Rajiv Gandhi University of Health Sciences, Karnataka

First Year M.Sc. (MLT) Degree Examination - -MAY-2024
Q.P. CODE: 8034

Section A

Type: DES

Q1. Define Basal metabolic rate (BMR). Discuss the measurement, factors that affect BMR and the clinical significance of BMR. (10)

Q2. Abnormal haemoglobins. 10)

Q3. Define creatinine clearance test. Discuss the patient instructions, timed collection of specimens and creatinine estimation. Add a note on the calculation of creatinine clearance rate and the biological reference intervals. (10)

Q4. Describe the sample collection, transport, and analysis of arterial blood gases. Add a note on the biological reference intervals and preanalytical variables. (10)

Q5. Explain the biochemistry, functions and clinical significance of *alpha-fetoprotein* (*AFP*) Comment on the analytical considerations and laboratory evaluation of AFP. (10)

Section B

Answer all the questions. Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Answer All The Questions

Type:
DES

Q6. Discuss the causes and management of electric hazards in a clinical laboratory. Add a note on the general recommendations for working with electrical equipment in the laboratory. (10)

Q7. Describe the principle and applications of paper chromatography. Explain the procedure of separation of amino acids using this technique. Add a note on the advantages and disadvantages. (10)

Q8. Explain different types of internal quality control materials. Describe the procedure for in- house QC preparation, validation and storage. (10)

Q9. Define risk. Discuss the contributors to pre-analytical and analytical laboratory risk and the measures to minimize them. (10)

Q10. Describe the principle behind centrifugation techniques. Give the applications of preparative and analytical centrifugation and discuss the procedure in detail. (10)

Rajiv Gandhi University of Health Sciences, Karnataka

First Year M.Sc. (MLT) Degree Examination - 30-MAY-2024

HAEMATOLOGY AND BLOOD TRANSFUSION - I (RS3)
Q.P. CODE: 8035

Section A and section B are to be written in same Answer Book
Haematology and Blood Transfusion [8035]
Marks: 100 Duration: 200 mins.

Section A

Answer all the questions.Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Answer All The Questions

1 Describe the organization and quality control of haematologylaboratory. (10)

2 Discuss on Anti human globulin test. (10)

3 Discuss the methods of collection, analysis, transport andpreservation of stool specimen. (10)

4 Enlist the causes of thrombocytopenia. Discuss the laboratorydiagnosis of idiopathic thrombocytopenic purpura. (10)

5 Define iron deficiency anemia. Discuss the laboratory diagnosis ofthe Iron deficiency anemia. (10)

Section B

Answer all the questions. Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Answer All The Questions

6 Classify autoimmune disorders. Write in brief the clinical featurespathogenesis and laboratory diagnosis of rheumatoid arthritis. (10)

7 Discuss on Hematopoetic stem cell transplantation. (10)

8 Discuss on type IV hypersensitivity reaction and explain thepathogenesis with the examples. (10)

9 Explain Mendel's law of inheritance with the examples. (10)

10 Describe laboratory diagnosis of HIV. (10)

Rajiv Gandhi University of Health Sciences, Karnataka

First Year M.Sc. (MLT) Degree Examination - 07-Jan-2022

[Time: 3 Hours] **[Max. Marks: 100]**

MICROBIOLOGY – I (RS3)
Q.P. CODE: 8036

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Section A and section B are to be written in same Answer Book

Section A – clinical Microbiology [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Pulmonary tuberculosis – Describe its laboratory diagnosis and add a note on the national program for its diagnosis and treatment.
2. Define Dimorphic fungi, list them and describe laboratory diagnosis Rose Gardener's Disease.
3. Identification of bacterial pathogens – describe the morphological and biochemical tests used for their identification.
4. Describe the lab diagnosis and preventive strategies for Polio
5. Hydatid disease – Name the agent, describe the life cycle, pathogenesis and its laboratory diagnosis.

