOGY

1. Methods of Blood Collection and Anticoagulants
2. Haemoglobin estimation: Sahli's method and Cyanmethaemoglobin method.
3. Total R.B.C.
4. Total W.B.C. Count.
5. Differential Count.
6. Platelet Count.
7. Reticulocyte Count
8. E.S.R.
9. Packed cell volume/ Determination of Haematocrit.
10. Bleeding time, Whole Blood Coagulation time and Prothrombin time.
11. Osmotic fragility test (Demonstration).
12. Preparation of various stains & reagents for hematology test
13. Sickling test.
14. Immature cells of leukemia (Demonstration).
15. Interpretation of Automated strips in various clinical condition.

SECTION – 1I BLOOD BANKING.

1. ABO cell grouping and serum grouping by slide and tube method.
2. Rh typing – Various Techniques.
3. Anti A/ Anti B titer
4. Anti D titration by albumin and indirect antiglobulin technique
5. Test for HBsAg (Hepatitis B surface Antigen) ELISA and Rapid Test (Demonstration).
6. Test for HIV Antibodies (ELISA and Rapid Test) (Demonstration).
7. (a) Cross matching procedures.
   (b) Direct Antiglobulin (Coomb's) Test.
   (c) Indirect antiglobulin test.

REFERENCE BOOKS:

1. Medical Laboratory Technology,5th reprint 1999,Vol.I,II & III, K.L.Mukharjee, TataMcGraw Hill

2. Text book of Medical Laboratory Technology, P.B.Godkar, 1994,Bhalani Publishing House, Mumbai.

3. Medical Laboratory Technology, Ramnik Sood, 4th ed., 1994,Jaypee Brothers.

4. Hand book of Medical Laboratory Technology, Bharucha, Meyerm, Mody, Carman.

5. Lynch's Medical Laboratory Technology, 3rd ed., Stanley S. Raphael, W. B. Saunders Company, Asian edition.

6. Practical Haematology. J. A. Dacie & S. M. Lewis, The English Language Book Society, 8th ed., ElBS

7. Collection and Handling of Laboratory Specimen – A Practical Guide, 1983,Editor T. M. Slockbower & T.A. Bhumenfeld, J. B. Lippincott company, USA

PRACTICAL BASED ON PAPER IV

SECTION – I INSTRUMENTATION

1. Operation of pH meter, Single pan Balance, Spectrophotometer,Colorimeter, Autoanalyzer, Electrophoresis. (Demonstration)

SECTION – 1I CLINICAL BIOCHEMISTRY

Preferably all the test should be done on semi Auto analyser.

1)Blood Glucose/Sugar estimation and GTT.
2) Blood Cholesterol – Free & Total HDL Cholesterol, LDL Cholesterol.
3) Serum Triglyceride
4) Serum Total Protein and Serum Albumin and A/G ratio
5) Microalbumin test
6) Blood/Urine Urea.
7) Blood /Urine Creatinine.
8) Blood /urine Uric Acid
9) Serum Calcium / Ionized Calcium
10)Serum potassium
11)Serum Sodium
12)Serum Chloride
13)Serum Iron, and TIBC (Total Iron Binding Capacity)
14) Serum Bilirubin.
15)Serum Alkaline Phosphatase.
16)Serum Acid Phosphatase.
17)S.G.O.T
18)S.G.P.T.
19)Serum Amylase.
20)Serum Lipase
21)Serum Protein Electrophoresis and Lipoprotein electrophoresis (Demonstration).
22)Cardiac Troponin T (Demonstration)
23)Cardiac Troponin I (Demonstration)
24)T3 ,T4, TSH ELISA (Demonstration)

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