

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013
BIOCHEMISTRY (I)
PAPER ONE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Enumerate the biochemical changes in the blood & urine of patients with 3 different types of jaundice.
- Q. 2.** Write short note on –
- a.** Heme catabolism (4)
 - b.** Constituents of bile (3)
- Q. 3.** Describe the formation of the thyroid hormones by the thyroid gland. Enumerate the laboratory tests done to assess thyroid function.
- Q. 4.** Classify hormones based on their mechanism of action with examples.
- Q. 5.** Describe in brief the biochemical role of testosterone and its method of estimation.
- Q. 6.** Describe the chemistry and functions of insulin.
- Q. 7.** Give the principle of ELISA. What are different types of ELISA?
- Q. 8.** What is the principle of RIA? Give its applications.
- Q. 9.** Enumerate the hormones of the anterior pituitary. Give an account of chemistry, mode of action and functions of FSH.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013**BIOCHEMISTRY (I)****PAPER ONE (MCQ)****Time allotted for MCQ- 15 minutes****B : MCQs (Single response type):****(½ x 14= 7)**

Select the most appropriate answer and encircle the alphabet against it

1. All are Steroid hormones except:
 - a. Estrogen
 - b. Progesterone
 - c. Glucagon
 - d. Testosterone
2. One of the following is a second messenger :
 - a. cAMP
 - b. ADP
 - c. NAD⁺
 - d. CoA
3. Bilirubin is the breakdown product of :
 - a. Heme
 - b. Purines
 - c. Pyrimidines
 - d. Proteins
4. Before excretion, bilirubin is conjugated to:
 - a. Glycine
 - b. Glutamic acid
 - c. Glucuronic acid
 - d. Glutamine
5. Insulin is secreted by which cells of pancreas:
 - a. α
 - b. β
 - c. γ
 - d. δ
6. Which of the following amino acid is required for the synthesis of the thyroid hormones?
 - a. Glycine
 - b. Tyrosine
 - c. Alanine
 - d. Leucine
7. Plasma steroids can be estimated by:
 - a. RIA
 - b. Fluorimetry
 - c. HPLC
 - d. All the above
8. The units for estimation of thyroid hormones is:
 - a. IU/L
 - b. mg/dL
 - c. ng/dL
 - d. KAU/L.
9. Bilirubin is estimated by the:
 - a. Vandenberg reaction
 - b. Jaffe's reaction
 - c. Ninhydrin reaction
 - d. Rothera test
10. RIA stands for:
 - a. Radio immunological study of absorbance
 - b. Radio-linked immunosorbant assay
 - c. Radio immuno assay
 - d. Radiation investigation assay
11. In Hypothyroidism there is:
 - a. Decreased fT3 & fT4 levels and increased TSH levels
 - b. Increased fT3 & fT4 levels and decreased TSH levels
 - c. Decreased fT3 & fT4 levels and normal TSH levels
 - d. Increased fT3 & fT4 levels and normal TSH levels.
12. Which of the following is not a protein hormone?
 - a. Growth hormone
 - b. Insulin
 - c. Cortisol
 - d. Glucagon
13. Deficiency of which of the following hormones causes diabetes insipidus?
 - a. Glucagon
 - b. Insulin
 - c. ADH
 - d. Growth hormone
14. The reference range for serum AST is:
 - a. 5 – 20 IU/L
 - b. 10 – 40 IU/L
 - c. 20 – 80 IU/L
 - d. 40 – 160 IU/L

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013
BIOCHEMISTRY (II)
PAPER –SECOND

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** a. Define variance, standard deviation and coefficient of variation. (4)
b. Define with example chi-square test. (3)
- Q. 2.** a. Explain internal and external quality control. (3)
b. Describe in details about Levy- Jenning chart with its clinical significance. (4)
- Q. 3.** Differentiate point wise the following pairs: (3.5+3.5=7)
a. Quantitative and qualitative data.
b. Calibrators and controls.
- Q. 4.** Write the principle and uses of polymerase chain reaction.
- Q. 5.** a. What is standard operating procedure? (3)
b. What are oncogenes and protooncogenes? (4)
- Q. 6.** How tumor markers are classified? Give two examples of each.
- Q. 7.** What is recombinant DNA technology?
- Q. 8.** a. Write the importance of free radicals in medicine. (3)
b. What is replication? Write two steps where inhibitors are used in replication. (4)
- Q. 9.** Write notes on: (3+4=7)
a. Process of transcription
b. What are restriction endonucleases

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013
BIOCHEMISTRY (II)
PAPER –SECOND (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. The central line drawn in the Levy- Jennings chart represents:
 - a. Mean
 - b. Mode
 - c. Median
 - d. Method
2. The I- 35 Westgard rule represents:
 - a. Transport
 - b. Centrifugation
 - c. Test result reporting
 - d. Exposure to UV light
3. The number having the highest frequency in a given set of data is called:
 - a. Mean
 - b. Median
 - c. Mode
 - d. Out lier
4. Accuracy is:
 - a. Reproducibility of the result
 - b. The ability to detect minute amounts of analyte
 - c. Closeness of the result to the true value
 - d. Same as precision
5. Molecule of genetic information is:
 - a. Protein
 - b. DNA
 - c. RNA
 - d. Enzyme
6. Which base is NOT present in normal DNA or RNA?
 - a. Uracil
 - b. Thymine
 - c. Theophylline
 - d. Guanine
7. DNA is denatured by:
 - a. Heat
 - b. Acid
 - c. Alkali
 - d. All of the above
8. What is the direction of transcription:
 - a. 5` - 3`
 - b. 3` - 5`
 - c. 5` - 5`
 - d. 3` - 3`
9. Which is an oncofoetal antigen?
 - a. CEA
 - b. CA- 125
 - c. β- HCG
 - d. ALP
10. The two DNA strands are held together by:
 - a. Covalent bonds
 - b. Ionic interactions
 - c. Hydrogen bonds
 - d. Vander Waals forces
11. The enzyme responsible for unwinding of DNA at he replication fork is:
 - a. Helicase
 - b. Topoisomerase
 - c. Polymerase
 - d. Primase
12. The heights in centimeters of 5 students are: 165, 175, 176, 159, 170. The sample median and sample mean are:
 - a. 170, 169
 - b. 170, 170
 - c. 169, 170
 - d. 176, 169
13. Which of the following is true about t-RNA?
 - a. No intrabasal pairing
 - b. Inverted T appearance
 - c. Clover leaf pattern
 - d. Each specific for one m-RNA
14. The gene – cutting tools of recombinant DNA technology is:
 - a. Helicases
 - b. Restriction enzymes
 - c. DNA ligases
 - d. Plasmids

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013
MICROBIOLOGY (I)
PAPER THREE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Enumerate two bile stained ova and draw their labelled diagram.
- Q. 2.** Discuss the laboratory diagnosis of visceral leishmaniasis.
- Q. 3.** Discuss the laboratory diagnosis of malaria.
- Q. 4.** Write short notes on:
- a.** Modified ZN staining for stool
 - b.** NIH swab
- Q. 5.** Tabulate the differences between:
- a.** Amoebic dysentery and bacillary dysentery
 - b.** Taenia solium and Taenia saginata
- Q. 6.** Draw a flow chart diagram of life cycle of ascaris lumbricoides.
- Q. 7.** Draw and label:
- a.** Trophozoite of giardia.
 - b.** Microfilaria of W. bancrofti.
- Q. 8.** Discuss the stool concentration methods.
- Q. 9.** Write short notes on:
- a.** Hydatid cyst
 - b.** Enterobius vermicularis

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013**MICROBIOLOGY (I)
PAPER THREE (MCQ)****Time allotted for MCQ- 15 minutes****B : MCQs (Single response type):****(½ x 14= 7)**

Select the most appropriate answer and encircle the alphabet against it

1. Which of the following is a cestode
 - a. Entamoeba histolytica
 - b. Leishmania donovani
 - c. Ascaris lumbricoides
 - d. H. nana
2. Most common organ involved in extraintestinal amoebiasis is:
 - a. Liver
 - b. Lung
 - c. Brain
 - d. Spleen
3. The vector for Kala azar is
 - a. Aedes aegypti mosquito
 - b. Female anopheles mosquito
 - c. Phlebotomus fly
 - d. Tsetse fly
4. The definitive host in malaria is
 - a. Man
 - b. Female anopheles mosquito
 - c. Male anopheles mosquito
 - d. Aedes aegypti mosquito
5. All of the following are nematode EXCEPT :
 - a. Taenia solium
 - b. Ascaris lumbricoides
 - c. Hook worm
 - d. Thread worm
6. Peripheral blood smear is stained with:
 - a. Gram stain
 - b. Leishman stain
 - c. ZN stain
 - d. Albert's stain
7. Which is the infective form of Giardia lamblia:
 - a. Trophozoite
 - b. Cyst
 - c. Precyst
 - d. Pseudocyst
8. Larval form of Taenia solium is seen in :
 - a. Pig
 - b. Cattle
 - c. Dog
 - d. Cat
9. Definitive host for Echinococcus granulosus is:
 - a. Pig
 - b. Cattle
 - c. Dog
 - d. Man
10. Cerebral malaria is caused by
 - a. P. vivax
 - b. P. ovale
 - c. P. malariae
 - d. P. falciparum
11. Which of the following is a protozoa:
 - a. Taenia solium
 - b. H. nana
 - c. Toxoplasma gondii
 - d. Taenia saginata
12. Mature cyst of Entamoeba histolytica is:
 - a. Uninucleate
 - b. Binucleate
 - c. Quadrinucleate
 - d. Octanucleate
13. Oocyst of Toxoplasma is seen in :
 - a. Sheep
 - b. Human
 - c. Cattle
 - d. Domestic cat
14. Relapse in malaria is common in:
 - a. P. vivax
 - b. P. ovale
 - c. P. malariae
 - d. P. falciparum

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013
MICROBIOLOGY (II)
(APPLIED MICROBIOLOGY & ADVANCED TECHNIQUES)
PAPER FOUR

