ANATOMY

No. of theory classes: 70 hours
No. of practical classes: 20 hours

1. 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, function
   Glands- classification, describe serous & mucous glands with examples
   Basic tissues – classification with examples
   Practical: Histology of types of epithelium
              Histology of serous, mucous & mixed salivary gland

2. Locomotion and support
   Theory:
   Cartilage – types with example & 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 & histology
   Names of muscles of the body
   Practical: Histology of the 3 types of cartilage
              Demo of all bones showing parts, radiographs of normal bones & joints
3. Cardiovascular system

Theory:
Heart-size, location, chambers, exterior & interior
Blood supply of heart
Systemic & 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 & thoracic duct
Histology of lymphatic tissues
Names of regional lymphatics, axillary and inguinal lymph nodes in brief

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

4. 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

5. **Respiratory system**
Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
Histology of trachea, lung and pleura
Names of paranasal air sinuses

**Practical:** Demonstration of parts of respiratory system.
Normal radiographs of chest
Histology of lung and trachea

6. **Peritoneum**
**Theory:** Description in brief
**Practical:** Demonstration of reflections

7. **Urinary system**
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

8. **Reproductive system**
**Theory:**
Parts of male reproductive system, testis, vas deferens, epididymis, prostate (gross & histology)
Parts of female reproductive system, uterus, fallopian tubes, ovary (gross & histology)
Mammary glad – gross
**Practical:** demonstration of section of male and female pelves with organs in situ
Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian
9. **Endocrine glands**

**Theory:**
Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal gland – (gross & histology)

**Practical:** Demonstration of the glands
Histology of pituitary, thyroid, parathyroid, suprarenal glands

10. **Nervous system**

**Theory:**
Neuron
Classification of NS
Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (gross & histology)
Meninges, Ventricles & cerebrospinal fluid
Names of basal nuclei
Blood supply of brain
Cranial nerves
Sympathetic trunk & names of parasympathetic ganglia

**Practical:** Histology of peripheral nerve & optic nerve
Demonstration of all plexuses and nerves in the body
Demonstration of all part of brain
Histology of cerebrum, cerebellum, spinal cord

1. **Sensory organs:**

**Theory:**
Skin: Skin-histology
Appendages of skin
Eye: parts of eye & lacrimal apparatus
Extra-ocular muscles & 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 & retina

2. Embryology

**Theory:**
Spermatogenesis & oogogenesis
Ovulation, fertilization
Fetal circulation
Placenta

**Internal Assessment**

| Theory - Average of two exams conducted | 10 |
| Record & Lab work                     | 10 |
| Total                                 | 20 |

**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.

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</table>
NO PRACTICAL EXAMINATION

REFERENCE BOOKS

Anatomy
1. William Davis (P) understanding Human Anatomy and Physiology MC Graw Hill

2. Chaursia – A Text book of Anatomy
   T.S. Ranganathan – A text book of Human Anatomy

3. Fattana, Human anatomy
   (Description and applied)
   Saund er’s & C P Prism Publishers,
   Bangalore – 1991

4. ESTER. M. Grishcimer,
   Physiology & Anatomy with Practical Considerations, J.P. Lippin Cott. Philadelphia

SYLLABUS FOR FIRST YEAR ALLIED SCIENCE COURSES - RGUHS

PHYSIOLOGY

Theory 70 hours
Practical 20 hours

Introduction – composition and function of blood
Red blood cells – Erythropoiesis , stages of differentiation function, count physiological Variation.
Haemoglobin – structure, functions, 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

6
clotting factors.

**Blood Bank**

Blood groups – ABO system, Rh system

Blood grouping & typing

Crossmatching

Rh system – Rh factor, Rh in compatibility.

