UNIVERSITY OF KASHMIR, SRINAGAR

NAAC Accredited Grade A+

NOTIFICATION

It is notified for the information of all concerned that the Standing Committee of the Academic Council (SCAC) at its meeting held on 30-09-2020 has approved prescription of syllabi and course structure for newly introduced following paramedical courses/Programmes for the academic session 2020-21 onwards.

a) B.Sc Medical laboratory Technology
b) B.Sc Radiography
c) B.Sc Cardiac Care Technology
d) B.Sc Operation Theatre
e) B.Sc Respiratory Care Technology
f) B.Sc Anesthesia Technology
g) B.Sc Neuro Sciences Technology
h) B.Sc Renal Dialysis
i) B.Sc Radiotherapy

23-2-2021

Deputy Registrar
ACADEMIC

No: F (Prescription-Syllabi/ Paramedical Courses/Acad/KU/201
Dated: 23-02-2021

Copy to the:-

1. Dean, Academics Affairs, University of Kashmir, Srinagar;
2. Dean, College Development Council, University of Kashmir, Srinagar;
3. Principal, of Government Medical College Srinagar..
4. Controller of Examinations, University of Kashmir, Srinagar;
5. Director, IT&SS, University of Kashmir, Srinagar;
6. Special Secretary to Vice-Chancellor for the information of the Vice-Chancellor;
7. Principal, Dr. Qadri's College of Medical Laboratory Technology
8. Assistant Controller, Secrecy/Tabulation/Professional Unit.
9. Concerned System Engineer Examinations wing University of Kashmir.
10. File.

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Course Title: Anatomy
Course Code: BMLT101

ANATOMY

Theory: 70hrs
Practicals: 20hrs

I. INTRODUCTION: HUMAN BODY AS A WHOLE

THEORY:
Definition of anatomy and its divisions
Terms of location, positions and planes
Cell and its organelles
Epithelium – definition, classification, describe with examples, functions
Glands – classification, describe serous and mucous glands with examples
Basic tissues – classification with examples

PRACTICALS:
Histology of types of epithelium
Histology of serous, mucous and mixed salivary gland

II. LOCOMOTION AND SUPPORT

THEORY:
Cartilage – types with examples and histology
Bone – classification, names of bone cells, parts of long bone, microscopy of
Compact bone, names of all bones, vertebral column, intervertebral disc,
Fontanelles of fetal skull
Joints – classification of joints with examples, synovial joint (in detail for radiology)
Muscular system – classification of muscular tissue and histology
Names of muscles of the body

PRACTICALS:
Histology of 3 types of cartilages
Demo of all bones showing parts, radiographs of normal bones and joints
Histology of compact bone (TS and LS)
Demonstration of all muscles of the body
Histology of skeletal, smooth and cardiac muscle (TS and LS)

III. CARDIOVASCULAR SYSTEM

THEORY:
Heart – size, location, chambers, exterior and interior
Blood supply of heart
Systemic and pulmonary circulation
Branches of aorta, common carotid artery, subclavian artery,
Axillary artery, brachial artery, superficial palmar arch, femoral artery,
Internal iliac artery
Peripheral pulse
Inferior venacava, portal vein, portosystemic anastomosis
Great saphenous vein
Dural venous sinuses
Lymphatic system – cisterna chyli and thoracic duct
Histology of lymphatic tissues
Names of regional lymphatics, axillary and inguinal lymph nodes in brief

PRACTICALS:
Demonstration of heart and vessels in the body
Histology of large artery, medium sized artery and vein, large vein
Microscopic appearance of large artery, medium sized artery and vein,
Large vein pericardium
Histology of lymph node, spleen, tonsil and thymus
Normal chest radiograph showing heart shadows
Normal angiograms

IV. GASTRO-INTESTINAL SYSTEM

THEORY:
Parts of GIT, oral cavity (lip, tongue – with histology, tonsil, dentition, pharynx,
Salivary glands, Waldeyer's ring)
Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas,
Radiographs of abdomen