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Name various organisms causing Sore throat. Discuss briefly laboratory diagnosis of this condition.
- Q. 2.** Define and enumerate causes of Meningitis. How will you proceed to diagnose it in the laboratory?
- Q. 3.** Write Short Notes On:
- a.** Bacteriological analysis of Water
 - b.** Bacteriological analysis of Air
- Q. 4.** Name various organisms causing Nosocomial infections. Discuss laboratory work-up involved in diagnosis of these infections.
- Q. 5.** Discuss in detail the laboratory work-up involved in the diagnosis of Malaria.
- Q. 6.** Write down the principle and application of:
- a.** Immunofluorescence
 - b.** Western blot
- Q. 7.** Write short notes on:
- a.** Widal test
 - b.** RPR test
- Q. 8.** Enumerate the causes of:
- a.** Diarrhoea
 - b.** wound infections
- Q. 9.** Discuss in detail the laboratory work-up required in investigating an outbreak of food poisoning.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013
MICROBIOLOGY (II)
(APPLIED MICROBIOLOGY & ADVANCED TECHNIQUES)
PAPER FOUR (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Commonest cause of Sore throat is:
 - a. *S. pyogenes*
 - b. *S. pneumoniae*
 - c. *S. agalactiae*
 - d. Viridans streptococci
2. Commonest cause of Pneumonia in children is:
 - a. *S. pyogenes*
 - b. *C. diphtheriae*
 - c. *S. pneumoniae*
 - d. *Klebsiella*
3. Commonest cause of urinary tract infection is:
 - a. *E. coli*
 - b. *Pseudomonas*
 - c. *Staphylococcus aureus*
 - d. *Proteus vulgaris*
4. Which of the following protozoa can cause dysentery?
 - a. *E. histolytica*
 - b. *Trichomonas*
 - c. *Cryptosporidium parvum*
 - d. All of the above
5. Causative agent of Lymphatic filariasis is:
 - a. *Leishmania donovani*
 - b. *Plasmodium* spp.
 - c. *Wuchereria bancrofti*
 - d. *Trypanosoma cruzi*
6. Vector for transmission of Kala-azar is:
 - a. *Anopheles* mosquito
 - b. *Aedes aegypti*
 - c. *Culex*
 - d. Sandfly
7. Which of the following agents can cause diarrhoea?
 - a. Rotavirus
 - b. *E. coli*
 - c. *E. histolytica*
 - d. All of the above
8. Which of the following is air-borne pathogen?
 - a. Hepatitis A virus
 - b. *M. tuberculosis*
 - c. *E. histolytica*
 - d. HIV
9. ELISA kits are commercially available for detection of:
 - a. Anti-HIV antibodies
 - b. Hepatitis B surface antigen
 - c. Rotavirus
 - d. All of the above
10. Which pathogen can be transmitted by needle stick injury?
 - a. *Staphylococcus*
 - b. *E. coli*
 - c. Hepatitis B
 - d. *M. tuberculosis*
11. Which of the following diseases can be acquired by milk?
 - a. Tuberculosis
 - b. Typhoid
 - c. Brucellosis
 - d. All of the above
12. Hospital-associated infection can occur by:
 - a. Contact spread
 - b. Airborne spread
 - c. Oral route
 - d. All of the above
13. Widal test is used for diagnosis of?
 - a. Enteric fever
 - b. HIV infection
 - c. Tuberculosis
 - d. Malaria
14. PCR stands for:
 - a. Polymerase chain reaction
 - b. Polymerase chain reagin
 - c. Polymerase complex reaction
 - d. Polymerase cleavage reaction

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013
PATHOLOGY (I)
PAPER FIVE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Discuss the types of immunoglobulins and antibodies.
- Q. 2.** Laboratory investigation of iron deficiency anaemias.
- Q. 3.** Cytochemistry in various haematopoietic disorders.
- Q. 4.** Draw the normal coagulation pathway.
- Q. 5.** Bleeding disorders.
- Q. 6.** Write briefly about disseminated intravascular coagulation (DIC).
- Q. 7.** Cellular immune response.
- Q. 8.** Classify the various haemolytic anaemia.
- Q. 9.** Draw a well labeled diagram of peripheral blood in megaloblastic anaemia.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2013**PATHOLOGY (I)
PAPER FIVE (MCQ)****Time allotted for MCQ- 15 minutes****B : MCQs (Single response type):****(½ x 14= 7)**

Select the most appropriate answer and encircle the alphabet against it

1. Which is the earliest stage in the development of neutrophil?
 - a. Metamyelocyte
 - b. Myelocyte
 - c. Myeloblast
 - d. Promyelocyte
2. Which cells differentiate into plasma cells?
 - a. NK cells
 - b. B lymphocytes
 - c. T lymphocytes
 - d. Macrophages
3. Which antigens play a role in organ transplant?
 - a. A
 - b. B
 - c. HLA
 - d. None
4. In haemolytic anaemia, which of these increases?
 - a. TLC
 - b. MCH
 - c. Reticulocyte count
 - d. Haemoglobin
5. In macrocytic anaemia the mean corpuscular volume (MCV) is:
 - a. > 50 fl
 - b. > 75 fl
 - c. > 100 fl
 - d. > 300 fl
6. Which vitamin is necessary for synthesis of coagulation factors?
 - a. Vitamin B₁₂
 - b. Vitamin C
 - c. Vitamin K
 - d. Vitamin A
7. D- dimmers are increased in:
 - a. Anaemia
 - b. Leukaemia
 - c. DIC
 - d. Haemophilia
8. Normal value of prothrombin time (PT) is:
 - a. 4 sec.
 - b. 14 sec.
 - c. 1 minute
 - d. 2 min
9. Haemophilia B is due to deficiency of:
 - a. F. VIII
 - b. F. IX
 - c. Von Willebrand factor
 - d. None of the above
10. Aged plasma is stored plasma that is deficient in:
 - a. F. V
 - b. F. VIII
 - c. Both
 - d. None
11. Acute promyelocytic leukaemia is:
 - a. M₀
 - b. M₂
 - c. M₃
 - d. M₇
12. Perl's stain on bone marrow examination is done to demonstrate:
 - a. Fibrosis
 - b. TB
 - c. Iron
 - d. Calcium
13. Which haemoglobin will be increased in β-thalassemia trait:
 - a. A₁
 - b. A₂
 - c. S
 - d. All of the above
14. Increased osmotic fragility is seen in:
 - a. Thalassemia
 - b. Spherocytosis
 - c. Sick cell anaemia
 - d. Leukaemia

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY 2013
PATHOLOGY (II)
PAPER SIX

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

Q. 1. Write briefly about:

(4+3=7)

a. Frozen section procedure and handling of specimen.

b. Museum techniques

Q. 2. How you will demonstrate nucleic acid in histopathology sections?

Q. 3. Write the cytological features of malignant and premalignant cervical smear.

Q. 4. Enumerate various micro-organism seen in histopathology. Write one method for their demonstration.

Q. 5. Write short note on:

(4+3=7)

a. Pregnancy test

b. Rapid malaria test

Q. 6. Write briefly on cancer immunology and its applications.

Q. 7. Describe principle of enzyme histochemistry and its applications in histopathology.

Q. 8. Describe briefly about Type-IV hypersensitivity reaction.

Q. 9. Write short note on:

(4+3=7)

a. Cell mediated immunity

b. Tissue typing

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY 2013
PATHOLOGY (II)
PAPER SIX (MCQ)

Time allotted for MCQ- 15 minutes

(½ x 14= 7)

B : MCQs (Single response type):

Select the most appropriate answer and encircle the alphabet against it

1. Which can produce macrocytic RBCs?
 - a. B₁₂ /Folate deficiency
 - b. Vit – C deficiency
 - c. Iron deficiency
 - d. Lead deficiency
2. Microcytic hypochromic blood picture with eosinophilia in a child is commonly seen in:
 - a. Worm infestation
 - b. Kala azar
 - c. Malaria
 - d. Thalassemia
3. For demonstrations of monoblasts, we use:
 - a. Esterase (NSE)
 - b. MPO
 - c. PAS
 - d. SBB
4. In a case of DIC, lab findings are:
 - a. ↑ PT
 - b. ↑ APTT
 - c. ↓ Platelets
 - d. All of the above
5. In hemophilia – A :
 - a. ↑ PT
 - b. ↑ APTT
 - c. Both a & b increased
 - d. ↓ Platelets
6. Normal prothrombin time is:
 - a. < 10 sec.
 - b. 12 – 15 sec.
 - c. > 1 min.
 - d. 40 – 45 sec.
7. Which is indicative of platelet function:
 - a. Bleeding time
 - b. Clotting time
 - c. PT
 - d. APTT
8. Which of the following show increased reticulocyte count?
 - a. Iron deficiency anemia
 - b. Aplastic anemia
 - c. Hemolytic anemia
 - d. Megaloblastic anemia
9. Which of the following leukemia mostly seen in children?
 - a. CLL
 - b. CML
 - c. ALL
 - d. AML
10. In DIC peripheral blood smears show:
 - a. Giant platelet
 - b. Eosinophilia
 - c. Positive FDP
 - d. Spherocytes and Schistocytes
11. In β- Thalassemia:
 - a. β- chains are reduced
 - b. α- chains are reduced
 - c. Both the chains are reduced
 - d. γ- chain increased
12. Which of the following radionuclides is used for red cell life –span?
 - a. Co⁵⁷
 - b. Cr⁵¹
 - c. Fe⁵⁹
 - d. I¹²⁵
13. Which of the following radionuclides is used for oral iron absorption?
 - a. Co⁵⁷
 - b. Cr⁵¹
 - c. Fe⁵⁹
 - d. I¹²⁵
14. Lymphoblasts show block-positive with:
 - a. PAS
 - b. MPO
 - c. NSE
 - d. SBB

Regn. No.....

Paper Code: BM- 301...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
BIOCHEMISTRY (I)
PAPER ONE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** How are bile pigments formed? Explain the clinical significance of elevated amounts of bile pigments in the blood and the urine (4+3=7marks)
- Q. 2.** Classify hormones based on their mechanism of action. (7 marks)
- Q. 3.** List the hormones secreted by the anterior pituitary and describe the biochemical role of any one of these hormones. (5+2=7marks)
- Q. 4.** What is ELISA? What are different types of ELISA? Give its applications. (2+3+2=7 marks)
- Q. 5.** What is the principle of RIA? Give its applications. What are the advantages and disadvantages of RIA over ELISA? (2+3+2=7 marks)
- Q. 6.** Enumerate the parameters assessed under liver function tests in the Biochemistry Reference Lab. Give the principle of estimation of any one enzyme done under this profile. (3+4=7 marks)
- Q. 7.** Enumerate the laboratory tests done to assess thyroid function. (7marks)
- Q. 8.** Describe the chemistry and functions of insulin. (7marks)
- Q. 9.** What are the constituents of bile? What are the different types of Gall stones? Write the method of qualitative analysis of gall stones. (3+2+2=7marks)

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
BIOCHEMISTRY (I)
PAPER ONE (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Direct Vandenberg reaction measures-
 - a. Both conjugated & unconjugated bilirubin
 - b. Conjugated bilirubin
 - c. Unconjugated Bilirubin
 - d. Total Bilirubin
2. The enzyme which converts heme into biliverdin is-
 - a. Heme oxygenase
 - b. Heme reduction
 - c. Heme dehydrogenase
 - d. Heme decarboxylase
3. Normal range for serum Total Bilirubin is-
 - a. 0.0 to 0.2 mg/dl
 - b. 0.2 to 0.6 mg/dl
 - c. 0.2 to 1.0 mg/dl
 - d. 1.0 to 2.0 mg/dl
4. The normal colour of urine is due to presence of -
 - a. Biliverdin
 - b. Urobilinogen
 - c. Stereobilin
 - d. Stereobilinogen
5. Pre- Proinsulin contains-
 - a. 31 Amino acids
 - b. 51 Amino acids
 - c. 86 Amino acids
 - d. 109 Amino acids
6. Which one of the following hormones does not exert its action through cAMP?
 - a. Glucagon
 - b. LH
 - c. TSH
 - d. Prolactin
7. One of the following is not a second messenger for hormone action.
 - a. Calcium
 - b. CMP
 - c. cAMP
 - d. cGMP
8. Which of the following hormones is a glucocorticoid?
 - a. Progesterone
 - b. Estrogen
 - c. Cortisol
 - d. Aldosterone
9. The mineral required for the synthesis of thyroid hormones is-
 - a. Calcium
 - b. Magnesium
 - c. Iodine
 - d. Chlorine
10. Increased fT3 & fT4 levels and decreased TSH levels are seen in
 - a. Hypothyroidism
 - b. Hyperthyroidism
 - c. Hyper parathyroidism
 - d. Euthyroid state
11. Which of the following hormone is involved in increase re-absorption of water from renal tubular epithelial cells-
 - a. Insulin
 - b. Glucagon
 - c. Vasopressin
 - d. Cortisol
12. Insulin is secreted by which cells of pancreas-
 - a. α
 - b. β
 - c. γ
 - d. δ
13. What is the normal ranges of fT4-
 - a. 0.6 – 1.7 ng/dL
 - b. 0.8 – 2.4 µg/dL
 - c. 5 – 12 µg/dL
 - d. 5 – 12 ng/dL
14. Which of the following hormone is NOT a steroid hormone?
 - a. DHEAS
 - b. Glucagon
 - c. Estrogen
 - d. Cortisol

Regn. No.....

