



UNIVERSITY OF JAMMU

(NAAC ACCREDITED A+ GRADE UNIVERSITY)
Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

NOTIFICATION

(20/Jul/Adp/II)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Competent Bodies, has been pleased to authorize the adoption of Regulations & Curriculum governing the degree of **Bachelor of Science in Radiography (B.Sc. Radiography)** from the Academic Session 2020-21 onwards as given in the Annexure-I & II.

The Regulations & Curriculum of the course is available on the University Website: www.jammuuniversity.ac.in.

Sd/-
DEAN ACADEMIC AFFAIRS

No. F.Acd/III/20/1217-1222
Dated: 07/08/2020

Copy for information & necessary action to:-

1. Dean Faculty of Medical Sciences
2. Principal, GMC, Jammu
3. C.A to the Controller of Examinations
4. Assistant Registrar (Exams/Confidential)
5. Incharge University Website

Sumita sharma
Deputy Registrar (Academic)
5/8/2020
[Signature]
5/8/20

**Regulations & Curriculum for Bachelor of Science
Degree Courses In**

B.Sc Radiography

Courses offered in Allied Health Sciences:

1. B.Sc Medical Lab Technology.
2. B.Sc Radiography.
3. B.Sc Cardiac Care Technology
4. B.Sc Operation Theatre.
5. B.Sc Respiratory Care Technology.
6. B.Sc Anesthesia Technology.
7. B.Sc Neuro Sciences Technology.
8. B.Sc Renal Dialysis.

A. INTRODUCTION

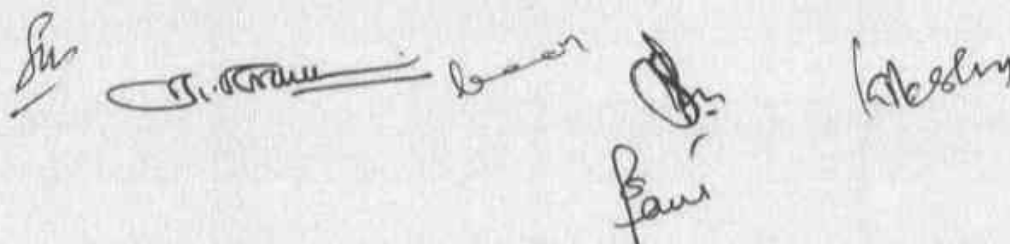
B.Sc (Allied Health Sciences) course is aimed at training students to prepare them as qualified physician assistants who will be able to meticulously assist the concerned specialist in handling the various illnesses. This program is a taught course that covers relevant topics and specialized areas of knowledge as opted. The aim of this B.Sc Program is to provide a through training to the candidates through formal lectures and or seminars and practical programs which culminate in a internship course that finally prepares the student for the rigors of the medical world.

B. SHORT TITLE AND COMMENCEMENT

These Regulations shall be called the "Regulations for B.Sc (Allied Health Sciences) Course". These regulations shall be deemed to have come into force from the academic year _____. These regulations are subject to modifications as may be approved by the concerned faculty / Board of studies from time to time.

C. ELIGIBILITY FOR ADMISSION

- a) A candidate seeking admission to the Bachelor of Science Degree Courses in the Allied Health Sciences course from Sl.No. 1 to 8 shall have passed the 10+2 or equivalent examination from a recognized Board / University with Physics, Chemistry & Biology as principle subjects of study.



- b) Lateral entry to second year for allied health science courses for candidates who have passed diploma program from the Government Boards and recognized by Jammu and Kashmir State Paramedical Council and shall have passed 10+2 with Physics, Chemistry & Biology as principal subjects and these students are eligible to take admission on lateral entry system only in the same subject studied at diploma level.

NOTE:

- a. The candidate shall have passed individually in each of the principal subjects.
- b. Candidates who have completed diploma or vocational course through Correspondence shall not be eligible for any of the courses mentioned above.
- c. A candidate should have completed the age of 17 Years as on 31st December of the year of admission.

D. DURATION OF THE COURSE

Duration shall be for a period of three and half years including six months of Internship.

E. MEDIUM OF INSTRUCTION

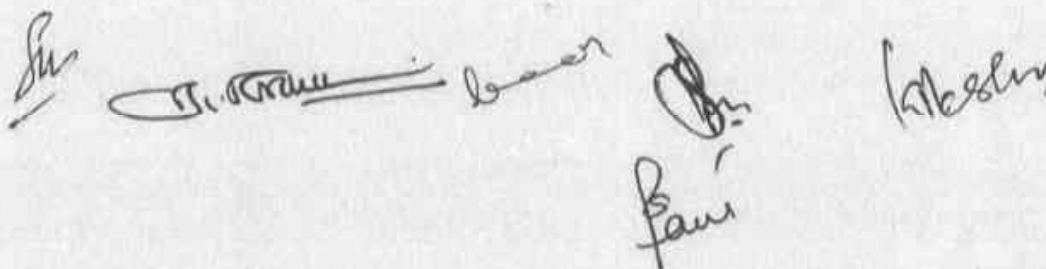
The medium of instruction and examination shall be in English.

F. SCHEDULE OF EXAMINATION

The University shall conduct two examinations annually at an interval of not less than 4 to 6 months as notified by the university from time to time. A candidate who satisfies the requirement of attendance, progress and conduct as stipulated by the university shall be eligible to appear for the university examination. Certificate to that effect shall be produced from the head of the institution along with the application for examination and the prescribed fee.