Section B – Immunology and Molecular Biology [50 marks]

6. Immunity – Definition types and describe acquired immunity.
7. Mechanisms of bacterial drug resistance.
8. DNA finger printing technology – principle, applications.
9. What are immunoglobulins? Describe their structure and functions based on the type.
10. Define agglutination and precipitation reactions. Describe application of agglutination reactions in diagnostic laboratory.

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Rajiv Gandhi University of Health Sciences, Karnataka

First Year M.Sc. (MLT) Degree Examination - 03-Jan-2022

[Time: 3 Hours] **[Max. Marks: 100]**

BIOCHEMISTRY – I
(RS-2)
Q.P. CODE: 9811

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.
Section A and section B are to be written in same Answer Book

Section A - Clinical Biochemistry [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Describe the structural organization of protein. Explain the determination of primary structure.
2. What are the indications for conducting oral glucose challenge test (OGCT)? Discuss the patient instructions, sample collection, analysis and interpretation of the results of this test.
3. Discuss in detail about the properties of Aminoacids. Add a note on classification of aminoacids based on polarity.
4. Describe the sample collection, transport, and analysis of arterial blood gases. Add a note on the biological reference intervals and preanalytical variables.
5. What are the indications for biochemical analysis of Cerebrospinal fluid (CSF)? Explain the sample collection, principle and procedure for the measurement of biochemical analytes in CSF.

Section B – Laboratory Principles & Techniques [50 marks]

6. Discuss the specifications for radiation safety in clinical laboratory. Describe the disposal of radioactive and hazardous waste.

7. Describe the responsibilities of employer and employee towards the laboratory safety. Discuss the biologic safety norms and the safety equipment required in a laboratory.

8. Explain the principle, uses, care and maintenance of weighing balance, pH meter and centrifuges.

9. Write in detail about quality control in clinical laboratory. Add a note on errors caused during analysis.

10. Describe the principle and applications of Potentiometry. Give the schematic diagram of ion-selective membrane electrode based potential cell and discuss the care and maintenance.

Rajiv Gandhi University of Health Sciences, Karnataka

First Year M.Sc. (MLT) Degree Examination - 05-Jan-2022

[Time: 3 Hours] **[Max. Marks: 100]**

MICROBIOLOGY – I
(RS-2)
Q.P. CODE: 9812

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.
Section A and section B are to be written in same Answer Book

Section A - Clinical Microbiology [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Lab diagnosis of Dermatophytosis.
2. Bacteriological examination of water.
3. Pathogenicity and clinical manifestation of Enteric fever.
4. Laboratory diagnosis of Candidiasis.
5. Herpes Simplex Viruses – pathogenicity, clinical manifestation and lab diagnosis.

Section B – Immunology and Molecular Biology [50 marks]

6. Write in detail the mechanism and different types of cells involved in CMI.
7. Classical and alternate complement cascade pathway.
8. Difference between primary and secondary immune response.
9. Type IV hypersensitivity.
10. Mechanism and functions of flow cytometry, FISH and CGH.

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Rajiv Gandhi University of Health Sciences, Karnataka

First Year M.Sc. (MLT) Degree Examination - 07-Jan-2022

[Time: 3 Hours] **[Max. Marks: 100]**

Haematology and Blood Transfusion – I (RS-2)
Q.P. CODE: 9813

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.
Section A and section B are to be written in same Answer Book

Section A – Haematology and Clinical Pathology [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. List the Hemoparasites. Write in detail the lab diagnosis of malaria.
2. Discuss the causes and lab diagnosis of Megaloblastic anemia.
3. Draw the stages of erythropoiesis. Write a note on significance of Reticulocyte count and its estimation.
4. List the morphological differences between Myeloblast and Lymphoblast. Add a note on cytochemistry used to differentiate them.
5. Explain the steps for examination of CSF. Discuss the differences in lab findings of CSF in Bacterial and Viral meningitis.