Paper Code: BM- 302...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
BIOCHEMISTRY (II)
PAPER –SECOND

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Write notes on :
- a. Standard deviation and coefficient of variation.
 - b. Define with example chi-square test.
- Q. 2.** Differentiate point wise the following pairs.
- a. Quantitative and qualitative data.
 - b. Calibrators and controls.
- Q. 3.** Write notes on :
- a. Internal and external quality control.
 - b. Pre-analytical, analytical and post-analytical errors.
- Q. 4.** Write notes on :
- a. Standard operating procedure
 - b. Oncogenes and proto-oncogenes
- Q. 5.** Write the principle and uses of polymerase chain reaction.
- Q. 6.** Write notes on :
- a. Importance of free radicals in medicine.
 - b. What is replication? Draw the diagram of replication fork.
- Q. 7.** How tumor markers are classified? Give two example of each.
- Q. 8.** Write notes on:
- a. Process of transcription.
 - b. Restriction endonucleases.
- Q. 9.** What is recombinant DNA technology? Write its applications.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
BIOCHEMISTRY (II)
PAPER –SECOND (MCQ)

Time allotted for MCQ- 15 minutes

(½ x 14= 7)

B : MCQs (Single response type):

Select the most appropriate answer and encircle the alphabet against it

1. The I-35 Westgard rule represents:
 - a. Transport
 - b. Centrifugation
 - c. Exposure to UV Light
 - d. Test result reporting
2. The central line drawn in the Levy-Jennings chart represents:
 - a. Mean
 - b. Mode
 - c. Median
 - d. Method
3. Accuracy is:
 - a. Reproducibility of the result
 - b. The ability to detect minute amounts of analyte
 - c. Closeness of the result to the true value
 - d. Same as precision
4. The number having the highest frequency in a given set of data is called:
 - a. Mean
 - b. Mode
 - c. Median
 - d. Outlier
5. DNA is denatured by :
 - a. Heat
 - b. Acid
 - c. Alkali
 - d. All of the above
6. The two DNA strands are held together by:
 - a. Covalent bonds
 - b. Ionic bonds
 - c. Hydrogen bonds
 - d. Vander wals forces
7. The enzyme responsible for unwinding of DNA at the replication fork is:
 - a. Helicase
 - b. Primase
 - c. Topoisomerase
 - d. Polymerase
8. Which is an oncofoetal antigen?
 - a. CEA
 - b. CA-125
 - c. β -HCG
 - d. ALP
9. The anticodon region is an important part of the structure of :
 - a. r-RNA
 - b. t-RNA
 - c. m-RNA
 - d. hn-RNA
10. The gene-cutting tools of recombinant DNA technology is:
 - a. Helicase
 - b. Restriction enzymes
 - c. DNA ligases
 - d. Plasmids
11. Name the enzyme that synthesizes RNA from a double stranded DNA template:
 - a. RNA dependent RNA polymerase
 - b. DNA dependent RNA polymerase
 - c. Reverse transcriptase
 - d. RNA dependent replicase
12. For DNA synthesis the primer is:
 - a. DNA
 - b. Histone
 - c. RNA
 - d. hn-RNA
13. Translation results in the formation of :
 - a. A t-RNA molecule
 - b. A DNA molecule
 - c. A protein molecule
 - d. A m-RNA molecule
14. Which base is not present in normal DNA or RNA:
 - a. Uracil
 - b. Thymine
 - c. Theophylline
 - d. Guanine

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY – 2015
MICROBIOLOGY (I)
PAPER THREE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** You have been given five milliliter of blood anticoagulated with EDTA. Name the different tests you can perform on this specimen to diagnose malaria. Please mention specific tests only; do not write about anaemia or other non-specific findings. 7 marks
- Q. 2.** Please mention two clinical features of kala-azar. Please mention four typical but non-specific laboratory findings in kala azar. Please mention one specific laboratory finding in kala azar. 2 + 4 + 1 = 7 marks
- Q. 3.** Name three stool concentration techniques. Name three intestinal nematodes. Name one intestinal cestode. 3 + 3 + 1 = 7 marks
- Q. 4.** Describe the life cycle of *Enterobius vermicularis* with a sketch. Name one important symptom caused by it. Name the best sampling method for detecting its ova. 4 + 1 + 2 = 7 marks
- Q. 5.** What is the definitive host for *Plasmodium falciparum*? What is its intermediate host? Name two stains that can stain this parasite. Which stage of *Plasmodium falciparum* is completely different in shape from the corresponding stages of other *Plasmodium* species? Name one unique antigen of *Plasmodium falciparum*. 1 + 1 + 2 + 1 + 2 = 7 marks
- Q. 6.** Name two protozoa that can be transmitted across the placenta from a pregnant woman to her unborn child. Name one diagnostic test for each of these protozoa. Which of these protozoa has a worldwide distribution? 2 + 4 + 1 = 7 marks
- Q. 7.** Which specimens will you collect to make a laboratory diagnosis of giardiasis? How many specimens would you like to take if the result is negative the first time? Which tests will you perform on these specimens? 2 + 2 + 3 = 7 marks
- Q. 8.** Draw labeled diagrams of a hookworm ovum and a *Taenia* ovum. 3.5 + 3.5 = 7 marks
- Q. 9.** What is the definitive host of hookworms? What is the most significant clinical problem caused by hookworms? How do hookworms cause this problem? Mention the scientific names of the two different species of hookworms. How do hookworms enter the human body? 1 + 1 + 2 + 2 + 1 = 7 marks

Regn. No.....

Paper Code: BM- 303...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015

**MICROBIOLOGY (I)
PAPER THREE (MCQ)**

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Which of the following protozoa is found in human intestines?
 - a. *Entamoeba histolytica*
 - b. *Plasmodium falciparum*
 - c. *Leishmania donovani*
 - d. *Toxoplasma gondii*
2. Which is the best technique for demonstrating *Cryptosporidium* oocysts in stool?
 - a. Lactophenol cotton blue
 - b. Leishman stain
 - c. Modified Z-N stain
 - d. Gram stain
3. Which of the following is a typical feature of *Plasmodium vivax*?
 - a. Gametocytes are banana shaped
 - b. Schüffner's dots are seen inside parasitized RBC
 - c. A single RBC can be infected with 3 - 4 parasites
 - d. Schizonts are never seen in peripheral blood smears
4. Which of the following is a suitable specimen for the laboratory diagnosis of malaria?
 - a. Urine
 - b. Stool
 - c. Peripheral blood
 - d. CSF
5. Which form of *Leishmania donovani* is found in the body of patients of kala azar (visceral leishmaniasis)?
 - a. Amastigotes
 - b. Promastigotes
 - c. Both of the above
 - d. None of the above
6. Larvae of which of these nematodes can penetrate human skin?
 - a. *Ascaris lumbricoides*
 - b. *Trichuris trichiura*
 - c. *Enterobius vermicularis*
 - d. *Ancylostoma duodenale*
7. Which is the following parasites causes cysticercosis?
 - a. *Taenia solium*
 - b. *Taenia saginata*
 - c. *Echinococcus granulosus*
 - d. *Ascaris lumbricoides*
8. Which of the following protozoa is often detected in urine specimens?
 - a. *Giardia lamblia*
 - b. *Trichomonas vaginalis*
 - c. *Entamoeba histolytica*
 - d. *Plasmodium falciparum*
9. Which of the following parasites is usually diagnosed by antibody detection, and NOT by microscopy?
 - a. *Plasmodium vivax*
 - b. *Plasmodium falciparum*
 - c. *Trichomonas vaginalis*
 - d. *Toxoplasma gondii*
10. Which of the following ova float in saturated salt solution?
 - a. *Taenia solium*
 - b. *Taenia saginata*
 - c. *Trichuris trichiura*
 - d. Unfertilized ova of *Ascaris lumbricoides*
11. *Giardia lamblia* trophozoites are found in the
 - a. Esophagus
 - b. Stomach
 - c. Small intestine
 - d. Large intestine
12. You receive a reddish-brown pus specimen from a liver abscess. Microscopy shows no pus cells and no bacteria. What is the most likely pathogen?
 - a. *Giardia lamblia*
 - b. *Plasmodium vivax*
 - c. *Leishmania donovani*
 - d. *Entamoeba histolytica*
13. Which of the following is an acceptable method for confirming the diagnosis of hydatid cyst?
 - a. Culture of *Echinococcus granulosus* on cornmeal agar
 - b. Microscopy for *Echinococcus granulosus* ova in the patient's stool
 - c. Detection of *Echinococcus granulosus* antigens in serum
 - d. Microscopy for scolices and hooklets in fluid removed from a hydatid cyst
14. What is the best time to collect a blood specimen to detect *Wuchereria bancrofti* microfilaria in a patient from India?
 - a. 6 AM to 10 AM
 - b. 10 AM to 2 PM
 - c. 6 PM to 10 PM
 - d. 10 PM to 2 AM

Regn. No.....