V. RESPIRATORY SYSTEM
Parts of RS – nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
Histology of trachea, lungs and pleura
Names of paranasal air sinuses

PRACTICALS:
Demonstration of parts of respiratory system
Normal radiographs of chest
Histology of lung and trachea

VI. PERITONEUM

THEORY:
Description in brief

PRACTICAL:
Demonstrations of reflections

VII. URINARY SYSTEM
THEORY:

Kidney, ureter, urinary bladder, male and female urethra
Histology of kidney, ureter and urinary bladder

PRACTICAL:
Demonstration of parts of urinary system
Histology of kidney, ureter, urinary bladder
Radiographs of abdomen – IVP, retrograde cystogram

VIII. REPRODUCTIVE SYSTEM

THEORY:
Parts of male reproductive system, testis, vas deferens, epididymis,
Prostate (gross and histology)
Parts of female reproductive system, uterus, fallopian tubes,
Ovaries (gross and histology)
Mammary gland – gross

PRACTICAL:
Demonstration of section of male and female pelvis with organs in situ
Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian tubes,
Ovaries
Radiographs of pelvis – Hysterosalpingogram

IX. ENDOCRINE GLANDS

THEORY:
Names of all endocrine glands, in detail on pituitary gland, thyroid gland,
Parathyroid gland, suprarenal gland (gross and histology)

PRACTICAL:
Demonstration of the glands
Histology of pituitary, thyroid, parathyroid, suprarenal glands

X. NERVOUS SYSTEM

THEORY:
Neuron
Classification of NS
Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord

With spinal nerve (gross and histology)
Meninges, ventricles and cerebrospinal fluid
Names of basal nuclei
Blood supply of the brain
Cranial nerves
Sympathetic trunk and names of parasympathetic ganglia

PRACTICAL:
Histology of peripheral nerve and optic nerve
Demonstration of all plexuses and nerves in the body
Demonstration of all parts of brain
Histology of cerebrum, cerebellum, spinal cord

XI. SENSORY ORGANS

THEORY:
Skin – histology, appendages of skin
Eye – parts of eye and lacrimal apparatus
Extra-ocular muscles and nerve supply
Ear – parts of ear- external, middle and inner ear and contents

PRACTICAL:
Histology of thin and thick skin
Demonstration and histology of eyeball
Histology of cornea and retina

XII. EMBRYOLOGY

THEORY:
Spermatogenesis and oogenesis
Ovulation, fertilization
Fetal circulation
Placenta

INTERNAL ASSESSMENT

Theory-average of 2 exams conducted 20
Practicals: record and lab work* 10

*There shall be no university practical examination and internal assessment marks secured in Practicals need not be sent to the university.

SCHEME OF EXAMINATION THEORY
There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Anatomy shall be as given under.

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
Short answer type	12 (attempt 10)	10 x 3	30
Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

Distribution of Marks for University Theory and Practical Exam

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80	-	20	100	*			100

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Course Title: Physiology

Course Code: BMLT102

Introduction

Composition and function of blood

Red blood cells – Erythropoiesis, stages of differentiation function, count physiological Variation.
Haemoglobin –structure, function, concentration physiological variation, Methods of Estimation of Hb
White blood cells – Production, function, life span, count, differential count
Platelets – Origin, normal count, morphology functions.
Plasma Proteins – Production, concentration, types, albumin, globulin, Fibrinogen, Prothrombin functions.
Haemostasis & Blood coagulation
Haemostasis – Definition, normal haemostasis, clotting factors, mechanism of clotting, disorders of clotting factors.