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 sedementation 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 – Jugalar, 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
Pancrease – structure, function, composition, regulation of pancreatic juice
Liver – functions of liver
Bile secretion, composition, function regulation of bile secretion. Bilirubin metabolism types of bilirubin, Van der Beg reaction, Jaundice- types, significance.
Gall bladder – functions
Intestine – small intestine and large intestine
Small intestine – Functions- Digestive, 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. H
Transportation of Respiratory gases:

Lung volumes and capacities
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,
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
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-funtions. 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 nepran, vasarecta, cortical and
juxtamedullary nephrons – Comparision, Juxta Glomerular Apparatus –Structure and function.
Renal circulation peculiarities.
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, Cysteurethrogram.
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**

**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 two exams conducted. 10
Record & Lab work 10
Total 20

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.

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NO PRACTICAL EXAMINATION
REFERENCE BOOKS

Physiology

2. Chatterjee (CC) Human Physiology Latest Ed. Vol-1, Medical Allied Agency
3. Choudhari (Sujith K) Concise Medical Physiology Latest Ed. New Central Book,

SYLLABUS FOR ALLIED HEALTH SCIENCE COURSES RGUIHS

BIOCHEMISTRY

No. Theory classes : 70 hours
No. of practical classes : 20 hours

Theory:

1. Specimen collection : Pre-analytical variables
   Collection of blood
   Collection of CSF & other fluids
   Urine collection
   Use of preservatives
   Anticoagulants

2. Introduction to Laboratory apparatus
   Pipettes- different types (Graduated, volumetric, Pasteur, Automatic etc.,)
   Calibration of glass pipettes
   Burettes, Beakers, Petri dishes, depression plates.
   Flasks - different types )Volumetric, round bottmed, Erlemeyer conical etc.,)
Funnels – different types (Conical, Buchner etx..)
Bottles – Reagent bottles – graduated and common, Wash bottles – different type
Specimen bottles etc.,
Measuring cylinders, Porcelain dish
Tubes – Test tubes, centrifuge tubes, test tube draining rack
Tripod stand, Wire gauze, Bunsen burner.
Cuvettes, significance of cuvettes in colorimeter, cuvettes for visible and UV range, cuvette holders  Racks – Bottle, Test tube, Pipette
Dessicator, Stop watch, rimers, scissors
Dispensers – reagent and sample
Any other apparatus which is important and may have been missed should also be covered

Maintenance of lab glass ware and apparatus:
Glass and plastic ware in Laboratory
  *use of glass: significance of boro silicate glass ; care and cleaning of glass ware, different cleaning solutions of glass
  * care and cleaning of plastic ware, different cleaning solutions

3. **Instruments** (Theory and demonstration) Diagrams to be drawn
1. Water bath: Use, care and maintenance

  Oven & Incubators : Use, care and maintenance.
  Water Distillation plant and water deionisers. Use, care and maintenance
  Refrigerators, cold box, deep freezers – Use, care and maintainance
  Reflux condenser : Use, care and maintenance

2. Centrifuges (Theory and demonstration) Diagrams to be drawn
   Definition, Principle, svedberg unit, centrifugal force, centrifugal field rpm, ref.Conversion of G to rpm and vice versa.
   Different types of centrifuges
   Use care and maintenance of a centrifuge

3. Laboratory balances  [Theory & Practicals) Diagrams to be drawn
   - Manual balances: Single pan, double pan, trip balance
   - Direct read out electrical balances.
Use care and maintenance. Guideline to be followed and precautions to be taken while weighing
Weighing different types of chemicals, liquids, hygroscopic compounds etc.

4. Colorimeter and spectrophotometer (Theory and Practicals) Diagrams to be drawn
   Principle, Parts Diagram.
   Use, care and maintenance.