Paper Code: BM- 304...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015

MICROBIOLOGY (II)

(APPLIED MICROBIOLOGY & ADVANCED TECHNIQUES)

PAPER FOUR

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Suppose you have to develop an solid-phase ELISA to detect antibody against HBsAg.
- What will you use to coat the polystyrene well to capture HBsAg?
 - After coating, washing and application of specimen, what will you use to detect whether the specimen contains any HBsAg?
 - Name one enzyme you can use as a label.
 - Name one chromogenic substrate you can use with that enzyme.
 - Name a chemical to stop the chromogenic reaction.
- 2 + 2 + 1 + 1 + 1 = 7 marks
- Q. 2.**
- Name two common bacteria that cause urinary tract infection (UTI).
 - Name the culture medium of choice for urine specimens.
 - Mention the commonest methods of collecting urine for bacteriological culture
 - Mention two microscopic findings in urine that suggest the present of UTI.
- 2 + 1 + 2 + 2 = 7 marks
- Q. 3.**
- Name three infections that can cause fever for more than seven days.
 - Name one test for each of these diseases.
 - Name one specimen on which you can run tests for all three infections.
- 3 + 3 + 1 = 7 marks
- Q. 4.**
- Name two infections often diagnosed by immunochromatography.
 - What is the colour label commonly used in immunochromatography?
 - Suggest two advantages of immunochromatography over ELISA.
- 2 + 1 + 4 = 7 marks
- Q. 5.**
- Name two bacteria that cause diarrhoea.
 - Name one selective medium for isolating each of these bacteria.
 - Name one virus that causes diarrhoea.
 - Name two methods for detecting this virus.
- 2 + 2 + 1 + 2 = 7 marks
- Q. 6.**
- Name three sexually transmitted infections.
 - Name one diagnostic test for each of these infections.
- 3 + 4 = 7 marks
- Q. 7.** Describe briefly how to diagnose HIV infection in the laboratory. 7 marks
(Please do NOT describe the epidemiology or replication cycle of HIV. Please do NOT draw diagrams of the HIV virion)
- Q. 8.**
- Name three pathogens that cause sore throat or pharyngeal infection.
 - Name one inoculating medium for each of these pathogens.
 - Which sore throat pathogen often causes heart disease in poor children?
- 3 + 3 + 1 = 7 marks
- Q. 9.**
- Name two infections diagnosed in our laboratory by latex agglutination.
 - What is latex?
 - Name two important advantages of latex agglutination tests.
- 2 + 1 + 4 = 7 marks

Regn. No.....

Paper Code: BM- 304...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015

MICROBIOLOGY (II)

(APPLIED MICROBIOLOGY & ADVANCED TECHNIQUES)

PAPER FOUR (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Which of the following bacterial species is often isolated from CSF specimens?
A) *Streptococcus pneumoniae*
B) *Neisseria meningitidis*
C) *Mycobacterium tuberculosis*
D) All of the above
2. Urine specimens for bacterial culture should be transported at
A) - 20°C
B) + 4°C
C) + 25°C
D) + 37°C
3. Which of the following bacterial species is a commensal in the human pharynx?
A) *Streptococcus mutans*
B) *Streptococcus pyogenes*
C) *Corynebacterium diphtheriae*
D) *Neisseria gonorrhoeae*
4. A sputum specimen is considered suitable for bacterial culture if it has
A) Many squamous epithelial cells and few pus cells
B) Many squamous epithelial cells and many pus cells
C) Many squamous epithelial cells and many red blood cells
D) Few squamous epithelial cells and many pus cells
5. Which of the following tests detects an antigen?
A) Widal test
B) Rapid plasma reagin (RPR)
C) HBsAg
D) anti-HCV
6. Which is the best plating medium for isolating *Vibrio cholerae* from stool specimens?
A) XLD agar
B) TCBS agar
C) SS agar
D) CLED agar
7. A patient has a pink rash on the whole body for 7 days. We take a serum specimen and do the RPR test. The result is "Reactive. Titre: 256". We take a fresh specimen and repeat the test. The result is the same. Which test will you do next?
A) Widal test
B) anti-dsDNA test
C) ASLO test
D) Treponema pallidum haemagglutination (TPHA) test
8. What of the following is the best specimen for bacteriological investigation of woundinfections?
A) Pus swab taken from the surface of the wound
B) Pus swab taken from the depth of the wound
C) Pus aspirated with a syringe
D) Tissue biopsy taken from the advancing edge of the infection process
9. Which of the following bacteria is a COMMON cause of nosocomial infections?
A) *Haemophilus influenzae*
B) *Mycoplasma pneumoniae*
C) *Legionella pneumophila*
D) *Acinetobacter* spp.
10. What is the best way to disinfect skin at the site of venepuncture before collecting specimens for blood culture?
A) Spirit > Iodine > Spirit
B) Spirit > Soap > Spirit
C) Spirit > Soap > Water
D) Spirit > Glutaraldehyde > Spirit
11. Which of the following is the best medium for blood culture?
A) Peptone water
B) Alkaline peptone water
C) Nutrient broth
D) Brain heart infusion broth
12. The Widal Test is most useful for diagnosing enteric fever in which week of illness?
A) 1st week
B) 2nd week
C) 3rd week
D) 4th week
13. Which test may remain positive for some time even after the successful treatment of malaria?
A) Microscopy of thin smear
B) Microscopy of thick smear
C) Microscopy by the QBC™ technique
D) Immunochromatography for antigen
14. Which of the following enzymes is commonly used as a label in ELISA?
A) Catalase
B) Oxidase
C) Peroxidase
D) Neuraminidase

Regn. No.....

Paper Code: BM- 305...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
PATHOLOGY (I)
PAPER FIVE



[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1. Write briefly :
- a. Quality Assurance in Hematology Lab
 - b. Quality Assurance in Blood Banks
- Q. 2. Classify hemolytic anemia. Write briefly about Sickle cell anemia.
- Q. 3. How will you investigate a case of increased bleeding tendency? Write briefly about Hemophilia.
- Q. 4. Write short notes on:
- a. Classification of Acute Myeloid Leukemia
 - b. Laboratory diagnosis of Leukemia
- Q. 5. Give differential diagnosis of Microcytic hypochromic anemia. How will you investigate such a case?
- Q. 6. Draw peripheral smear findings in a case of :
- a. Megaloblastic anemia
 - b. Iron deficiency anemia
- Q. 7. What are various cytochemical stains used for diagnosis of leukemia? Write briefly about staining procedure for any one.
- Q. 8. Write in brief about DIC its etiopathogenesis and lab findings.
- Q. 9. Write short notes on :
- a. Mechanism of Fibrinolysis
 - b. Role of thrombin in coagulation

Regn. No.....

Paper Code: BM- 305...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
PATHOLOGY (I)
PAPER FIVE (MCQ)

Time allotted for MCQ- 15 minutes

(½ x 14= 7)

B : MCQs (Single response type):

Select the most appropriate answer and encircle the alphabet against it

1. Block positivity for PAS seen in
 - a. All nucleated cells of Body
 - b. Myeloblasts
 - c. Macrophages
 - d. Lymphoblasts
2. Megaloblastic anemia is characterized on peripheral smear by presence of
 - a. Oval Macrocytes
 - b. Hypersegmented polymorphs
 - c. Pancytopenia
 - d. All of the above
3. Howell-Jolly Bodies seen in:
 - a. Iron deficiency
 - b. Lead Poisoning
 - c. Alcoholism
 - d. Megaloblastic anemia
4. Auer Rods are seen in
 - a. Myeloblasts
 - b. Lymphoblasts
 - c. Megakaryocytes
 - d. Lymphocytes
5. For demonstration of Blasts (Myeloid) stain uses
 - a. MPO
 - b. PAS
 - c. LAP
 - d. H& E
6. In Beta -Thalassemia
 - a. Beta chain increased
 - b. Beta chain decreased
 - c. Alpha chain increased
 - d. Alpha chain decreased
7. DIC stands for
 - a. Delayed Irregular Coagulation
 - b. Disseminated Intravascular Coagulation
 - c. Disseminated Intravascular Circulation
 - d. None of the above
8. Sickle cell anemia occurs due to
 - a. Frame shift mutation
 - b. Splicing mutation
 - c. Point mutation
 - d. All of the above
9. Megaloblastic anemia is occur due to deficiency of
 - a. Iron
 - b. Folate
 - c. Vit B 6
 - d. Both b & c
10. Langerhans cells are seen in
 - a. Brain
 - b. Skin
 - c. Liver
 - d. Lung
11. Vit -K dependent clotting factors are all except
 - a. F-II
 - b. F-VIII
 - c. F-VII
 - d. F- X
12. Intrinsic coagulation pathway starts from
 - a. F-X,
 - b. F-VII
 - c. Fibrinogen
 - d. F-XII
13. DIC as a complication seen in which leukemia
 - a. ALL -L1
 - b. AML-M3
 - c. CML
 - d. NHL
14. In our body iron in diet absorbed from,
 - a. Stomach
 - b. Duodenum
 - c. Terminal ileum
 - d. Colon

Regn. No.....

Paper Code: BM - 306...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
PATHOLOGY (II)
PAPER SIX



[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions
Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1. Write briefly :
- a. AgNOR
 - b. Museum Techniques
- Q. 2. How you will identify lipids, describe any one method of its demonstration?
- Q. 3. Quality assurance in cytopathology Lab
- Q. 4. Define role of cytotechnician in Cytopathology Lab
- Q. 5. Write short notes on :
- a. NABL
 - b. Rapid Malaria Test
- Q. 6. Enumerate various body fluid received in lab. How you will process them.
- Q. 7. Describe principle of enzyme histochemistry and its applications in histopathology
- Q. 8. Role of cervical cytology for screening of carcinoma cervix
- Q. 9. Write briefly about
- a. Embedding
 - b. H & E staining

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2015
PATHOLOGY (II)
PAPER SIX (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Which stain commonly used to demonstrate protozoas
 - a. PAS
 - b. Ziehl-Neelsen
 - c. Sudan Black-B
 - d. Giemsa
2. Proteolipids are
 - a. Proteins
 - b. Lipids
 - c. Esters
 - d. Carbohydrates
3. Phospholipids are lipids which are
 - a. Water insoluble
 - b. Water soluble
 - c. Heat resistant
 - d. None
4. Tadpole cells are
 - a. Squamous cells seen in cervical smear
 - b. Squamous cells seen in BAL smear
 - c. Cells seen in ascitic fluid
 - d. Cells seen in CSF
5. Parabasal cells seen in excess in :
 - a. Pregnant female
 - b. Post menopausal female
 - c. Both (a) & (b) increased
 - d. During puberty
6. "Thin Prep" is :
 - a. Modified method of staining for cervical smear
 - b. For CSF cell count
 - c. Both a & b
 - d. None
7. Congo -Red staining is used for:
 - a. Lipids
 - b. Nucleic Acids
 - c. Amyloid
 - d. Enzymes
8. Acid Phosphatase used in enzyme histochemistry for diagnosis of
 - a. Carcinoma uterus
 - b. Prostate cancer
 - c. Meningioma
 - d. Megaloblastic anemia
9. Factor that affect quality of fixation
 - a. Buffers and pH
 - b. Duration of fixation and size of specimen
 - c. Temperature of fixation
 - d. All of the above
10. Best fixative used in tissue processing for electron microscopy
 - a. 40% Formalin
 - b. Formaldehyde
 - c. Glutaraldehyde
 - d. Formal calcium
11. Thickness of routine sections in histopathology is
 - a. 1-2 microne
 - b. 3-4 microne
 - c. 5-8 microne
 - d. 10-12 microne
12. The best general fixative for Lipids:
 - a. Formal Calcium
 - b. Formaldehyde
 - c. Boin's Fixative
 - d. Zenkersolution
13. Methy Green-Pyronine staining used for
 - a. DNA
 - b. RNA
 - c. Mitochondria
 - d. Ribosome
14. Endogenous pigment:
 - a. Hemosiderin
 - b. Carbon
 - c. Silica
 - d. Tattoo pigment

Regn. No.....