Blood Bank

Blood groups – ABO system, Rh system
Blood grouping & typing
Crossmatching
Rh system – Rh factor, Rh incompatibility.
Blood transfusion – Indication, universal donor and recipient concept.
Selection criteria of a blood donor. Transfusion reactions
Anticoagulants – Classification, examples and uses
Anaemias : Classification – morphological and etiological. Effects of anemia on body
Blood indices – Colour index, MCH, MCV, MCHC
Erythrocyte sedimentation Rate (ESR) and Paced cell volume
Normal values, Definition. Determination
Blood Volume -Normal value, determination of blood volume and regulation of blood volume Body fluid – pH, normal value, regulation and variation
Lymph – lymphoid tissue formation, circulation, composition and function of lymph

Cardiovascular system

Heart – Physiological Anatomy, Nerve supply
Properties of Cardiac muscle
Cardiac cycle-systole, diastole.
Intraventricular pressure curves.
Cardiac Output – only definition
Heart sounds- Normal heart sounds Areas of auscultation.
Blood Pressure – Definition, normal value, clinical measurement of blood pressure. Physiological variations, regulation of heart rate, cardiac shock, hypotension, hypertension. Pulse – Jugular, radial pulse, Triple response
Heart sounds – Normal heart sounds, cause characteristics and signification. Heart rate
Electrocardiogram (ECG) –significance.

Digestive System - Physiological anatomy of Gastro intestinal tract
Functions of digestive system.
Salivary glands - Structure and functions.
Deglutination –stages and regulation
Stomach – structure and functions.
Gastric secretion – Composition function regulation of gastric juice secretion.
Pancreas – structure, function, composition, regulation of pancreatic juice
Liver – functions of liver.
Bile secretion, composition, function, regulation of bile secretion. Bilirubin metabolism, types of bilirubin, Vandernberg reaction, Jaundice- types, significance.
Gall bladder – functions.
Intestine – small intestine and large intestine.
Small intestine –Functions- Digestion, absorption, movements.
Large intestine – Functions, Digestion and absorption of Carbohydrates, Proteins, Fats, Lipids. Defecation

Respiratory system
Functions of Respiratory system, Physiological Anatomy of Respiratory system, Respiratory tract, Respiratory Muscles, Respiratory organ-lungs, Alveoli, Respiratory membrane, stages of respiration.

Mechanism of normal and rigorous respiration. Forces opposing and favouring expansion of the lungs. Intra pulmonary pleural pressure, surface tension, recoil tendency of the wall.

Transportation of Respiratory gases: Transportation of Oxygen: Direction, pressure gradient, Forms of transportation, Oxygenation of Hb. Quantity of Oxygen transported.

Lung volumes and capacities - Regulation of respiration what? Why? How? Mechanisms of Regulation, nervous and chemical regulation. Respiratory centre. Hearing Brier, Reflexes.

Applied Physiology and Respiration : Hypoxia, Cyanosis, Asphyxia, Dyspnea, Dysbarism, Artificial Respiration, Apnoea.

Endocrine System –
Definition, Classification of Endocrine glands & their Hormones Properties of Hormones.

Thyroid gland hormone – Physiological, Anatomy, Hormone secreted, Physiological function, regulation of secretion. Disorders – hypo and hyper secretion of hormone

Adrenal gland, Adrenal cortex physiologic anatomy of adrenal gland, Adrenal cortex, cortical hormones – functions and regulation Adrenal medulla – Hormones, regulation and secretion. Functions of Adrenaline and nor adrenaline

Pituitary hormones – Anterior and posterior pituitary hormones, secretion, function.

Pancreas – Hormones of pancreas. Insulin – secretion, regulation, function and action.
Diabetes mellitus – Regulation of blood glucose level.

Parathyroid gland – function, action, regulation of secretion of parathyroid hormone.

Calcitonin – function and action

Special senses
Vision – structure of eye. Function of different parts.
Structure of retina.
Hearing structure and function of can mechanism of hearing
Taste – Taste buds functions.
Smell physiology, Receptors.