G. SCHEME OF EXAMINATION

There shall be three examinations one each at the end of 1st, 2nd and 3rd year.



± ELIGIBILITY FOR THE EXAMINATION :

The Examination each year shall be open to :

- a) A regular student who produces the following certificates signed by the Head of the Department / Principal of the College :
 - i. Certificate of good character.
 - ii. Certificate that the student attended the required number of lectures as prescribed under statutes.
 - iii. Certificate that the student has qualified the sessionals / Clinicals etc.
- b) A candidate who has otherwise eligible to appear in the Examination in the particular year but :
 - i. Could not appear due to genuine reason (to be certified by an appropriate authority.
 - ii. Was unable to pass the examination in any paper (s).

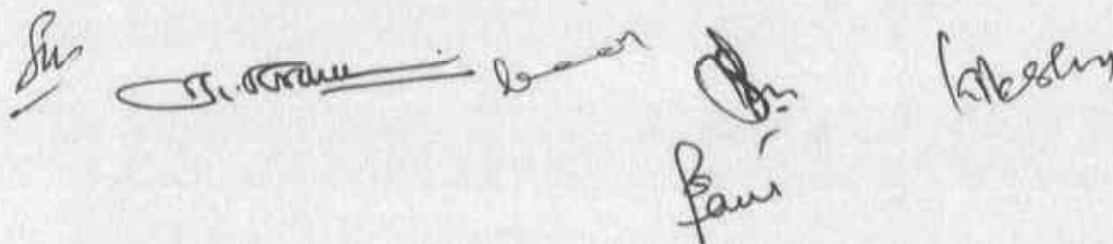
H. ATTENDANCE

Every candidate should have attended at least 80% of the total number of classes conducted in an academic year from the date of commencement of the term to the last working day as notified by university in each of the subjects prescribed for that year separately in theory and practical. Only such candidates are eligible to appear for the university examinations in their first attempt. A candidate lacking in prescribed percentage of attendance in any subjects either in theory or practical in the first appearance will not be eligible to appear for the University Examination in that subject. The discretionary power of condonation of shortage of attendance to appear for University Examination rests with the University.

± CONDONATION :

Not with standing anything contrary contained in any provision of these statutes where any candidate falls short of attendance in any year it may be condoned after sufficient cause is shown by him/her in writing in this regard :

- a) By the Head of the Department / Principal of the College up to maximum of 5% of the total lectures delivered in all the papers. In addition to this a maximum of 5% of the total lectures delivered may also be condoned by the Vice-Chancellor.



Provided that no condition in shortage shall be permitted by the Vice-Chancellor unless endorsed and recommended by the Head of the Department / Principal of the College.

4 PARTICIPATION IN SPORTS EVENTS :

- i. Not with standing anything contrary contained in these statutes, where a candidate participates in any one or more of the activities as specified in the University statutes, he/she may be treated as present on all working days not exceeding 30 days in one academic year.
- ii. The Candidate participating in such event must produce a copy of certificate to the Head of the Department / Principal of the College within seven days from the end of the event, failing which no such benefit shall be given.
- iii. The authority competent to issue the candidate participation certificate shall bring to the notice of the Head of the Department, name, roll no. of the candidate and the date(s) on which the activities were conducted within a week's period from the end of the event.

I. INTERNAL ASSESSMENT (IA)

Theory - 20 marks.

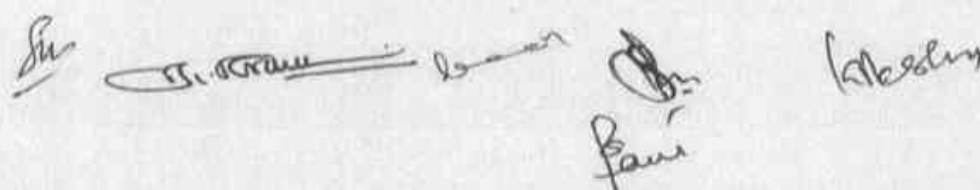
Practical - 10 marks. [Lab work- 06 marks and Record-04 marks]

There shall be a minimum of two periodical tests preferably one in each term in theory and practical of each subject in an academic year. The average marks of the two tests will be calculated and reduced to 20. The marks of IA shall be communicated to the University at least 15 days before the commencement of the University examination. The University shall have access to

the records of such periodical tests.

The marks of the internal assessment must be displayed on the notice board of the respective colleges with in a fortnight from the date test is held.

If a candidate is absent for any one of the tests due to genuine and satisfactory reasons, such a candidate may be given a re-test within a fortnight.



* There shall be no University Practical Examination in First year.

J. CURRICULUM

Subject and hours of teaching for Theory and Practicals

The number of hours of teaching theory and practical, subject wise in first year, second year and third year are shown in Table-I, Table-II and Table-III

Main and Subsidiary subjects are common in first year for all the courses in Allied Health Science.

The number of hours for teaching theory and practical for main subjects in first, Second and Third year are shown in Table-I, II and III.