Paper Code: BM- 301...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
BIOCHEMISTRY (I)
PAPER ONE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Which are the parameters assessed under liver function tests in the Biochemistry Reference Lab? Give the principle of estimation of any one parameter.
- Q. 2.** Describe how heme is catabolized and what is its fate?
- Q. 3.** What is ELISA? Describe the principles of the different types of ELISA with their applications. (2,5)
- Q. 4.** Describe the chemistry and functions of insulin.
- Q. 5.** Write short note on: (4+3)
- a.** Gall Stones
 - b.** Constituents of bile
- Q. 6.** Classify hormones based on their mechanism of action with examples.
- Q. 7.** What is the principle of RIA? Give its applications.
- Q. 8.** Enumerate the hormones of the anterior pituitary. Give an account of chemistry, mode of action and functions of TSH.
- Q. 9.** Describe in brief the biochemical role of testosterone and its method of estimation.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
BIOCHEMISTRY (I)
PAPER ONE (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Most protein hormones-
 - a. Bind to cell surface receptors that send a signal to the interior of the cell
 - b. Enter the cell and bind to intracellular receptors
 - c. Act by binding irreversibly to their receptors
 - d. Bind immediately to G-proteins after secretion.
2. All of the following act as secondary messengers **EXCEPT**-
 - a. cAMP
 - b. Ca²⁺
 - c. Inositol triphosphate
 - d. Phospholipase C
3. Which of the following hormones is involved in increased re-absorption of water from renal tubular epithelial cells-
 - a. Insulin
 - b. Glucagon
 - c. Vasopressin
 - d. Cortisol
4. All of the following hormones are produced by anterior pituitary gland **EXCEPT** -
 - a. TSH
 - b. Gonadotropic hormone
 - c. Growth hormone
 - d. MSH
5. Increased ALT, AST, ALP & decreased albumin is associated with-
 - a. Pre hepatic jaundice
 - b. Hepatic jaundice
 - c. Post hepatic jaundice
 - d. Bone tumor
6. IU/L is-
 - a. Amount of an enzyme which converts 1 μmole of substrate to product in 1 min. under standard defined conditions.
 - b. Amount of an enzyme which converts 1 mole of substrate to product in 1 sec. under standard defined conditions.
 - c. Amount of an enzyme which converts 1 μ mole of substrate to product in 1 sec. under standard defined conditions.
 - d. Amount of an enzyme which converts 1 mole of substrate to product in 1 min. under standard defined conditions.
7. Plasma steroids can be estimated by-
 - a. RIA
 - b. Fluorimetry
 - c. HPLC
 - d. All the above
8. Indirect Vandenberg reaction measures-
 - a. Both conjugated & unconjugated bilirubin
 - b. Conjugated bilirubin
 - c. Unconjugated Bilirubin
 - d. Total Bilirubin
9. ELISA stands for-
 - a. Enzyme linked immunological study of absorbance
 - b. Enzyme linked immunosorbant assay
 - c. Estimation of large immuno surface antigen
 - d. Estimated level of interfering substances for autoanalysers
10. Degradation of Hb takes place in-
 - a. Mitochondria
 - b. RBC
 - c. Cytosol of cell
 - d. Reticuloendothelial system
11. Normal range for direct bilirubin is-
 - a. 0.2 – 0.4 mg/dL
 - b. 0.0 – 0.2 mg/dL
 - c. 0.2 – 1.2 mg/dL
 - d. 1.0 – 2 mg/dL
12. Glucagon is secreted by which cells of pancreas-
 - a. α
 - b. β
 - c. γ
 - d. δ
13. The normal ranges of fT4 is -
 - a. 0.8 – 2.4 ng/dL
 - b. 0.8 – 2.4 μg/dL
 - c. 5 – 12 μg/dL
 - d. 5 – 12 ng/dL
14. Decreased fT3 & fT4 levels and increased TSH levels are seen in -
 - a. Hypothyroidism
 - b. Hyperthyroidism
 - c. Hyper parathyroidism
 - d. Euthyroid state

Regn. No.....

Paper Code: BM- 302...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
BIOCHEMISTRY (II)
PAPER –SECOND

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Define and classify tumour markers. Enumerate the tumour markers used in breast cancer. (5+2=7)
- Q. 2.** What do you mean by quality control? Give it's importance in clinical laboratory. (4+3=7)
- Q. 3.** Write short notes on : (3.5+3.5=7)
- a. Genetic code
 - b. Normal distribution curve
- Q. 4.** Describe the process of translation in prokaryotes. Give examples of post translation modification. (4+3=7)
- Q. 5.** Describe in detail recombinant DNA technology.
- Q. 6.** Write short notes on : (3.5+3.5=7)
- a. Oncogenes
 - b. Chi-square test
- Q. 7.** Write the principle and uses of polymerase chain reaction. Enumerate the different types of polymerase chain reaction.
- Q. 8.** Write the differences between : (3.5+3.5=7)
- a. Replication in eukaryotes and prokaryotes
 - b. Internal and External quality control
- Q. 9.** What are free radicals? Write the uses of free radicals in clinical biochemistry. (4+3=7)

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
BIOCHEMISTRY (II)
PAPER –SECOND (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Two strands of DNA are held together by:
 - a. Covalent bond
 - b. Ionic interaction
 - c. Hydrogen bonds
 - d. Van der waals forces
2. How many nucleotides are there in one codon?
 - a. Two
 - b. Three
 - c. Four
 - d. Five
3. Enzymes required for DNA replication are:
 - a. DNA polymerase
 - b. Helicase
 - c. Primase
 - d. All of the above
4. The central line drawn in the Levy-Jennings chart represents:
 - a. Mean
 - b. Mode
 - c. Median
 - d. Standard deviation
5. The number having the highest frequency in a given set of data is called:
 - a. Mean
 - b. Mode
 - c. Median
 - d. Outlier
6. Which enzymes act as gene cutter in recombinant DNA technology?
 - a. Helicase
 - b. Plasmid
 - c. Ligases
 - d. Restriction endonucleases
7. Which is an oncofetal antigen?
 - a. CEA
 - b. CA-125
 - c. ALP
 - d. β-HCG
8. Anticodon is present on:
 - a. m-RNA
 - b. t-RNA
 - c. Sn-RNA
 - d. r-RNA
9. Which is the test of significant when more than two groups are to be compared?
 - a. t-test
 - b. Chi- square test
 - c. Z-test
 - d. Error test
10. In nucleic acid nucleotides are linked by:
 - a. Phosphodiester bond
 - b. o- glycosidic bond
 - c. Peptide bond
 - d. N-glycosidic bond
11. How many codons are there in genetic code?
 - a. 64
 - b. 50
 - c. 40
 - d. 60
12. Which is the example of post-transcriptional modification?
 - a. 5' capping
 - b. 3' poly A tailing
 - c. splicing
 - d. All of the above
13. Okajaki fragments are part of:
 - a. Leading strand
 - b. Legging strand
 - c. Template strand
 - d. None of the above
14. DNA is more stable than RNA because of :
 - a. Presence of deoxy ribose sugar
 - b. Presence of uracil
 - c. It is a large molecule
 - d. Presence of phosphodiester bond

Regn. No.....

Paper Code: BM- 303...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY – 2016
MICROBIOLOGY (I)
PAPER THREE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions
Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Discuss the various modalities for laboratory diagnosis of Malaria.
- Q. 2.** Tabulate the differences between Amoebic dysentery and Bacillary dysentery. Discuss the lab. diagnosis of *Entamoeba histolytica*.
- Q. 3.** Write down the classification of Helminths with 2 examples of each.
- Q. 4.** Discuss the morphology, life cycle and laboratory diagnosis of *Taenia solium*.
- Q. 5.** Write Short Notes on:
- (a) NIH swab
 - (b) Larva migrans
- Q. 6.** Draw well labelled diagrams of 4 ova/cyst found in human stool.
- Q. 7.** Give 3 examples of each:
- (a) Parasites causing CNS infection
 - (b) Parasites causing Anaemia
- Q. 8.** Draw a well labelled diagram of:
- (a) *Microfilaria* of *Wuchereria bancrofti*
 - (b) Hydatid cyst
- Q. 9.** Give 3 examples of each:
- (a) Helminthic eggs that float in saturated salt solution
 - (b) Bile stained helminthic eggs.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016

**MICROBIOLOGY (I)
PAPER THREE (MCQ)**

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Round worm is common name for:
 - a. *H. nana*
 - b. *Taenia saginata*
 - c. *Ankylostoma duodenale*
 - d. *Ascaris lumbricoides*
2. Vector for Malaria is:
 - a. *Anopheles mosquito*
 - b. *Aedes aegypti*
 - c. Sandfly
 - d. Ticks
3. Which of the parasites is transmitted congenitally?
 - a. *Trichuris trichiura*
 - b. *Toxoplasma gondii*
 - c. *E. histolytica*
 - d. *Giardia lamblia*
4. *Echinococcus granulosus* causes:
 - a. Sleeping sickness
 - b. Malaria
 - c. Kala-azar
 - d. Hydatid disease
5. Which one of the following is nematode:
 - a. *Trichuris trichiura*
 - b. *Taenia solium*
 - c. *Giardia lamblia*
 - d. *Echinococcus granulosus*
6. Which parasitic disease can be diagnosed by skin test:
 - a. Hydatid disease
 - b. Kala-azar
 - c. Amoebiasis
 - d. Malaria
7. Traveller's diarrhoea is caused by:
 - a. *Trichuris trichiura*
 - b. *Ascaris lumbricoides*
 - c. *Taenia saginata*
 - d. *Giardia lamblia*
8. Visceral larva migrans is caused by:
 - a. *Wuchereria bancrofti*
 - b. *Toxocara canis*
 - c. *Loa loa*
 - d. *Echinococcus*
9. Which of the following parasite is acid fast?
 - a. *E. histolytica*
 - b. *H. nana*
 - c. *Cryptosporidium*
 - d. *T. saginata*
10. Infective stage of *Entamoeba histolytica* is:
 - a. Uninucleate cyst
 - b. Binucleate cyst
 - c. Quadrinucleate cyst
 - d. Trophozoite
11. Which parasite is transmitted by blood transfusion?
 - a. *Trichomonas vaginalis*
 - b. *Ascaris*
 - c. *T. solium*
 - d. *Plasmodium*
12. Larval form of *Echinococcus granulosus* is seen in:
 - a. Wolf
 - b. Dog
 - c. Fox
 - d. Man
13. Larval form of *Taenia solium* is seen in:
 - a. Pig
 - b. Dog
 - c. Cattle
 - d. Sheep
14. *Toxoplasma gondii* belongs to:
 - a. Cestode
 - b. Trematode
 - c. Nematode
 - d. Protozoa

Regn. No.....