Nervous system
Functions of Nervous system, Neuron structure, classification and properties. Neuroglia, nerve fiber, classification, conduction of impulses continuous and saltatory. Velocity of impulse transmission and factors affecting. Synapse – structure, types, properties.
Receptors – Definition, classification, properties. Reflex action – unconditioned properties of reflex action. Babinski's sign. Spinal cord nerve tracts. Ascending tracts, Descending tracts
Pyramidal tracts – Extrapyramidal tracts. Functions of Medulla, pons, Hypothalamic, disorders. Cerebral cortex lobes and functions, Sensory cortex, Motor cortex, Cerebellum, functions of Cerebellum. Basal ganglion-functions. EEG.
Cerebro Spinal Fluid(CSF) : formation, circulation, properties, composition and functions lumbar puncture.
Autonomic Nervous System: Sympathetic and parasympathetic distribution and functions and comparison of functions.

Excretory System
Excretory organs

Kidneys: Functions of kidneys structural and functional unit nephron, vasarecta, cortical and juxtamedullary nephrons – Comparision, Juxta Glomerular Apparatus –Structure and function. Renal circulation peculiarities.

Mechanism of Urine formation: Ultrafiltration criteria for filtration GFR, Plasma, fraction, EFP, factors effecting EFR. Determination of GFR selective reabsorption – sites of reabsorption, substance reabsorbed, mechanisms of reabsorption Glucose, urea.
H + Cl aminoacids etc. TMG, Tubular lead, Renal threshold % of reabsorption of different substances, selective e secretion.
Properties and composition of normal urine, urine output. Abnormal constituents in urine. Mechanism of urine concentration.

Counter – Current Mechanisms : Micturition, Innervation of Bladder, Cystourethrogram. Diuretics : Water, Diuretics, osmotic diuretics, Artificial kidney Renal function tests – plasma clearance Actions of ADH, Aldosterone and PTH on kidneys. Renal function tests.

Reproductive system
Function of Reproductive system, Puberty
Male reproductive system- Functions of testes, spermatogenesis site, stages, factors, influencing semen.
Endocrine functions of testes
Androgens – Testosterone structure and functions.
Female reproductive system. Ovulation, menstrual cycle. Physiological changes during pregnancy, pregnancy test.
Lactation : Composition of milk factors controlling lactation.

Muscle nerve physiology
Classification of muscle, structure of skeletal muscle, Sarcomere contractile proteins, Neuromuscular junction. Transmission across, Neuromuscular junction. Excitation contraction coupling. Mechanism of muscle contraction muscle tone, fatigue Rigour mortis.

Skin -structure and function
Body temperature measurement, Physiological variation, Regulation of body Temperature by physical chemical and nervous mechanisms .Role of Hypothalamus, Hypothermia and fever.

Practicals
Haemoglobinometry
White Blood Cell count
Red Blood Cell count
Determination of Blood Groups
Leishman's staining and Differential WBC count
Determination of packed cell Volume
Erythrocyte sedimentation rate [ESR]
Calculation of Blood indices
Determination of Clotting Time, Bleeding Time
Blood pressure Recording
Auscultation for Heart Sounds
Artificial Respiration
Determination of vital capacity

INTERNAL ASSESSMENT

Theory-average of 2 exams conducted	20
Practicals: record and lab work*	10

*There shall be no university practical examination and internal assessment marks secured in Practicals need not be sent to the university.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Short essay type	10 (attempt 8)	8 x 5	40
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Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

Distribution of Marks for University Theory and Practical Exam

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80	-	20	100	*			100

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Course Title: Biochemistry

Course Code: BMLT103

BIOCHEMISTRY I
No. Theory classes: 70 hours
No. Practical classes: 20 hours

I. Clinical Laboratory

- Responsibilities of health care personnel
- Laboratory hazards- Physical, Chemical and Biological. Laboratory safety measures- Safety regulations and first aid in laboratory

II. Laboratory apparatus : Different types, use, care and maintenance (Where appropriate, diagrams to be drawn in practical record)

- Glass ware in laboratory – Significance of boro silicate glass. Plastic ware in laboratory
- Cleaning of glass ware and plastic ware
- Pipettes - Glass and Automated
- Burettes, Beakers, Petri dishes, Porcelain dish
- Flasks - different types (volumetric, round bottomed, Erlenmeyer, conical etc.,)
- Funnels – different types (Conical, Buchner etc.,)
- Bottles – Reagent, Wash bottles
- Measuring cylinders, reagent dispensers
- Tubes – Test tube, Centrifuge tube, Folin-Wu tube
- Cuvettes and its use in measurements , cuvettes for visible and UV range
- Racks – Bottle, Test tube, Pipette and draining racks
- Tripod stand, Wire gauze, Bunsen burner, Dessicator, Stop watch, timers