Table – I Distribution of Teaching Hours in First Year Subjects

Main Subjects

S.No	Subject	Theory No. of Hours	Practical No. of Hours	Total No. of Hours.
1	Human Anatomy	70	20	90
2	Physiology	70	70	90
3	Biochemistry	70	20	90
4	Pathology – [Clinical Pathology, Hematology & Blood Banking]	70	20	90
5	Microbiology	70	20	90
	Total	350	100	450

The classes in main and subsidiary subjects are to be held from Monday to Thursday. On Fridays and Saturdays students shall work in hospitals in the respective specialty or department chosen by them

Subsidiary Subjects

English 25 Hours

Health-Care 40 Hours

Hospital posting – 470 Hours Fri day 9am - 1pm and 2pm - 4-30 pm
Saturday 9am - 1pm

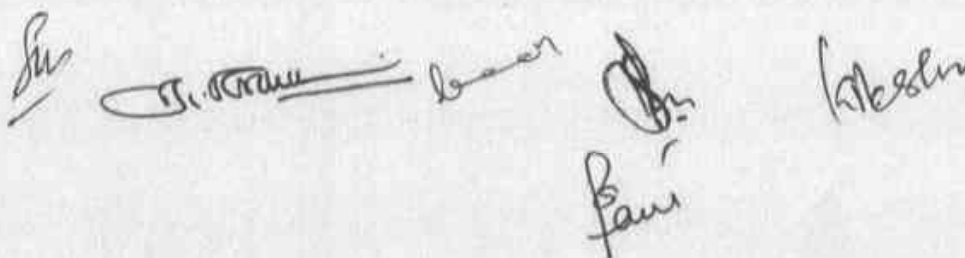


Table – II Distribution of Teaching Hours in Second Year Subjects

Main Subjects

S.No	Subject	Theory No. of Hours	Practical No. of Hours	Clinical posting	Total No. of Hours.
1	Physics of Radiology, Radiation Physics & Medical Physics	100	No Practicals		100
2	Radiographic Techniques I*	100	540 Hospital Postings		640
3	Radiographic Photography and Image Processing	100	240		340

Subsidiary Subjects

Sociology 20 Hours

Constitution of India 10 Hours

Environmental Science & Health 10 Hours

Table – III Distribution of Teaching Hours in Third Year Subjects

Main Subjects

S.No	Subject	Theory No. of Hours	Practical No. of Hours	Clinical posting	Total No. of Hours.
1	Diagnostic Imaging Techniques	200	340		540
2	Radiographic Techniques II	100	440		540

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Subsidiary Subjects

Biostatistics	20 Hours
Computer application	10 Hours

*** There shall be no University Practical Examination in First year.**

K SCHEME OF EXAMINATION

There shall be three examinations, one each at the end of I, II and III year. The examination for both main and subsidiary subjects for all courses in Allied Health Sciences shall be common in the first year. Distribution of Subjects and marks for First Year, Second year & Third year University theory and practical Examinations are shown in the Table - IV, V & VI.

First year examination:

The University examination for 1st year shall consist of only theory examination and there shall be no University Practical Examination.

Second & Third year examination:

The University examination for 2nd and 3rd year shall consist of Written Examination & Practical.

Written Examinations consists of :

04 papers in the 2nd Year

02 papers in the 3rd Year.

Practical examination:

One combined practical examination, at the end 2nd Year and one combined practical examination at the end of the 3rd Year.

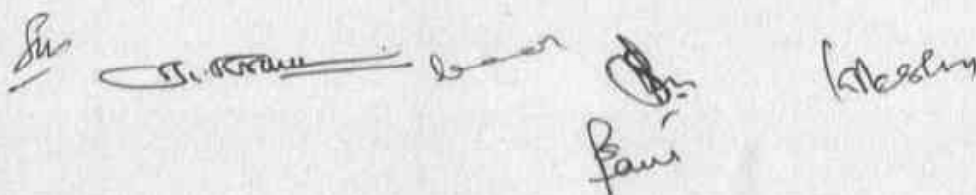


Table – IV Distribution of Subjects and marks for First Year University theory Examination.

A	Main Subject *	Written Paper		Internal Assessment	Total
		Duration	Marks	Theory (Marks)	Marks
1	Basic Anatomy [Including Histology]	3 Hours	80	20	100
2	Physiology	3 Hours	80	20	100
3	Biochemistry	3 Hours	80	20	100
4	Pathology	3 Hours	80	20	100
5	Microbiology	3 Hours	80	20	100
B	Subsidiary Subject **				Total
1	English	3 Hours	80	20	100
2	Health Care	3 Hours	80	20	100

Note * IA = Internal Assessment

Main Subjects shall have University Examination.

** Subsidiary subjects: Examination for subsidiary

Subjects shall be conducted by respective colleges.

Table – V Distribution of Subjects and marks for Second Year Examination.

Paper	Subjects	Theory		IA	Sub Total	Practicals			
		Theory	Viva-Voca			Univ Practicals	IA	Sub total	Grand Total
1	Sec A :- Physics of Radiology Sec B :- Radiation Physics & Medical Physics	80 (40 + 40)	-	20 (10 + 10)	100	No Practicals			300
2	Radiographic Photography & Imaging Processing	60	20	20	100	80	20	100	
3	Sec. B : Principles of Radiotherapy	30	10	10	100	80	20	100	300

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Table – VI Distribution of Subjects and marks for Third Year Examination.