5. pH meter (Theory & practicals) Diagrams to be drawn
   Principle, parts, Types of electrodes, salt bridge solution.
   Use, care and maintenance of pH meter and electrodes
   Guidelines to be followed and precautions to be taken while using pH meter

4. Safety of measurements

5. Conventional and SI units

6. Atomic structure
   1. Dalton’s theory, Properties of electrons, protons, neutrons, and nucleus, Rutherford’s model
      of atomic structure, Bohr’s model of atomic structure, orbit and orbital, Quantum numbers,
      Heisenberg’s uncertainty principle.
   2. Electronic configuration – Aufbau principle, Pauli’s exclusion principle, etc.,
   3. Valency and bonds – different types of strong and weak bonds in detail with examples

1. Theory & Practicals for all the following under this section
   1. **Molecular weight**, equivalent weight of elements and compounds, normality, molarity
      Preparation of molar solutions (mole/litre solution) eg: 1 M NaCl, 0.15 M NaCl
      1 M NaOH, 0.1 M HCl, 0.1 M H2SO4 etc.,

      **preparation of normal solutions**. eg., IN Na2CO3, O IN Oxalic acid, 0.1 N HCl, 0.1N H2SO4, 0.66 N H2SO4 etc.,

   2. **Percent solutions**. Preparation of different solutions – v/v w/v (solids, liquids, and acids)
      Conversion of a percent solution into a molar solution

   3. **Dilutions**
      Diluting solutions: eg. Preparation of 0.1 N NaCl from 1 N NaCl from 2 NHCl etc.,
      Preparing working standard from stock standard, Body fluid dilutions, Reagent dilution
      techniques, calculating the dilution of a solution, body fluid reagent etc.,
4. **Saturated and supersaturated solutions.**

   **Standard solutions.** Technique for preparation of standard solutions eg: Glucose, urea, etc., Significance of volumetric flask in preparing standard solutions. Volumetric flasks of different sizes, Preparation of standard solutions of deliquescent compounds (CaCl2, potassium carbonate, sodium hydroxide etc.,)

   Preparation of standards using conventional and SI units

2. **Acids, bases, salts and indicators.**

   Acids and Bases: Definition, physical and chemical properties with examples.

   Arrenhius concept of acids and bases, Lowery – Bronsted theory of acids and bases classification of acids and bases. Different between bases and alkali, acidity and basicity, monoprotonic and polyprotomic acids and bases

   Concepts of acid base reaction, hydrogen ion concentration, Ionisation of water, buffer, Ph value of a solution, preparation of buffer solutions using Ph meter.

   Salts: Definition, classification, water of crystallization – definition and different types, deliquescent and hygroscopic salts

   **Acid-base indicators: (Theory and Practicals)**

   Theory – Definition, concept, mechanism of dissociation of an indicator, colour change of an indicator in acidic and basic conditions, use if standard buffer solution and indicators for Ph determinations, preparation and its application, list of commonly used indicators and their Ph range, suitable pH indicators used in different titrations, universal indicators

   Practicals – Titration of a simple acid and a base (Preparation of standard solution of oxalic acid and using this solution finding out the normality of a sodium hydroxide solution. Acid to be titrated using this base) Calculation of normality of an acid or a base after titration, measurement of hydrogen ion concentration

**Quality control:**

- Accuracy
- Precision
Specificity
Sensitivity
Limits of error allowable in laboratory
Percentage error

Normal values and Interpretations

Special Investigations: Serum Electrophoresis
Immunoglobulins
Drugs: Digitoxin, Theophyllines

3. Regulation of Acid Base status:
   Henderson Hasselback Equations
   Buffers of the fluid
   pH Regulation
   Disturbance in acid Base Balance
   Anion Gap
   Metabolic acidosis
   Metabolic acidosis
   Metabolic alkalosis
   Respiratory acidosis
   Respiratory alkalosis

4. Basic Principles and estimation of Blood Gases and pH

5. Basic principles and estimation of Electrolytes
   Water Balance
   Sodium regulation
   Bicarbonate buffers

6. Nutrition, Nutritional support with special emphasis on parental nutrition.
   Calorific Value
   Nitrogen Balance
   Respiratory Quotient
   Basal metabolic rate
   Dietary Fibers
   Nutritional importance of lipids, carbohydrates and proteins
Vitamins