Section B – Immunopathology and Medical Genetics [50 marks]

6. Discuss hypersensitivity reactions with examples.
7. Describe the clinical presentation, pathogenesis and lab diagnosis of SLE.
8. What are the various types of adverse transfusion reactions? Describe the transfusion reaction workup done in these cases.
9. What are the types, clinical presentation of immune thrombocytopenia. Add a note on the lab diagnosis of ITP.
10. What is autosomal recessive inheritance? Explain with examples.

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First Year M.Sc. (MLT) Degree Examination - 20-Nov-2024

Time: 3 Hours **Max. Marks: 100**

BIOCHEMISTRY – I (RS-3)

Q.P. CODE: 8034

Your answers should be specific to the questions asked

Draw neat labeled diagrams wherever necessary

Section A and section B are to be written in same Answer Book

Section A - Clinical Biochemistry [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Define buffers. Explain the various blood buffers and explain the role of buffers in regulating pH.
2. Explain types and management of Diabetes Mellitus.
3. Explain the function and metabolism of lipoproteins. Add a note on cause of hypertriglyceridemia.
4. Explain the role of cardiac markers in lab diagnosis of myocardial infarction.
5. Give examples of various urine preservatives used in laboratories. Write briefly about the commonly done biochemical tests done in urine sample with their normal range.

Section B – Laboratory Principles and Techniques [50 marks]

6. What is Internal Quality Control? Explain the Westgard rules and criteria for IQC testing.
7. Explain the separation of plasma proteins by Agarose gel electrophoresis. Draw the normal and abnormal patterns and their interpretation.
8. Explain the principle of chromatography. Explain HPLC in detail.
9. Write briefly on safety measures to be taken in a clinical laboratory with respect to chemical fire and biological safety.
10. Explain the principle, classification and uses of centrifuges in the laboratory. Add a note on cell fractionation.

First Year M.Sc. (MLT) Degree Examination - 22-Nov-2024

[Time: 3 Hours] **[Max. Marks: 100]**

HAEMATOLOGY AND BLOOD TRANSFUSION – I (RS3)

Q.P. CODE: 8035

Your answers should be specific to the questions asked. Draw neat labeled diagrams wherever necessary.

Section A and section B are to be written in same Answer Book

Section A – Haematology and clinical pathology [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Define Leukaemia. Describe the clinical features of chronic myeloid leukemia and add a note on its laboratory findings.
2. Write in detail on disseminated intravascular coagulation (DIC).
3. Discuss on sputum examination in detail.
4. Reticulocyte count, principle, procedure, interpretation and uses.
5. Write in detail with the laboratory diagnosis of aplastic anemia.

Section B – Immunopathology and Medical Genetics [50 marks]

6. Explain the methods of identification of Barr body. Add a note on the clinical significance of Barr body.

7. Write in detail on Hashimoto's thyroiditis.

8. Discuss type I hypersensitivity reaction and explain the pathogenesis with the examples.

9. Write in detail on SLE.

10. Classify genetic disorders and write in detail on X linked recessive disorder.

First Year M.Sc. (MLT) Degree Examination - 20-Nov-2024

[Time: 3 Hours] **[Max. Marks: 100]**

BIOCHEMISTRY – I

(RS-2)
Q.P. CODE: 9811

Your answers should be specific to the questions asked. Draw neat, labeled diagrams wherever necessary.

Section A and section B are to be written in same Answer Book

Section A - Clinical Biochemistry [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Classify the lipids with examples. Explain the functions of cholesterol and add a note on coronary artery diseases.

2. Enumerate the classifications of amino acids based on structure, nutritional requirement and polarity. Name any three derived amino acids and mention their importance.

3. Describe the method of collection of arterial blood. Mention the precautions, transport conditions and sample rejection criteria. Name the measured parameters in arterial blood gas analysis and their biological reference intervals.

4. Enlist the indications and precautions for oral glucose tolerance test. Explain the principle, procedure and interpretation of this test.