Paper Code: BM- 304...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016

MICROBIOLOGY (II)

(APPLIED MICROBIOLOGY & ADVANCED TECHNIQUES)

PAPER FOUR

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Name various organisms causing Sore throat. Discuss briefly laboratory diagnosis of this condition.
- Q. 2.** Define and enumerate causes of Meningitis. How will you proceed to diagnose it in the laboratory?
- Q. 3.** Write Short Notes On:
- a. Bacteriological analysis of Water
 - b. Bacteriological analysis of Air
- Q. 4.** Name various organisms causing Nosocomial infections. Discuss laboratory work-up involved in diagnosis of these infections.
- Q. 5.** Discuss in detail the laboratory work-up involved in the diagnosis of Malaria.
- Q. 6.** Write down the principle and application of:
- a. Immunofluorescence
 - b. Western blot
- Q. 7.** Write short notes on:
- a. Widal test
 - b. RPR test
- Q. 8.** Enumerate the causes of:
- a. Diarrhoea
 - b. Wound infections
- Q. 9.** Discuss in detail the laboratory work-up involved in the diagnosis of Pneumonia.

Regn. No.....

Paper Code: BM- 304...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
MICROBIOLOGY (II)
(APPLIED MICROBIOLOGY & ADVANCED TECHNIQUES)
PAPER FOUR (MCQ)

Time allotted for MCQ- 15 minutes

(½ x 14= 7)

B : MCQs (Single response type):

Select the most appropriate answer and encircle the alphabet against it

1. Commonest cause of Sore throat is:
 - a. *S. pyogenes*
 - b. *S. pneumoniae*
 - c. *S. agalactiae*
 - d. Viridans streptococci
2. Commonest cause of Pneumonia in children is:
 - a. *S. pyogenes*
 - b. *C. diphtheriae*
 - c. *S. pneumoniae*
 - d. *Klebsiella*
3. Commonest cause of urinary tract infection is:
 - a. *E. coli*
 - b. *Pseudomonas*
 - c. *Staphylococcus aureus*
 - d. *Proteus vulgaris*
4. Which of the following protozoa can cause dysentery?
 - a. *E. histolytica*
 - b. *Trichomonas*
 - c. *Cryptosporidium parvum*
 - d. All of the above
5. Causative agent of Lymphatic filariasis is:
 - a. *Leishmania donovani*
 - b. *Plasmodium spp.*
 - c. *Wuchereria bancrofti*
 - d. *Trypanosoma cruzi*
6. Vector for transmission of Kala-azar is:
 - a. *Anopheles mosquito*
 - b. *Aedes aegypti*
 - c. *Culex*
 - d. Sandfly
7. Which of the following agents can cause diarrhoea?
 - a. Rotavirus
 - b. *E. coli*
 - c. *E. histolytica*
 - d. All of the above
8. Which of the following is air-borne pathogen?
 - a. Hepatitis A virus
 - b. *M. tuberculosis*
 - c. *E. histolytica*
 - d. HIV
9. ELISA kits are commercially available for detection of:
 - a. Anti-HIV antibodies
 - b. Hepatitis B surface antigen
 - c. Rotavirus
 - d. All of the above
10. Which pathogen can be transmitted by needle stick injury?
 - a. *Staphylococcus*
 - b. *E. coli*
 - c. Hepatitis B
 - d. *M. tuberculosis*
11. Which of the following diseases can be acquired by milk?
 - a. Tuberculosis
 - b. Typhoid
 - c. Brucellosis
 - d. All of the above
12. Hospital-associated infection can occur by:
 - a. Contact spread
 - b. Airborne spread
 - c. Oral route
 - d. All of the above
13. Widal test is used for diagnosis of?
 - a. Enteric fever
 - b. HIV infection
 - c. Tuberculosis
 - d. Malaria
14. PCR stands for:
 - a. Polymerase chain reaction
 - b. Polymerase chain reagin
 - c. Polymerase complex reaction
 - d. Polymerase cleavage reaction

Regn. No.....

Paper Code: BM- 305...

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
PATHOLOGY (I)
PAPER FIVE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** How you will investigate a case of suspected iron deficiency anemia?
- Q. 2.** Describe blood findings in case of megaloblastic anemia.
- Q. 3.** Write briefly about quality control in Hematology lab
- Q. 4.** Write causes and DIC. What abnormal lab findings will you see in this case?
- Q. 5.** Draw normal coagulation pathway.
- Q. 6.** What do you understand by Leukemia cytochemistry? Describe any one method in detail.
- Q. 7.** Draw labeled diagrams of a Myeloblast and a Lymphoblast.
- Q. 8.** Write a short note on sickle cell anemia.
- Q. 9.** Write briefly about mechanism of Fibrinolysis.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
PATHOLOGY (I)
PAPER FIVE (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Block positivity for PAS seen in:
 - a. All nucleated cells of Body
 - b. Myeloblasts
 - c. Macrophages
 - d. Lymphoblasts
2. Megaloblastic anemia is characterized on peripheral smear by presence of:
 - a. Oval Macrocytes
 - b. Hypersegmented polymorphs
 - c. Pancytopenia
 - d. All of the above
3. Howell-Jolly Bodies seen in:
 - a. Iron deficiency
 - b. Lead Poisoning
 - c. Alcoholism
 - d. Megaloblastic anemia
4. Auer Rods are seen in:
 - a. Myeloblasts
 - b. Lymphoblasts
 - c. Megakaryocytes
 - d. Lymphocytes
5. For demonstration of Blasts (Myeloid) stain uses:
 - a. MPO
 - b. PAS
 - c. LAP
 - d. H& E
6. In Beta -Thalassemia:
 - a. Beta chain increased
 - b. Beta chain decreased
 - c. Alpha chain increased
 - d. Alpha chain decreased
7. DIC stands for:
 - a. Delayed Irregular Coagulation
 - b. Disseminated Intravascular Coagulation
 - c. Disseminated Intravascular Circulation
 - d. None of the above
8. Sick cell anemia occurs due to:
 - a. Frame shift mutation
 - b. Splicing mutation
 - c. Point mutation
 - d. All of the above
9. Megaloblastic anemia is occur due to deficiency of:
 - a. Iron
 - b. Folate
 - c. Vit B 6
 - d. Both b & c
10. Internal quality control checks:
 - a. Precision
 - b. Accuracy
 - c. Both
 - d. None
11. Vit -K dependent clotting factors are all except:
 - a. F-II
 - b. F-VIII
 - c. F-VII
 - d. F- X
12. Intrinsic coagulation pathway starts from:
 - a. F-X,
 - b. F-VII
 - c. Fibrinogen
 - d. F-XII
13. DIC as a complication seen in which leukemia:
 - a. ALL -L1
 - b. AML-M3
 - c. CML
 - d. NHL
14. In our body iron in diet absorbed from:
 - a. Stomach
 - b. Duodenum
 - c. Terminal ileum
 - d. Colon

Regn. No.....

Paper Code: BM - 306

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
PATHOLOGY (II)
PAPER SIX

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Describe steps of histo-pathological processing.
- Q. 2.** Describe histopathological processing of human eye.
- Q. 3.** Write principle, steps and interpretation of PAS stain.
- Q. 4.** Write principle and application of electron microscopy.
- Q. 5.** Describe steps of cytological processing of body fluid.
- Q. 6.** Describe quality control procedures in histopathology lab.
- Q. 7.** Write about museum techniques.
- Q. 8.** Compare morphology of superficial, intermediate and parabasal cervical epithelial cells.
- Q. 9.** Describe steps of frozen section.

B.M.L.T. THIRD YEAR EXAMINATION, JUNE/JULY - 2016
PATHOLOGY (II)
PAPER SIX (MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Special stain useful to demonstrate helicobacter pylori in gastric mucosa is:
 - a. Hematoxylin and eosin
 - b. Warthin and starry
 - c. Gram stain
 - d. PAS
2. Basement membrane may be clearly highlighted by _____ stain.
 - a. Hematoxylin and eosin
 - b. Warthin and starry
 - c. PAS
 - d. Gram stain
3. Which of the following structure may only be visualized using electron microscope?
 - a. Nucleus
 - b. Mitochondria
 - c. Neuron
 - d. Nephron
4. Quality control in histopathology lab may be performed using:
 - a. Positive control
 - b. Inter lab comparison
 - c. Inter observer variation
 - d. All of the above
5. Among cells of cervical smears, maximum nucleus to cytoplasmic ratio is seen in which cell:
 - a. Superficial cervical cells
 - b. Intermediate cervical cells
 - c. Parabasal cervical cells
 - d. Basal cells
6. Lipid in histological section may be demonstrated by:
 - a. Congo red stain
 - b. Oil red O
 - c. PAS stain
 - d. None of the above
7. Fixative used for electron microscopy is:
 - a. Absolute alcohol
 - b. Formaldehyde
 - c. Glutaraldehyde
 - d. Distilled water
8. Fungal spores may be demonstrated in histological section using _____ stain
 - a. Hematoxylin and eosin
 - b. Gram stain
 - c. Reticulin stain
 - d. PAS stain
9. Decalcification of bone may be done by:
 - a. Acetic acid
 - b. EDTA
 - c. Microwave
 - d. All of the above.
10. Cell block preparation is done for following biological sample type:
 - a. Biopsy
 - b. FNAC
 - c. Body fluid
 - d. All of the above
11. Kaiserling solution I contains all EXCEPT:
 - a. Formalin
 - b. Potassium acetate
 - c. Sodium nitrate
 - d. Distilled water
12. Methyl green-pyronine stain colors RNA as:
 - a. Red
 - b. Green
 - c. Blue
 - d. Brown
13. Frozen section preparation requires:
 - a. Microtome
 - b. Cryostat
 - c. Histopathology processing
 - d. Fixation
14. Presence of red color in mucicarmin stain suggests presence of:
 - a. Fat
 - b. Collagen
 - c. Mucin
 - d. Reticulin

Regn. No.....

Paper Code: BMLT- 301...