**PRACTICALS**

1. Analysis of Normal Urine
   - Composition of urine
   - Procedure for routine screening
   - Urinary screening for inborn errors of metabolism
   - Common renal disease
   - Urinary calculus

2. Urine examination for detection of abnormal constituents

3. Interpretation and Diagnosis through charts
   a. Liver Function tests
   b. Lipid Profile
   c. Renal Function test
   d. Cardiac markers
   e. Blood gas and Electrolytes

4. Estimation of Blood sugar, Blood Urea and electrolytes

5. Demonstration of Strips

7. Demonstration of Glucometer

**Internal Assessment**

Theory - Average of two exams conducted. 10
Record &Lab work[4+6] 10
Total 20
Scheme of Examination

Theory

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NO PRACTICAL EXAMINATION

REFERENCE BOOKS

Biochemistry

1. Varley – Clinical chemistry
2. TEITZ – Clinical chemistry
3. Kaplan – Clinical chemistry
4. Ramakrishna(S) Prasanna( KG), Rajna ® Text book of Medical Biochemistry Latest Ed Orient longman Bombay –1980
5. Vasudevan (DM) Sreekumari(S) Text book of Biochemistry for Medical students ,Latest Ed
Syllabus for first year Allied science courses  
RGUHS  
PATHOLOGY

Histo Pathology, Clinical Pathology, Haematology and Blood Banking

Theory – 70 hours
Practical – 20 hours

HistoPathology - Theory
- Introduction to Histo Pathology
- Receiving of Specimen in the laboratory
- Grossing Techniques
- Mounting Techniques – various Mountants
- Maintenance of records and filing of the slides.
- Use & care of Microscope
- Various Fixatives, Mode of action, Preparation and Indication.
- Bio-Medical waste management
- Section Cutting
- Tissue processing for routine paraffin sections
- Decalcification of Tissues.
- Staining of tissues - H& E Staining
- Bio-Medical waste management

Clinical Pathology – Theory
- Introduction to Clinical Pathology
- Collection, Transport, Preservation, and Processing of various clinical specimens
- Urine Examination – Collection and Preservation of urine.  
  Physical, chemical, Microscopic Examination
- Examination of body fluids.
- Examination of cerebro spinal fluid (CSF)
- Sputum Examination.
- Examination of feces
Haematology – Theory
- Introduction to Haematology
- Normal constituents of Blood, their structure and function.
- Collection of Blood samples
- Various Anticoagulants used in Haematology
- Various instruments and glassware used in Haematology, Preparation and use of glassware
- Laboratory safety guidelines
- SI units and conventional units in Hospital Laboratory
- Hb, PCV
- ESR
- Normal Haemostasis
  Bleeding Time, Clotting Time, Prothrombin Time, Activated Partial Thromboplastin Time.

Blood Bank
  Introduction
  Blood grouping and Rh Types
  Cross matching

PRACTICALS
- Urine Examination.
- Physical
- Chemical
- Microscopic
- Blood Grouping Rh typing.
- Hb Estimation, Packed Cell Volume [PCV], Erythrocyte Sedimentation rate [ESR]
- Bleeding Time, Clotting Time.
- Histopathology – Section cutting and H & E Staining. [For BSc MLT only]

Internal Assessment
Theory - Average of two exams conducted. 10
Record & Lab work [4+6] 10
Total 20

Scheme of Examination  Theory
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REFERENCE BOOKS

Pathology –

1. Culling Histopathology techniques
2. Bancroft Histopathology techniques
3. Koss – cytology
4. Winifred greg – Diagnostic cytopathology
5. Orell – Cyto Pathology
6. Todd & Sanford Clinical Diagnosis by laboratory method
7. Dacie & Lewis – Practical Haematology

Syllabus for BSc. Allied Science Courses - RGHUS

Microbiology

Objective: This course introduces the principles of Microbiology with emphasis on applied aspects of Microbiology of infectious diseases particularly in the following areas

2. Collection and despatch of specimens for routine microbiological investigations.
3. Interpretation of commonly done bacteriological and serological investigations.