Paper	Subjects	Theory		IA	Sub Total	Practicals			
		Theory	Viva-Voca			Univ Practical	IA	Sub total	Grand Total
1	Diagnostic Imaging Techniques	60	20	20	100	80	20	100	300
2	Sec A – Radiographic Techniques I Sec B – Radiographic Techniques II	60 (30 + 30)	20 (10 + 10)	20 (10 + 10)	100				

L BOARD OF EXAMINERS FOR PRACTICALS :

- i. Subject to the provisions of these statutes and regulations made thereunder, there shall be a Board of Examiners to conduct viva- voce at the end of every year to evaluate the understanding and comprehension of a candidate in subject(s) taught during that year.
- ii. The Board of examiners shall consist of
 - a. Dean of the Faculty or his/her nominee.
 - b. Head of the Department / Principal of the College.
 - c. External Examiners(s)
- iii. The external examiner shall be chosen out of the panel recommended by the Head of the Department / Principal of the College and approved by the Vice-Chancellor.
- iv. The quorum for the conduct of examination by the Board of Examiners shall be at least 2 including External Examiners.

M APPOINTMENT AND ELIGIBILITY OF EXAMINERS:

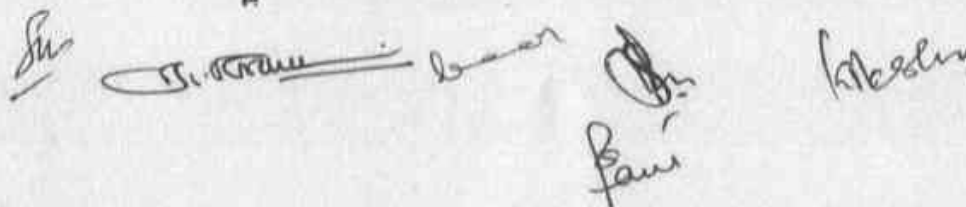
No person shall be appointed as an examiner in any of the subjects of the professional examinations leading to the award of the degree unless :

- a) He / She has at least five years teaching experience in the subject concerned in a College affiliated to a recognized University as a Faculty member.
- b) If of the rank of an Associate Professor or equivalent and above, with the requisite qualification and experience as given in above sub – clause

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- a. Provided that when an Associate Professor or equivalent and above are not available, an Assistant Professor of 5 Years standing as an Assistant Professor with requisite Qualification and Experience in the subject may be appointed as examiner.
- c) There shall be at least four examiners for upto 100 Students, out of whom not less than 50% must be external examiners. Of the four examiners, the senior – most internal examiner will act as the Chairman and Co-Coordinator of the whole examination programme so that uniformity in the matter of assessment of candidate is maintained. Where candidates appearing are more than 100, two additional examiners (One external and one Internal) for every additional 50 or part thereof appearing , appointed. However, for students upto 50 there shall be two examiners one external and one internal.
- d) Notwithstanding the number of candidates registered for the examination, one external examiner and one internal examiner who shall be the senior of the two internal examiners, in case of more than 100 students, will set and assess one question paper each (Where there are two papers in a subject) or one part of a question paper (where there is only one question paper in the subject). Senior most internal examiner of affiliated College shall be Chairman of the board of paper setters and act as moderator by rotation for one year.
- e) The external examiner shall ordinarily be an in-service teacher in the subject or an allied subject from any college affiliated to a recognized University (Other than Jammu University) Post Graduate Institute.
- f) External examiners (s) shall rotate after two years.
- g) In the case of non-availability of an examiner in a subject, a retired teacher with requisite qualification and teaching experience may be appointed either as external or internal examiner within seven years of super annuation.
- h) The Practical / Clinical and oral examination in each subject shall be conducted jointly by the external and internal examiner(s) and the award sheet containing the marks of practical and / or clinical (including the internal assessment) shall be compiled and signed by all the external and internal

A



examiner(s) before it is submitted to the University by the senior-most internal examiner of each affiliated college.

- i) Award sheet containing marks of theory along with duly evaluated and signed answer scripts shall be submitted to the University separately by each examiner.
- j) External examiner(s) shall rotate after two years.
- k) External examiners shall not be from the same University.
- l) Interpretation , if any shall be determined by the Vice-Chancellor in consultation with the Dean, Faculty of Medical Sciences and the decision taken shall be final and binding on all concerned.

N PASS CRITERIA

First year examination.

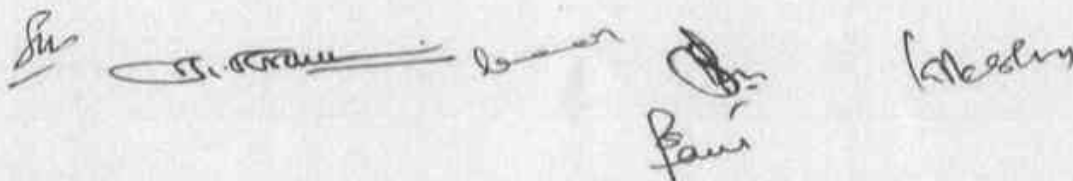
a. **Main Subjects:** A candidate is declared to have passed in a subject, if he/she secures, 50% of marks in University Theory exam and internal assessment added together.

b. **Subsidiary Subjects:** The minimum prescribed marks for a pass in subsidiary subject shall be 35% of the maximum marks prescribed for a subject. The marks obtained in the subsidiary subjects shall be communicated to the University before the Commencement of the University examination.