Lib

B.Sc. MEDICAL TECHNOLOGY (LABORATORY) THIRD YEAR EXAMINATION
JUNE/JULY - 2017
BIOCHEMISTRY
PAPER ONE

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagrams wherever necessary

A . Short answer questions:

(7 x 9 = 63)

- Q. 1. How is bilirubin excreted from body? What are the different methods for estimation of bile pigments?
(4+3)
- Q. 2. What are radioisotopes? Give examples of radioisotopes and their applications in medicine. (2+2+3)
- Q. 3. Enumerate the various immunological techniques. What is the principle of RIA? Give its applications.
(2+2+3)
- Q. 4. Discuss the chemical nature and mechanism of action of steroid hormones. Describe the biochemical role of corticosteroid hormone in brief. (4+3)
- Q. 5. Describe the chemistry and role of insulin in various metabolic pathways.
- Q. 6. Describe mechanism and metabolic role of thyroid hormone.
- Q. 7. Classify hormones based on their mechanism of action.
- Q. 8. Enumerate the common liver function tests done in the Biochemistry lab. Write in detail about the method of estimation of any of these parameters. (3+4)
- Q. 9. What are the different types of gall stones? Write the method of qualitative analysis of gall stones.
(3+4)

B.Sc. MEDICAL TECHNOLOGY (LABORATORY) THIRD YEAR EXAMINATION
JUNE/JULY - 2017
BIOCHEMISTRY
PAPER ONE (MCQ)

Time allotted for MCQ - 15 minutes

B . MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it-

1. Normal colour of feces is due to:
 - a. Bilirubin
 - b. Stercobilin
 - c. Porphobilinogen
 - d. Biliverdin
2. Bilirubin in serum can be measured by:
 - a. Van-den Bergh reaction
 - b. Ehrlich's reaction
 - c. Fouchet's reaction
 - d. All of them
3. All are the features of obstructive jaundice except:
 - a. Increased level of conjugated bilirubin in blood
 - b. Clay coloured stools
 - c. Presence of bile salts in urine
 - d. Increased excretion of urobilinogen in urine
4. All can act as second messenger except:
 - a. cyclic AMP
 - b. 2,3 bisphosphoglycerol
 - c. Calcium ions
 - d. Inositol triphosphate
5. All the hormones act at the level of transcription except:
 - a. Cortisol
 - b. Calcitriol
 - c. Calcitonin
 - d. Androgen
6. 11 α -hydroxylase is required for the synthesis of:
 - a. Cortisol
 - b. Estradiol
 - c. Testosterone
 - d. Aldosterone
7. All are derived from progesterone except:
 - a. Corticosterone
 - b. Aldosterone
 - c. Testosterone
 - d. Dehydro-epiandrosterone
8. Which of the following is a feature of hypothyroidism?
 - a. Decreased T3 level
 - b. Decreased TSH level
 - c. Weight loss
 - d. Increased BMR
9. Uptake of iodine by thyroid gland is inhibited by:
 - a. Fluoride
 - b. Perchlorate
 - c. Bromide
 - d. Chloride
10. Before excretion, bilirubin is conjugated to:
 - a. Glycine
 - b. Glutamic acid
 - c. Glucuronic acid
 - d. Glutamine
11. Reference range of ALT is:
 - a. 5-20 IU/L
 - b. 10-40 IU/L
 - c. 20-80 IU/L
 - d. 40-160 IU/L
12. Increased level of glucagon may result in:
 - a. Hyperglycemia
 - b. Hypoglycemia
 - c. Normal blood sugar level
 - d. None of the above
13. Deficiency of which hormone results in diabetes insipidus?
 - a. Vasopressin
 - b. Insulin
 - c. TSH
 - d. Cortisol
14. Which hormone is secreted by posterior lobe of pituitary gland?
 - a. Vasopressin
 - b. LH
 - c. ACTH
 - d. FSH

B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
BIOCHEMISTRY-II

[Time allotted: Three hours]**[Max Marks: 70]****Note:** Attempt all questions

Draw suitable diagrams wherever necessary

A : Short answer questions:**(7 x 9 = 63)**

- Q. 1.** What is total quality assurance? Describe how quality control should be carried out and maintained in a clinical biochemistry laboratory. (3+4=7 marks)
- Q. 2.** What is a thermocycler? Write the principles and applications of PCR. (2+5=7 marks)
- Q. 3.** Answer the following: (3.5+3.5=7 marks)
a. What are tumor markers? Enumerate at least 3 of these markers and name the diseases for which they are used as tumor markers
b. Describe post-translational modifications
- Q. 4.** Write brief notes on: (3.5+3.5=7 marks)
a. Westgard rules
b. Analytical errors
- Q. 5.** Describe the different factors which can cause systematic errors and random errors during analysis in a Clinical Biochemistry laboratory. (3.5+3.5=7 marks)
- Q. 6.** Write short notes on: (3.5+3.5=7 marks)
a. Standard Deviation
b. Chi-square test
- Q. 7.** Draw a labelled diagram of replication fork formed during prokaryotic replication. Name enzymes and proteins that are required for replication. (5+2=7 marks)
- Q. 8.** Draw a labelled diagram of transcription bubble formed during the process of transcription. What are post-transcription modifications? (5+2=7 marks)
- Q. 9.** Write short notes on: (3.5+3.5=7 marks)
a. Genetic code
b. Free radicals and ROS

B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
BIOCHEMISTRY-II
(MCQ)

Time allotted for MCQ- 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it:

1. Accuracy is:
 - a. Reproducibility of the result
 - b. The ability to detect minute amounts of analyte
 - c. Closeness of the result to the true value
 - d. Same as precision
2. The central line drawn in the Levy Jennings chart represents the:
 - a. Mean
 - b. Mode
 - c. Median
 - d. Method
3. One of the following is **not** an example of pre-analytical variation:
 - a. Transport
 - b. Test result reporting
 - c. Centrifugation
 - d. Exposure to UV light
4. What is **NOT** correct about telomerases?
 - a. They are composed of protein & RNA complementary to the telomere repeat
 - b. When they are mutated or absent, it can result in chromosomal shortening
 - c. They act in the centre of the DNA molecule
 - d. Telomerases have a role in cancer cell biology and in cell aging.
5. The enzyme required for transcription is:
 - a. Restriction enzymes
 - b. DNA polymerase
 - c. RNA polymerase
 - d. RNAase
6. Which one of the following is **not** a tumor marker?
 - a. Alpha-fetoprotein
 - b. Carcino-embryonic antigen
 - c. Prostatespecific antigen
 - d. Parathormone
7. The energy for the 'translocase' of protein biosynthesis is provided by the hydrolysis of which one of the following?
 - a. ATP
 - b. GTP
 - c. UTP
 - d. CTP
8. The most common quality control chart used in the lab is the:
 - a. Levy Jennings chart
 - b. Shewhart chart
 - c. Bar graph
 - d. Histogram
9. The number having the highest frequency in a given set of data is called the:
 - a. Mean
 - b. Median
 - c. Mode
 - d. Outlier
10. When one control value exceeds the +/- 2SD limits, the Westgard rule is represented as:
 - a. 1 – 3S
 - b. 1 – 2S
 - c. 2 – 2S
 - d. R – 4S
11. When the 2 – 2S rule is violated, then the control run should be:
 - a. Accepted as warning
 - b. Accepted
 - c. Rejected
 - d. Rejected with warning
12. The central line drawn in the Levy Jennings chart represents the:
 - a. Mean
 - b. Mode
 - c. Median
 - d. Method
13. The 1 – 3S Westgard rule represents:
 - a. Systematic error
 - b. Random error
 - c. No rule violated
 - d. None of the above
14. All are post analytical procedures **except**:
 - a. Transcription errors of results
 - b. Delivery of wrong report to wrong patient
 - c. Errors in calculations
 - d. Measurement of samples an reagent by inaccurate instrument

Regn. No.....

Paper Code: BMLT- 303...

B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY – 2017
MICROBIOLOGY (I)

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions. Draw suitable diagrams wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1. 2
- a. Draw a labelled diagram of a *Giardia lamblia* cyst. 2
 - b. Draw a labelled diagram of a *Giardia lamblia* trophozoite. 1
 - c. Which part of the human body is infected by Giardia? 2
 - d. Name some common symptoms of Giardia infection.
- Q. 2. 2
- a. What specimen would you collect for the laboratory diagnosis of malaria? 1
 - b. In what kind of vacutainer tube will you collect the specimen? 4
 - c. Name four tests that can be performed on the specimen to diagnose malaria.
- Q. 3. 1
- a. Name the parasite that causes kala-azar. 3
 - b. Name three non-specific haematological findings in a patient of kala-azar. 1
 - c. Name one good specimen in which the parasite may be detected. 1
 - d. Name one stain for staining the parasite. 1
 - e. Name one culture medium for isolating the parasite.
- Q. 4. 1
- a. Name an amoeba that causes acute meningitis. 1
 - b. Name an amoeba that causes dysentery. 2
 - c. Describe the life cycle of the amoeba that causes dysentery. 3
 - d. Describe briefly the laboratory diagnosis of amoebic dysentery.
- Q. 5. 2
- a. Name the two species of hookworms that infest human beings. 1
 - b. What is their infective form? 1
 - c. How does the infective form enter the human body? 1
 - d. Name the most severe clinical manifestation of hookworm infestation 1
 - e. Draw a labelled diagram of a hookworm ovum. 2
- Q. 6. 2
- a. Name the two species of filarial worms that infect human beings. 1
 - b. What is the definitive host of filarial worms? 2
 - c. What are the intermediate hosts of the two species of filarial worms? 1
 - d. What specimen will you collect for the laboratory diagnosis of filariasis? 1
 - e. What is the best time to collect a specimen to demonstrate microfilariae?
- Q. 7. 5
- a. Describe the life cycle of *Ascaris lumbricoides*. 2
 - b. Draw a labelled diagram of an ascaris ovum.
- Q. 8. 3
- a. Name three different stool concentration techniques. 4
 - b. Describe the steps of one of these techniques.
- Q. 9. 4
- a. What is hydatid cyst? 1
 - b. What is the name of the parasite? 1
 - c. What is the definitive host of the parasite? 1
 - d. What is the intermediate host of the parasite? 1

Regn. No.....

Paper Code: BMLT- 303...

B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY – 2017
MICROBIOLOGY (I)
(MCQ)

Time allotted for MCQ - 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Which of the following protozoa is found in human intestines?
 - a. *Entamoeba histolytica*
 - b. *Plasmodium falciparum*
 - c. *Leishmania donovani*
 - d. *Toxoplasma gondii*
2. Which is the best technique for demonstrating *Cryptosporidium* oöcysts in stool?
 - a. Lactophenol cotton blue
 - b. Leishman stain
 - c. Modified Z-N stain
 - d. Gram stain
3. Which of the following is a typical feature of *Plasmodium vivax*?
 - a. Gametocytes are banana shaped
 - b. Schüffner's dots are seen inside parasitized RBC
 - c. A single RBC can be infected with 3 - 4 parasites
 - d. Schizonts are never seen in peripheral blood smears
4. Which of the following is a suitable specimen for the laboratory diagnosis of malaria?
 - a. Urine
 - b. Stool
 - c. Peripheral blood
 - d. CSF
5. Which form of *Leishmania donovani* is found in the body of patients of kala azar (visceral leishmaniasis)?
 - a. Amastigotes
 - b. Promastigotes
 - c. Both of the above
 - d. None of the above
6. Larvae of which of these nematodes can penetrate human skin?
 - a. *Ascaris lumbricoides*
 - b. *Trichuris trichiura*
 - c. *Enterobius vermicularis*
 - d. *Ancylostoma duodenale*
7. Which is the following parasites causes cysticercosis?
 - a. *Taenia solium*
 - b. *Taenia saginata*
 - c. *Echinococcus granulosus*
 - d. *Ascaris lumbricoides*
8. Which of the following protozoa is often detected in urine specimens?
 - a. *Giardia lamblia*
 - b. *Trichomonas vaginalis*
 - c. *Entamoeba histolytica*
 - d. *Plasmodium falciparum*
9. Which of the following parasites is usually diagnosed by antibody detection, and not by microscopy?
 - a. *Plasmodium vivax*
 - b. *Plasmodium falciparum*
 - c. *Trichomonas vaginalis*
 - d. *Toxoplasma gondii*
10. Which of the following ova float in saturated salt solution?
 - a. *Taenia solium*
 - b. *Taenia saginata*
 - c. *Trichuris trichiura*
 - d. Unfertilized ova of *Ascaris lumbricoides*
11. *Giardia lamblia* trophozoites are found in the
 - a. Esophagus
 - b. Stomach
 - c. Small intestine
 - d. Large intestine
12. You receive a reddish-brown pus specimen from a liver abscess. Microscopy shows no pus cells and no bacteria. What is the most likely pathogen?
 - a. *Giardia lamblia*
 - b. *Plasmodium vivax*
 - c. *Leishmania donovani*
 - d. *Entamoeba histolytica*
13. Which of the following is an acceptable method for confirming the diagnosis of hydatid cyst?
 - a. Culture of *Echinococcus granulosus* on cornmeal agar
 - b. Microscopy for *Echinococcus granulosus* ova in the patient's stool
 - c. Detection of *Echinococcus granulosus* antigens in serum
 - d. Microscopy for scolices and hooklets in fluid removed from a hydatid cyst
14. What is the best time to collect a blood specimen to detect *Wuchereria bancrofti* microfilaria in a patient from India?
 - a. 6 AM to 10 AM
 - b. 10 AM to 2 PM
 - c. 6 PM to 10 PM
 - d. 10 PM to 2 AM

Regn. No.....