4. Control of Hospital infections

5. Biomedical waste management

6. Immunization schedule

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<td>Classification of microorganisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria.</td>
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<td><strong>2. Growth and nutrition</strong></td>
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<td>Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic bacteriology.</td>
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<tr>
<td><strong>3. Sterilisation and Disinfection</strong></td>
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<td>Principles and use of equipments of sterilization namely Hot Air oven, Autoclave and serum inspissator. Pasteurization, Anti septic and disinfectants. Antimicrobial sensitivity test</td>
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<tr>
<td><strong>4. Immunology</strong></td>
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<tr>
<td>Immunity Vaccines, Types of Vaccine and immunization schedule Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASLO, CRP, RF &amp; ELISA. Rapid tests for HIV and HbsAg(Technical details to be avoided)</td>
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<td><strong>5. Systematic Bacteriology</strong></td>
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<td>Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (the classification, antigenic structure and pathogenicity are not to be taught) Staphylococci, Streptococci, Pneumococci, Gonococci, Menigococci, C diphtheriae, Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, Esch coli, Klebsiella, Proteus, vibrio cholerae, Pseudomonas &amp; Spirochetes</td>
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<td><strong>6. Parasitology</strong></td>
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<td>Morphology, life cycle, laboratory diagnosis of following parasites E. histolytica, Plasmodium, Tape worms, Intestinal nematodes</td>
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<td><strong>7. Mycology</strong></td>
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<td>Morphology, diseases caused and lab diagnosis of following fungi Candida, Cryptococcus, Dermatophytes, opportunistic fungi.</td>
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<td><strong>8. Virology</strong></td>
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<td>Morphology, life cycle, laboratory diagnosis of following viruses</td>
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</tbody>
</table>
General properties of viruses, diseases caused, lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.

9. **Hospital infection**  Causative agents, transmission methods, investigation, prevention and control Hospital infection.  4 hours

10. **Principles and practice  Biomedical waste management**  4 hours

**Practical**  20 hours

1. Compound Microscope.
2. Demonstration and sterilization of equipments – Hot Air oven, Autoclave, Bacterial filters.
3. Demonstration of commonly used culture media, Nutrient broth, Nutrient agar, Blood agar, Cholate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, NA with staph
4. Antibiotic susceptibility test
5. Demonstration of common serological tests – Widal, VRDL, ELISA.
6. Grams stain
7. Acid Fast staining
8. Stool exam for Helminthic ova
9. Visit to hospital for demonstration of Biomedical waste mangement.
10. Anaerobic culture methods.

**Internal Assessment**

<table>
<thead>
<tr>
<th>Type of Questions</th>
<th>No. of Questions</th>
<th>Marks</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory - Average of two exams conducted.</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record &amp; Lab work[4+6]</td>
<td>10</td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>20</td>
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</table>

**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.
<table>
<thead>
<tr>
<th>Long Essay (LE)</th>
<th>2</th>
<th>10</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Essay (SE)</td>
<td>6</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Short Answer (SA)</td>
<td>10</td>
<td>3</td>
<td>30</td>
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<tr>
<td><strong>Total Marks</strong></td>
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<td></td>
<td><strong>80</strong></td>
</tr>
</tbody>
</table>

**NO PRACTICAL EXAMINATION**

**REFERENCE BOOKS**

**Microbiology**

1. Ananthanarayana&Panikar Medical Microbiology
2. Robert Cruckshank – Medical Microbiology – The practice of Medical Microbiology
3. Chatterjee – Parasitology – Interpretation to Clinical medicine.
4. Rippon – Medical Mycology
5. Emmons – Medical mycology
7. Basic laboratory procedures in clinical bacteriology 1st Ed, J.P. Brothers, New Delhi –
8. Medical Parasitology – Ajit Damle