Second and Third year Examination

a. **Main Subjects:** A candidate is declared to have passed the Examination in a subject if he/she secures 50% of the marks in theory and 50% in practical separately. For a pass in theory, a candidate has to secure a minimum of 40% marks in the University conducted written examination, and 50% in aggregate in the University conducted written examination, internal assessment and Viva-Voce added together and for pass in Practical, a candidate has to secure a minimum of 40% marks in the university conducted Practical/Clinical examination and 50% in aggregate i.e. University conducted Practical/Clinical and Internal Assessment. In the third year a candidate is declared to have passed only if he/she passes all the two theory papers and one practical examination in a single attempt failing which where in the candidate fails in one or more theory papers and /or practical examination he/she will have to re appear for all the two theory papers and the practical examination in the subsequent attempt.

b. **Subsidiary Subjects:** The minimum prescribed marks for a pass in subsidiary subject shall be 35% of the maximum marks prescribed for a subject. The marks



obtained in the subsidiary subjects shall be communicated to the University before the commencement of the University examination.

O CARRY OVER BENEFIT

First year examination:

A candidate who fails in any two of the five main subjects of first year shall be permitted to carry over those subjects to second year. However, he/she must pass the carry over subjects before appearing for second year examination; otherwise he/she shall not be permitted to proceed to third year.

Second year examination.

A candidate is permitted to carry over any one main subject to the third year but shall pass this subject before appearing for the third year examination

P ELIGIBILITY FOR THE AWARD OF DEGREE

A candidate shall have passed in all the subjects of first, second and third year to be eligible for award of degree.

Distribution of Type of Questions and Marks for various Subjects

Max – Marks : 80 Duration : 3 Hrs

Type of Question	Number of Questions	Marks for each question	Total
Long Essay	3 (2 X10)	10	20
Short Essay Type	8 (6 x 5)	5	30
Short Answer Type	12 (10 x 3)	3	30

Max – Marks :60 Duration : 3 Hrs

Type of Question	Number of Questions	Marks for each question	Total
Long Essay	3 (2 X10)	10	20
Short Essay Type	7 (5 x 5)	5	25
Short Answer Type	7(5 x 3)	3	15

Max – Marks: 60 (30 +30) Duration : 3 Hrs

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Type of Question	Number of Questions	Marks for each question	Total
Long Essay	2 (2 X 10) + 2 (1 X 10)	10	20
Short Essay Type	3 (2 x 5) + 3 (2 x 5)	5	20
Short Answer Type	6 (5 x 2) + 6 (5 x 2)	2	20

Su

Dr. K. Ravi honor

Dr.
Ravi

Arshad

Members of Board of Studies

Dr Sunanda Raina

Convener

Paul

Smt.Shakuntla Sharma

Member

Shakuntla S.

Mr. J.C. Frank

Member

Mr. J.C. Frank

Smt Munni Dhar

Member

Munni Dhar

Smt.Sonam Sharma

Member

Sonam Sharma

Smt.Rafiqa Bashir

Member

Rafiqa Bashir

Smt. Rajni Sharma

Member

Rajni Sharma

B.SC RADIOGRAPHY TECHNOLOGY

COURSE CODE FOR B.SC RADIOGRAPHY TECHNOLOGY COURSE

YEAR	COURSE TITLE	COURSE CODE
FIRST YEAR	Human Anatomy	BRT101
	Physiology	BRT102
	Biochemistry	BRT103
	Pathology – [Clinical Pathology, Hematology & Blood Banking	BRT104
	Microbiology	BRT105
	English	BRT106
	Health Care	BRT107
SECOND YEAR	Physics of Radiology, Radiation Physics & Medical Physics	BRT201
	Radiographic Techniques I	BRT202
	Radiographic Photography and Image Processing	BRT203
	Sociology	BRT204
	Constitution of India	BRT205
	Environmental Science & Health	BRT206
THIRD YEAR	Diagnostic Imaging Techniques	BRT301
	Radiographic Techniques II	BRT302
	Biostatics	BRT303
	Computer Application	BRT304

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Anatomy

COURSE CODE: BRT101

DURATION OF EXAMINATION: 3 HOURS

COURSE DESCRIPTION

No. of Theory Classes : 70 Hours

No. of Practical Classes : 20 Hours

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
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
Histology of Compact Bone (Ts & Ls)
Demonstration of All Muscles of The Body
Histology of Skeletal (Ts & Ls), Smooth & Cardiac Muscle

3. Cardiovascular System

Theory:

Heart-Size, Location, Chambers, Exterior & Interior

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Human Anatomy

COURSE CODE: BRT101

DURATION OF EXAMINATION: 3 HOURS

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

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Human Anatomy

COURSE CODE: BRT101

DURATION OF EXAMINATION: 3 HOURS

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 Tubes, Ovary
Radiographs of Pelvis - Hysterosalpingogram

9. Endocrine Glands

Theory:

Names of All Endocrine Glands In Detail On Pituitary Gland, Thyroid Gland, Parathyroid Gland,
Suprarenal Glad - (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

Sensory Organs:

Theory:

Skin: Skin-Histology
Appendages of Skin

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Human Anatomy

COURSE CODE: BRT101

DURATION OF EXAMINATION: 3 HOURS

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

Embryology

Theory:

Spermatogenesis & Oogenesis
Ovulation, Fertilization
Fetal Circulation
Placenta

Internal Assessment

Theory - Average of Two Exams Conducted	20
Practicals: Record & 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.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (2 x 10)	10	20
SHORT ESSAY (SE)	8 (6 x 5)	5	30
SHORT ANSWER (SA)	12 (10 x 3)	3	30
TOTAL MARKS			80

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BRT102

DURATION OF EXAMINATION: 3 HOURS

PHYSIOLOGY

Theory 70 Hours

Practical 20hours

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 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 Sedimentation Rate (Esr) And Packed 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.