III. Instruments: Use, care and maintenance (Where appropriate, pictures/diagrams and schematic diagrams to be drawn in practical record)

- Water bath, Oven & Incubators, Distillation apparatus - water distillation plant and water deionisers, Reflux condenser, Cyclomixers , Magnetic stirrer, Shakers
- Refrigerators, Deep freezers, Cold box
- Centrifuges*: Principle, Svedberg unit, centrifugal force, centrifugal field, rpm, Conversion of G to rpm and vice versa) Components, working.

Different types of centrifuges

- Laboratory balances*: Physical and analytical. Mono & double pan, Electronic balances. Weighing different types of chemicals, liquids, hygroscopic compounds etc. Precautionary measures while handling (Diagram)
- Photometry - Colorimeter*- Principle, limitations of Beer-lambert's law, components, working.
- pH meter*- Principle, components-pH measuring electrodes, Working, Precautions taken while handling. (Diagram of pH meter)

(*Diagrams mandatory)

IV. Units of measurement

- Metric system. Common laboratory measurements, Prefixes in metric system
- International system of units- SI units- definition, classification, Conversion of conventional and SI Units

V. Introduction to general Bio-molecules:

- Chemistry of carbohydrates: Classification (structures for monosaccharides*), Functions of carbohydrates
- Chemistry of amino acids*: Classification–based on structure and nutritional requirement, Occurrence. Functions of amino acids.
- Chemistry of lipids: Classification of lipids and fatty acids. Functions of lipids
- Chemistry of nucleotides*: Purine and Pyrimidine bases. Composition of nucleosides and nucleotides. Occurrence of bases.

*** Structures mandatory**

VI. Fundamental Chemistry

- Valency, Molecular weight & Equivalent weight of elements and compounds. Normality, Molarity, Molality.

VII. Solutions: Definition, use, classification where appropriate, preparation and storage

- Stock and working solutions.
- Molar and Normal solutions of compounds and acids. (NaCl, NaOH, HCl, H2SO4, H3PO4, CH3COOH etc.,)
- Preparation of percent solutions – w/w, v/v w/v (solids, liquids and acids), Conversion of a percent solution into a molar solution
- Saturated and supersaturated solutions
- Standard solutions. Technique for preparation of standard solutions and Storage. E.g: glucose, albumin etc.
- Dilutions- Diluting Normal , Molar and percent solutions. Preparing working standard from stock standard.
  Part dilutions: Specimen dilutions. Serial dilutions. Reagent dilution. Dilution factors

VIII. Acids, Bases, Salts and Indicators : Basic concepts. Determination of pH- Henderson Hasselbalch's equation. Buffer solutions. pH determination of buffers. Blood pH.
Fluid buffers.

IX. Biomedical waste management

ASSIGNMENT TOPICS:

- Radio active isotopes
- Arterial Blood gases

PRACTICAL DEMONSTRATION (Record book to be maintained)

- Laboratory apparatus - All glass ware and plastic ware (all appropriate diagrams in practical record)
- Water bath, Oven & Incubators, Water Distillation plant*, refrigerators, cold box, cool barns, reflux condensers.
- Preparation of solutions: 1N HCl, 1M NaOH. Standard solutions of glucose and albumin
- Centrifuges*- Technique of Centrifugation

B.Sc 1st year Medical Laboratory Technology

- Analytical balance* - Weighing of chemicals to prepare standard and different types of solutions. Care while weighing acids, deliquescent and hygroscopic compounds.
- Colorimeter* - Absorbance readings of a colored solution and graphing
- pH meter* - Checking pH of urine and buffer

Diagrams to be drawn

INTERNAL ASSESSMENT

Theory-average of 2 exams conducted	20
Practicals: record and lab work*	10

*There shall be no university practical examination and internal assessment marks secured in Practicals need not be sent to the university.