Paper Code: BMLT- 304...

**B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
MICROBIOLOGY (II)**

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagram wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1.** Name various organisms causing urinary tract infection. Discuss briefly laboratory diagnosis of this condition.
- Q. 2.** Define and enumerate causes of pyrexia of unknown origin. How will you proceed to diagnose it in the laboratory?
- Q. 3.** Write short notes on:
a. Bacteriological analysis of water
b. Bacteriological analysis of milk
- Q. 4.** Name various organisms causing sexually transmitted diseases. Discuss in detail laboratory diagnosis of genital ulcers.
- Q. 5.** Discuss in detail the laboratory work-up involved in the diagnosis of Kala-Azar.
- Q. 6.** Write down the principle and application of:
a. ELISA
b. PCR
- Q. 7.** Write short notes on:
a. Stool concentration methods
b. Tests for determining efficacy of chemical disinfectants
- Q. 8.** Enumerate the causes of:
a. Meningitis
b. Sore throat
- Q. 9.** Discuss in detail the laboratory work-up required in investigating an outbreak of food poisoning.

B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
MICROBIOLOGY (II)
(MCQ)

Time allotted for MCQ - 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and **encircle** the alphabet against it

1. Painful genital ulcer is produced by:
 - a. Syphilis
 - b. Chancroid
 - c. Lymphogranuloma venerum
 - d. Donovanosis
2. Which of the following organisms may lead to pseudomembrane formation in throat?
 - a. Corynebacterium diphtheriae
 - b. Streptococcus pyogenes
 - c. Candida albicans
 - d. All of the above
3. Commonest cause of urinary tract infection is:
 - a. E. coli
 - b. Pseudomonas
 - c. Staphylococcus aureus
 - d. Proteus vulgaris
4. Which of the following protozoa can cause diarrhoea?
 - a. E. histolytica
 - b. Giardia lamblia
 - c. Cryptosporidium parvum
 - d. All of the above
5. Causative agent of Kala-azar is:
 - a. Leishmania donovani
 - b. Plasmodium sp.
 - c. Babesia
 - d. Trypanosoma cruzi
6. Vector for transmission of malaria is:
 - a. Anopheles mosquito
 - b. Aedes aegypti
 - c. Culex
 - d. Sandfly
7. Which of the following agents can cause dysentery?
 - a. Shigella dysenteriae
 - b. E. coli (EIEC)
 - c. E. histolytica
 - d. All of the above
8. Which of the following is/are water-borne pathogen?
 - a. Hepatitis A virus
 - b. Vibrio cholera
 - c. E. histolytica
 - d. All of the above
9. ELISA kits are commercially available for detection of:
 - a. Anti-HIV antibodies
 - b. Hepatitis B surface antigen
 - c. Rotavirus
 - d. All of the above
10. All of the following cause lymphatic filariasis except:
 - a. Wuchereria bancrofti
 - b. Brugia malayi
 - c. Brugia timori
 - d. Loa loa
11. Which of the following pathogens can be transmitted by air in the hospital?
 - a. Legionella
 - b. HIV
 - c. Hepatitis B virus
 - d. All of the above
12. Hospital-associated infection can occur by:
 - a. Contact spread
 - b. Airborne spread
 - c. Oral route
 - d. All of the above
13. Which of the following pathogen can be transmitted by needle prick injury?
 - a. Staphylococcus
 - b. E. coli
 - c. Hepatitis B
 - d. M. tuberculosis
14. Common cause of infective endocarditis is:
 - a. Streptococcus pyogenes
 - b. Streptococcus pneumoniae
 - c. Streptococcus agalactiae
 - d. Viridans streptococci

Regn. No.....

Paper Code: BMLT- 305...

**B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
PATHOLOGY (I)**

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagrams wherever necessary

A : Short answer questions:

(7 x 9 = 63)

- Q. 1. Difference between lymphoblast and myeloblast.
- Q. 2. Write briefly about beta- thalassemia.
- Q. 3. Classification of acute leukemia.
- Q. 4. Cytochemical stains used for diagnosis of leukemia.
- Q. 5. Normal coagulation cascade.
- Q. 6. Disseminated intravascular coagulation.
- Q. 7. Quality assurance in Blood Bank.
- Q. 8. Microcytic hypochromic anemia.
- Q. 9. Hemophilia.

B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
PATHOLOGY (I)
(MCQ)

Time allotted for MCQ - 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Mentzer index is defined as:
 - a. MCV/MCH
 - b. MCH/RBC
 - c. RBC/MCV
 - d. MCV/RBC
2. Which of following shows reaction for myeloperoxidase:
 - a. AML-M0
 - b. AML-M2
 - c. AML-M6
 - d. ALL-L2
3. Blast count in marrow is more than _____ in acute leukemia:
 - a. 10%
 - b. 20%
 - c. 30%
 - d. 40%
4. Auer rods are seen in:
 - a. Myeloblasts
 - b. Lymphoblasts
 - c. Megakaryocytes
 - d. Lymphocytes
5. DIC stands for:
 - a. Delayed Irregular Coagulation
 - b. Disseminated Intravascular Coagulation
 - c. Disseminated Intravascular Circulation
 - d. None of the above
6. Muco-cutaneous bleeding is feature of:
 - a. Thrombocytopenia
 - b. Hemophilia A
 - c. Hemophilia B
 - d. All of the above
7. Low value of hemoglobin indicates:
 - a. Infection
 - b. Anemia
 - c. Diabetes
 - d. Leukemia
8. Vit-K dependent clotting factors are all except:
 - a. Factor-II
 - b. Factor-VIII
 - c. Factor-VII
 - d. Factor-X
9. Which dietary component(s) is/are needed for DNA synthesis, and thus greatly influence the production of red blood cells?
 - a. Calcium and folic acid
 - b. Iron
 - c. Vitamin B12 and folic acid
 - d. Protein
10. Erythroblastosis fetalis, also known as hemolytic disease of the newborn, most often occurs in _____ mothers carrying _____ fetuses:
 - a. Rh+ ; Rh-
 - b. Rh- ; Rh+
 - c. Type A ; type O
 - d. Type B ; type A
11. Red blood cells survive around _____ days:
 - a. 120
 - b. 240
 - c. 10
 - d. 360
12. Isolated prolonged prothrombin time with normal APTT rules out deficiency of:
 - a. Factor VIII
 - b. Factor VII
 - c. Prothrombin
 - d. Fibrinogen
13. Macrocytic anemia suggests following etiology:
 - a. Iron deficiency anemia
 - b. Folate deficiency
 - c. Thalassemia
 - d. Anemia of chronic disease
14. The body responsible for accreditation of quality in a laboratory is called:
 - a. ICMR
 - b. NABL
 - c. SRL
 - d. MCI

Regn. No.....

Paper Code: BMLT - 306

**B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
PATHOLOGY (II)**

[Time allotted: Three hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagrams wherever necessary

A : Short answer questions:

(7 x 9 = 63)

Write notes on the following:

- Q. 1. Special stain for nucleic acids.
- Q. 2. Electron microscope.
- Q. 3. Stain for detection of lipids.
- Q. 4. Histopathology processing.
- Q. 5. Enzyme histochemistry.
- Q. 6. Ascitic fluid examination in laboratory.
- Q. 7. Quality assurance in histopathology.
- Q. 8. Fine needle aspiration cytology.
- Q. 9. Museum preservation technique.

B.Sc. MEDICAL TECHNOLOGY (LABORATORY)
THIRD YEAR EXAMINATION, JUNE/JULY - 2017
PATHOLOGY (II)
(MCQ)

Time allotted for MCQ - 15 minutes

B : MCQs (Single response type):

(½ x 14= 7)

Select the most appropriate answer and encircle the alphabet against it

1. Fixation of biopsy tissue is essential to:
 - a. Remove water
 - b. Prevent deterioration
 - c. Replace alcohol
 - d. Clear the sections
2. Which of the following is used to detect fat?
 - a. Eosin
 - b. Hematoxylin
 - c. Sudan black
 - d. Toluidine blue
3. Periodic Acid Schiff (PAS) stains:
 - a. Muco-polysaccharides
 - b. Basement membrane material
 - c. Glycogen
 - d. All of the above
4. Special stain for RNA:
 - a. PAS
 - b. MGG
 - c. MGP
 - d. PAP
5. Special stain for amyloid is:
 - a. Sudan black
 - b. Perl's stain
 - c. Congo red stain
 - d. Masson's trichrome stain
6. Iron can be demonstrated by:
 - a. Sudan black
 - b. Perls' stain
 - c. Congo red stain
 - d. Masson's trichrome stain
7. Clearing is done by placing the tissues in :
 - a. Water
 - b. Bouin's solution
 - c. Zenker's fixative
 - d. Xylol
8. Scanning electron microscopy (SEM) is best used to study:
 - a. Small internal cell structures
 - b. Surface morphology
 - c. Mitochondria
 - d. Chemical bonds
9. Urine pregnancy test is based on detection of:
 - a. Urine protein
 - b. Urine reducing sugar
 - c. Beta HCG
 - d. Estrogen
10. Which of the following is used to stain lipid?
 - a. Wright's stain
 - b. Hematoxylin and eosin stain
 - c. Sudan stain
 - d. Silver impregnation
11. Fixatives used for electron microscopy is:
 - a. Methanol
 - b. Formalin
 - c. Glutaraldehyde
 - d. Acetone
12. Which stain is commonly used for cervical cytology?
 - a. PAP
 - b. Gram's
 - c. Leishman's
 - d. Giemsa
13. Which technique is useful for diagnosis of lumps?
 - a. Bone marrow
 - b. FNAC
 - c. Bronchial brush
 - d. PAP stain
14. The body responsible for accreditation of quality in a laboratory is called:
 - a. ICMR
 - b. NABL
 - c. SRL
 - d. MCI