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BRT102

DURATION OF EXAMINATION: 3 HOURS

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, Vandenberg 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 :

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. Hering Breuer, 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

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BRT102

DURATION OF EXAMINATION: 3 HOURS

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, Neurone 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 Neuron, Vasorecta, Cortical And Juxtamedullary Nephrons - Comparison, Juxta Glomerular Apparatus - Structure And Function, Renal Circulation Peculiarities.

Mechanism Of Urine Formation : Ultrafiltration Criteria For Filtration Gfr, Plasma Fraction, Efr. Factors Effecting Efr. Determination Of Gfr Selective Reabsorption - Sites Of Reabsorption, Substance Reabsorbed, Mechanisms Of Reabsorption Glucose, Urea.

H + Cl Aminoacids Etc. Tmg, Tubular Load, 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

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BRT102

DURATION OF EXAMINATION: 3 HOURS

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 Two Exams Conducted.	20
Practicals: Record & 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.

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BRT102

DURATION OF EXAMINATION: 3 HOURS

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (2 x 10)	10	20
SHORT ESSAY (SE)	8 (6 x 5)	5	30
SHORT ANSWER (SA)	12 (10 x 3)	3	30
TOTAL MARKS			80

First Year Annual Examination to be held in the year
2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BRT103

DURATION OF EXAMINATION: 3 HOURS

BIOCHEMISTRY

No. Theory Classes : 70hours

No. Of Practical Classes : 20 Hours

Theory:

Specimen Collection :

Pre-Analytical Variables
Collection Of Blood
Collection Of Csf & Other Fluids
Urine Collection
Use Of Preservatives
Anticoagulants

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 Bottomed, Erlenmeyer Conical Etc..)

Funnels - Different Types (Conical, Buchner Etc..)

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 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 Maintenance Reflux Condenser : Use, Care And Maintenance

Centrifuges (Theory And Demonstration) Diagrams To Be Drawn

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BRT103

DURATION OF EXAMINATION: 3 HOURS

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

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.

Colorimeter And Spectrophotometer (Theory And Practicals) Diagrams To Be Drawn Principle, Parts Diagram.

Use, Care And Maintenance.

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

Dalton's Theory, Properties F 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.

Electronic Configuration - Aufbau Principle, Pauli's Exclusion Principle, Etc., M

Valency And Bonds - Different Types Of Strong And Weak Bonds In Detail With Examples

Theory & Practicals For All The Following Under This Section

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, 0 In Oxalic Acid, 0.1 N HCl, 0.1n H₂SO₄, 0.66 N H₂SO₄ Etc.,

Percent Solutions. Preparation Of Different Solutions - V/V W/V (Solids, Liquids And Acids) Conversion Of A Percent Solution Into A Molar Solution

Dilutions

Diluting Solutions: Eg. Preparation Of 0.1 N NaCl From 1 N NaCl From 2 N HCl Etc., Preparing Working Standard From Stock Standard, Body Fluid Dilutions, Reagent Dilution Techniques, Calculating The Dilution Of A Solution, Body Fluid Reagent Etc.,

Saturated And Supersaturated Solutions.

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BRT103

DURATION OF EXAMINATION: 3 HOURS

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

Acids, Bases, Salts And Indicators.

Acids And Bases: Definition, Physical And Chemical Properties With Examples.

Arrhenius Concept Of Acids And Bases, Lowry - Bronsted Theory Of Acids And Bases Classification Of Acids And Bases. Different Between Bases And Alkali, Acidity And Basicity, Monoprotic And Polyprotic 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 Of 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

Regulation Of Acid Base Status:

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BRT103

DURATION OF EXAMINATION: 3 HOURS

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

Basic Principles And Estimation Of Blood Gases And Ph

Basic Principles And Estimation Of Electrolytes

Water Balance

Sodium Regulation

Bicarbonate Buffers

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

Analysis Of Normal Urine

Composition Of Urine

Procedure For Routine Screening

Urinary Screening For Inborn Errors Of Metabolism

Common Renal Disease

Urinary Calculus

Urine Examination For Detection Of Abnormal Constituents

Interpretation And Diagnosis Through Charts

Liver Function Tests

Lipid Profile

Renal Function Test

Cardiac Markers

Blood Gas And Electrolytes

4. Estimation Of Blood Sugar, Blood Urea And Electrolytes

5. Demonstration Of Strips

Demonstration Of Glucometer



First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BRT103

DURATION OF EXAMINATION: 3 HOURS

Internal Assessment	
Theory - Average Of Two Exams Conducted.	10
Record & Lab Work[4+6]	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.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (2 x 10)	10	20
SHORT ESSAY (SE)	8 (6 x 5)	5	30
SHORT ANSWER (SA)	12 (10 x 3)	3	30
TOTAL MARKS			80

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Pathology

COURSE CODE: BRT104

DURATION OF EXAMINATION: 3 HOURS

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

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Pathology

COURSE CODE: BRT104

DURATION OF EXAMINATION: 3 HOURS

- 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.	20
Practicals: Record & 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.

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Pathology

COURSE CODE: BRT104

DURATION OF EXAMINATION: 3 HOURS

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (2 x 10)	10	20
SHORT ESSAY (SE)	8 (6 x 5)	5	30
SHORT ANSWER (SA)	12 (10 x 3)	3	30
TOTAL MARKS			80

First Year Annual Examination to be held in the year
2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Microbiology

COURSE CODE: BRT105

DURATION OF EXAMINATION: 3 HOURS

MICROBIOLOGY

Objective : This Course Introduces The Principles Of Microbiology With Emphasis On Applied Aspects Of Microbiology Of Infectious Diseases Particularly In The Following Areas Principles & Practice Of Sterilization Methods.