SCHEME OF EXAMINATION THEORY

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Biochemistry I shall be as given under

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
Short answer type	12 (attempt 10)	10 x 3	30
Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

Distribution of Marks for University Theory and Practical Exam

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80	-	20	100	*			100

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Course Title: Pathology(Clinical Pathology, Hematology & Blood Banking)

Course Code: BMLT104

I. Histopathology- Theory

- Introduction to Histopathology
- Receiving specimens in the laboratory
- Grossing techniques
- Mounting techniques- various mountants
- Maintenance of records and filing of slides
- Use and care of Microscope
- Various fixatives, mode of action, preparation and indications
- Biomedical waste management
- Section cutting
- Tissue processing for routine paraffin sections
- Decalcification of tissues
- Staining of tissues-H & E Staining

II. Clinical Pathology- Theory

- Introduction to clinical pathology
- Collection , transport, preservation and processing of various clinical specimens
- Urine examination- collection and preservation, Physical, chemical and microscopic examination for abnormal constituents
- Examination of Body fluids
- Examination of Cerebrospinal fluid (CSF)
- Sputum examination
- Examination of feces

III. Hematology – Theory

- Introduction to hematology
- Normal constituents of Blood, their structure and functions
- Collection of Blood samples
- Various anticoagulants used in Hematology
- Various instruments and glass ware used in Hematology, preparation and usage of glass wares
- Laboratory safety guidelines
- SI units and conventional units in Hospital laboratory
- Quality control of laboratory findings
- Hemoglobin estimation, different methods and normal values
- Packed cell volume

- Erythrocyte sedimentation rate
- Normal Haemostasis
- Bleeding time. Clotting time, prothrombin time, Activated partial Thromboplastin time

IV. Blood Bank- Theory

- Introduction blood banking
- Blood group system
- Collection and processing of blood for transfusion
- Compatibility testing
- Blood transfusion reactions

Practicals

1. Urine analysis- Physical, Chemical, Microscopic
2. Blood grouping and Rh typing
3. Hb estimation , packed cell volume (PCV), Erythrocyte Sedimentation rate (ESR)
4. Bleeding time and Clotting time
5. Histopathology- section cutting and H & E Staining (for BSc MLT only

INTERNAL ASSESSMENT

Theory-average of 2 exams conducted	20
Practicals: record and lab work*	10

*There shall be no university practical examination and internal assessment marks secured in Practicals need not be sent to the university.

SCHEME OF EXAMINATION THEORY

There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Pathology I shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
Short answer type	12 (attempt 10)	10 x 3	30
Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

Distribution of Marks for University Theory and Practical Exam

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80	-	20	100	*			100

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Course Title: Microbiology

Course Code: BMLT105

1. Introduction (6 hrs)

History of Microbiology, classification of microorganisms, use of microscope in the study of bacteria, Morphology of bacterial cell

2. Growth and nutrition (6 hrs)

Nutrition, growth and multiplication of bacteria, culture media and culture methods

3. Sterilization and disinfection (8 hrs)

Principles and use of equipments of sterilization, chemicals used in disinfection

4. Biomedical waste management principle and practice

5. Immunology (5 hrs)

Immunity, vaccines
Immunization schedule
Definition of Antigen, antibody, list of antigen antibody reactions.