5. Explain the role of blood buffers in acid-base balance.

Section B – Laboratory Principles & Techniques [50 marks]

6. Explain the general principle of chromatography. Enumerate the types of chromatography based on principle of separation. Outline the principles of high performance liquid chromatography with a diagram.

7. Explain the principle and instrumentation of atomic absorption spectrometry, with a diagram. Mention its applications.

8. Describe the functional components of clinical laboratory. Add a note on factors affecting productivity of a laboratory.

9. Explain the principle of agarose gel electrophoresis and its applications.

10. Discuss the importance of documentation in the clinical laboratory. Enumerate any five quality or technical records in the laboratory and the contents in these records.

First Year M.Sc. (MLT) Degree Examination - 22-Nov-2024

[Time: 3 Hours] **[Max. Marks: 100]**

MICROBIOLOGY – I (RS-2)

Q.P. CODE: 9812

Your answers should be specific to the questions asked. Draw neat, labeled diagrams wherever necessary.

Section A and section B are to be written in same Answer Book

Section A - Clinical Microbiology [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Explain the structure of bacterial cell with the help of a suitable diagram and differentiate between eukaryotic and prokaryotic cell with example.
2. Enumerate fungi causing opportunistic mycoses. Discuss in detail about the pathogenicity and lab diagnosis of candidiasis.
3. Describe in detail life cycle and lab diagnosis of malaria.
4. CSSD.
5. Describe the pathogenicity and laboratory diagnosis of cholera.

Section B – Immunology and Molecular Biology [50 marks]

6. Recombinant DNA technology.
7. Describe the structure and functions of IgG.
8. Define autoimmunity. Discuss mechanism and laboratory diagnosis of autoimmune disorders.
9. Agglutination reactions and their applications in diagnosis of infectious diseases.
10. Discuss in detail about the structure and function of MHC molecules.

First Year M.Sc. (MLT) Degree Examination - 25-Nov-2024

Time: 3 Hours **Max. Marks: 100**

MICROBIOLOGY – I (RS3)

Q.P. CODE: 8036

Your answers should be specific to the questions asked Draw neat labeled diagrams wherever necessary

Section A and section B are to be written in same Answer Book

Section A – Clinical Microbiology [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Bacterial culture methods
2. Discuss laboratory diagnosis and prophylaxis of rabies virus
3. Serological tests for syphilis
4. Describe the laboratory diagnosis of malaria
5. Moist heat sterilization

Section B – Immunology and Molecular Biology [50 marks]

6. Agglutination reactions – principle, types and applications
7. Autoimmunity – definition and mechanism
8. Restriction fragment length polymorphism
9. Mitosis and Meiosis
10. Structure and function of MHC molecules

First Year M.Sc. (MLT) Degree Examination - 25-Nov-2024

[Time: 3 Hours] **[Max. Marks: 100]**

Haematology and Blood Transfusion – I (RS-2)

Q.P. CODE: 9813

Your answers should be specific to the questions asked.

Draw neat, labeled diagrams wherever necessary.

Section A and section B are to be written in same Answer Book

Section A – Haematology and Clinical Pathology [50 marks]

Answer All The Questions **10 X 10 = 100 Marks**

1. Discuss the indications and procedure for Semen analysis.
2. What are Red cell indices? Write the morphological classification of anemias with examples.
3. Explain the pathogenesis and lab diagnosis of Chronic Myeloid Leukemia.
4. What are the sites and indications of Bone marrow aspiration and Biopsy? Explain the aspiration techniques, processing and staining methods of Bone marrow aspirates.
5. List any Five Hemolytic anemias with the confirmatory lab tests used to diagnose them.

Section B – Immunopathology and Medical Genetics [50 marks]

6. Discuss the types, clinical features and laboratory diagnosis of Autoimmune hemolytic anemias.
7. Explain the pathogenesis of AIDS and add a note on lab diagnosis.
8. Describe delayed hypersensitivity reactions. Give examples.
9. Explain Sex linked inheritance of diseases with examples.
10. Explain in detail technique of peripheral Lymphocyte culture.