Collection And Despatch Of Specimens For Routine Microbiological Investigations.

Interpretation Of Commonly Done Bacteriological And Serological Investigations.

Control Of Hospital Infections
Biomedical Waste Management
Immunization Schedule

Theory - 70 Hours

- | | |
|--|----------|
| 1. Morphology | 4 Hours |
| Classification Of Microorganisms, Size, Shape And Structure Of Bacteria.
Use Of Microscope In The Study Of Bacteria. | |
| 2. Growth And Nutrition | 4 Hours |
| Nutrition, Growth And Multiplications Of Bacteria, Use Of Culture Media
In Diagnostic Bacteriology. | |
| 3. Sterilisation And Disinfection | 4 Hours |
| Principles And Use Of Equipments Of Sterilization Namely Hot Air Oven, Autoclave
And Serum Inspissator. Pasteurization, Anti Septic And Disinfectants.
Antimicrobial Sensitivity Test | |
| 4. Immunology | 6 Hours |
| Immunity Vaccines, Types Of Vaccine And Immunization Schedule
Principles And Interpretation Of Commonly Done Serological Tests
Namely Widal, Vdrl, Aslo, Crp, Rf & Elisa. Rapid Tests For Hiv And
Hbsag(Technical Details To Be Avoided) | |
| 5. Systematic Bacteriology | 20 Hours |
| 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, Meningococci, CDiphtheriae,
Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, Esch Coli, Klebsiella, Proteus, Vibrio
Cholerae, Pseudomonas & Spirochetes. | |
| 6. Parasitology | 10 Hours |
| Morphology, Life Cycle, Laboratory Diagnosis Of Following Parasites
E. Histolytica, Plasmodium, Tape Worms, Intestinal Nematodes | |

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Microbiology

COURSE CODE: BRT105

DURATION OF EXAMINATION: 3 HOURS

- | | |
|---|----------|
| 7. Mycology | 4 Hours |
| Morphology, Diseases Caused And Lab Diagnosis Of Following Fungi.
Candida, Cryptococcus, Dermatophytes, Opportunistic Fungi. | |
| 8. Virology | 10 Hours |
| General Properties Of Viruses, Diseases Caused, Lab Diagnosis And Prevention Of Following
Viruses, Herpes, Hepatitis, Hiv, Rabies And Poliomyelitis. | |
| 9. Hospital Infection | 4 Hours |
| Causative Agents, Transmission Methods, Investigation, Prevention And Control Hospital Infection | |
| 10. Principles And Practice Biomedical Waste Management | 4 Hours |

Practical	20 Hours
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Compound Microscope.
Demonstration And Sterilization Of Equipments - Hot Air Oven, Autoclave, Bacterial Filters.
Demonstration Of Commonly Used Culture Media, Nutrient Broth, Nutrient Agar, Blood Agar,
Chocolate Agar, Mac Conkey Medium, LJ Media, Robertson Cooked Meat Media, Potassium
Tellurite Media With Growth, Mac With LF & NII, Na With Staph
Antibiotic Susceptibility Test
Demonstration Of Common Serological Tests - Widal, Vrdl, Elisa.
Grams Stain
Acid Fast Staining
Stool Exam For Helminthic Ova
Visit To Hospital For Demonstration Of Biomedical Waste Mangement.
10. Naerobic Culture Methods.

Internal Assessment

Theory - Average of Two Exams Conducted.	20
Practicals: Record & 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.

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Microbiology

COURSE CODE: BRT105

DURATION OF EXAMINATION: 3 HOURS

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (2 x 10)	10	20
SHORT ESSAY (SE)	8 (6 x 5)	5	30
SHORT ANSWER (SA)	12 (10 x 3)	3	30
TOTAL MARKS			80

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Radiography Technology 1st Year
COURSE TITLE: English
COURSE CODE: BRT106
DURATION OF EXAMINATION: 3 HOURS

English
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 Vocubular.

Unit - V: The Study Of The Various Forms Of Composition:

Paragraph, Essay, Letter, Summary, Practice In Writing

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: English

COURSE CODE: BRT106

DURATION OF EXAMINATION: 3 HOURS

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%

First Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 1st Year

COURSE TITLE: Health Care

COURSE CODE: BRT107

DURATION OF EXAMINATION: 3 HOURS

B.Sc. Allied Health Sciences - I Year
HEALTH CARE

Teaching Hours: 40

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, Enema Giving.

Methods Of Giving Nourishment: Feeding, Tube Feeding, Drips, Transfusion

Care Of Rubber Goods

Recording Of Body Temperature, Respiration and Pulse,

Simple Aseptic Technique, Sterilization 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.

Second Year Annual Examination to be held in
the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE: Physics of Radiography,

Radiation & Medical Physics

COURSE CODE: BRT201

DURATION OF EXAMINATION: 3 HOURS

II Year B.Sc. (Radiography)

Course of Study:

PHYSICS OF RADIOLOGY SECTION-A

Applied Mathematics:

Elementary Use of Algebraic Symbols And Signs.

Indices: Power of 10 Simple Equations.

Graphical Representation Of A Data.

Measurement of Angles. Geometry Of Triangles.