5. Infection (5hrs)

Definition, types and mode of transmission
Hospital infections – causative agents, mode of transmission and prophylaxis
Antimicrobial susceptibility testing

6. Systematic bacteriology (15 hrs)

Disease caused and lab diagnosis of medically important bacteria (Staphylococcus, Streptococcus, Gonococcus, Echerichia coli, Salmonella, Shigella, Vibrio, Mycobacteria, Treponema, Leptospira) **(No need of classification, antigenic structure, virulence mechanism)**

7. Parasitology (10hrs)

Introduction to Parasitology
List of medically important parasites and diseases (E.histolytica, Plasmodium, W.bancrofti, Ascaris, Ancylostoma)
Lab diagnosis of parasitic infections

8. Virology (10hrs)

Introduction to virology
List of medically important viruses and diseases (AIDS, Hepatitis, Rabies, Polio, Arboviruses)
Lab diagnosis of viral infections

9. Mycology (5hrs)

Introduction to Mycology
List of medically important fungi and diseases (Candidiasis, Cryptococcosis, Dermatophytes, Aspergillosis and Mucor mycosis)
Lab diagnosis of fungal infections

PRACTICALS (20hrs)

Compound Microscope
Demonstration and sterilization of equipments
Demonstration of commonly used culture media and media with growth
Antibiotic susceptibility test
Demonstration of common serological tests –widal, VDRL,
Grams stain, Acid fast staining
Stool exam for Helminthic ova

INTERNAL ASSESSMENT

Theory-average of 2 exams conducted	20
Practicals: record and lab work*	10

*There shall be no university practical examination and internal assessment marks secured in Practicals need not be sent to the university.

SCHEME OF EXAMINATION THEORY
There shall be one theory paper of three hours duration carrying 80 marks. Distribution of type of questions and marks for Microbiology I shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
Short essay type	10 (attempt 8)	8 x 5	40
Short answer type	12 (attempt 10)	10 x 3	30
Short answer 5 Questions	07 (attempt 5)	5 x 2	10
Grand total			80

Distribution of Marks for University Theory and Practical Exam

Theory				Practicals			Grand total
Theory	Viva Voce	IA	Sub Total	Practicals	IA	Sub Total	
80	-	20	100	*			100

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Course Title: English

Course Code: BMLT106

COURSE OUTLINE

COURSE DESCRIPTION: This course is designed to help the student acquire a good command and comprehension of the English language through individual papers and conferences.

BEHAVIOURAL OBJECTIVES :

The student at the end of training is able to

1. Read and comprehend english language
2. Speak and write grammatically correct english
3. Appreciates the value of English literature in personal and professional life.

UNIT -I : INTRODUCTION :

Study Techniques

Organisation of effective note taking and logical processes of analysis and synthesis Use of the dictionary

Enlargement of vocabulary Effective diction

UNIT - II : APPLIED GRAMMAR :

Correct usage

The structure of sentences The structure of paragraphs

Enlargements of Vocabulary

UNIT - III : WRITTEN COMPOSITION :

Precise writing and summarising Writing of bibliography

Enlargement of Vocabulary

UNIT - IV : READING AND COMPREHENSION :

Review of selected materials and express oneself in one's words. Enlargement of Vocabulary.

UNIT - V : THE STUDY OF THE VARIOUS FORMS OF COMPOSITION :

Paragraph, Essay, Letter, Summary, Practice in writing

UNIT - VI : VERBAL COMMUNICATION :

Discussions and summarization, Debates, Oral reports, use in teaching

Scheme of Examination

Written (Theory): Maximum Marks: -80 marks

No Practical or Viva voce examination

This is a subsidiary subject, examination to be conducted by respective colleges. Marks required for a pass is 35%

Annexure to Notification No.F(Prescription-Syllabus/Paramedical Courses/Acad/KU/21 dated 23-02-2021

B.Sc 1st year Medical Laboratory Technology

Course Title: Health Care

Course Code: BMLT107

Introduction to Health

Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept. National Health Policy

National Health Programmes (Briefly Objectives and scope) Population of India and Family welfare programme in India

Introduction to Nursing

What is Nursing ? Nursing principles. Inter-Personnel relationships. Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Bed Side Management: Giving and taking Bed pan, Urinal : Observation of stools, urine. Observation of sputum, Understand use and care of catheters, enemagiving.

Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion Care of Rubber Goods

Recording of body temperature, respiration and pulse, Simple aseptic technique,

sterlization and disinfection. Surgical Dressing: Observation of dressing procedures

First Aid :

Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.