Proportion, Inverse Square Law, Elementary Explanation Of Exponential Law.

Electromagnetic Radiation, Atomic Structure & Radioactivity

Electromagnetic Waves & Their Properties, Inverse Square Law, The Quantum Theory Of Radiation (Planck's Concept of Quanta, Photon And Its Characteristic Properties), The Electromagnetic Spectrum, Spectrum of White Light, Spectra:- Emission Spectra-Continuous, Line & Band Spectra, Absorption Spectra, Fluorescence and Phosphorescence, Photoelectric Emission, Photocell, Intensity & Quality of Electromagnetic Radiation.

The Structure Of The Atom Nucleus, Atomic Number (Z), Mass Number (A), Ionisation & Excitation, Isotopes, The Periodic Table.

Radioactivity, Properties Of Alpha, Beta, Gamma Radiation, Radioactive Transformation Process (Radioactive Displacement Law), Radioactive Decay (Radioactive Disintegration Law), Decay Constant, Half-Life, Units Of Radioactivity, Artificial Radioactivity Or Induced Radioactivity (Production Of Artificial Radioactive Isotopes), The Uses Of Radioactive Nuclides In Medicine.

Fundamental of Electricity (Basic of Electronics):

Electric Charges & Units Of Electric Charge, Coulombs Law, Electric Induction, Electric Potential & Potential Difference, Capacitance & Capacitors, Resistance.

Conductors, Insulators & Semiconductors, Electric Current, Ohm's Law & Kirchoff's Law, Circuit Laws (Combination Of Potential Difference In Series & Parallel, Meters, Electrical Energy & Power, Heating Effect Of A Current).

The Magnetic Effects Of An Electric Current (Electromagnetism), Electromagnetic Induction, Mutual Induction & Self Induction.

Alternating Current, The A.C. Transformer Theory, Construction, Types Of Transformers Its Practical

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Physics of Radiography, Radiation & Medical Physics

COURSE CODE: BRT201

DURATION OF EXAMINATION: 3 HOURS

Aspects, Transformer Losses And Regulation & Rating, Types Of Transformers Used In X-Ray Equipment.

Thermionic Emission, The Vacuum Diode, Variation of Anode Current With Anode Voltage And Filament Temperature In The Vacuum Diode, The Effect of Gas In The Diode, The Thermionic Gas Diode. Meaning Of Rectification (Full Wave & Half Wave Rectification).

Principles Of Semiconductors, P-N Junction Diode, High Voltage Rectifier Circuits (Self Rectifying Circuit, Half-Wave Pulsating Voltage Circuit, Full-Wave Pulsating Voltage Circuits, Shock-Proofing.

X-Rays:

Conductivity Of Electricity Through Gases At Low Pressure, Cathode Rays - Production & Properties. Sources Of Electrons (Discharge Through Gases, Thermionic Emission & Photo Electric Emission), Discovery Of An Electron, Concept Of Electron Volt.

Discovery Of X-Rays, Production & Properties Of X-Rays. Factors Influencing The Intensity & Quality Of X-Rays, Construction & Working Of Modern X-Ray Tube (Fixed Anode & Rotatory Anode Tubes), The Physics Of X-Spectra I.E. The Spectrum Of Radiation From An X-Ray Tube (Continuous Spectrum & Line Or Characteristic Spectrum), Factors Upon Which The X-Ray Emission Depends, Soft & Hard X-Rays, Distribution Of X-Rays In Space, The Diagnostic X-Ray Tubes (Inserts And Shields), Filament Design, Anode Design (Fixed & Rotatory), Methods Of Cooling, Basic X-ray Circuit.

Basic Interactions Between X-Rays And Matter > Coherent Scattering, Photoelectric Effect, Compton Scattering, Pair Production & Photodisintegration, Attenuation And Absorption, Reduction In Intensity Due To Absorption & Attenuation And The Inverse Square Law (Exponential Formula), Filtration, Attenuation Coefficients And Half Value Layer. Energy Absorbed From X-Rays, Factors Affecting Transmission Of A Homogenous Beam Through An Object (Geometry, Thickness, Wavelength Of Beam, Composition Of An Object), Transmission Of A Heterogeneous X-Ray Beam, Transmission Of X-Rays Through Body Tissues: Relative Amount Of Scattered Radiation In An X-Ray Beam During Its Passage Through A Patient. The Practical Aspects Of X-Ray Absorption And Transmission In Body Tissues.

The Physics Of The Radiograph. The Basic Of The X-Ray Measurements. The Units Of Exposure And Absorbed Dose Simple Principles Of Dosimeters. The Fluorescent Effect Of X-Rays. The Photographic Film As A Dosimeter, X-Ray Quality Specification & Measurement, Kilovoltage Peak, Half Value Thickness. Routine Methods Of Checking Quality.

Radiation Quantities & Units:

Radiometric Quantities (The Fluence Of Photons & Fluence Rate, The Energy Fluence And Energy Fluence Rate).

Interaction Quantities (Interaction Cross Section, Linear Attenuation Coefficient, Mass Attenuation

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Physics of Radiography, Radiation & Medical Physics

COURSE CODE: BRT201

DURATION OF EXAMINATION: 3 HOURS

Coefficient, Stopping Power, Linear Energy Transfer, The Radiation Chemical Yield, The Mean Energy Expended In A Gas Per Ion Pair Formed.

Dosimetric Quantities (Mean Energy Imparted, The Specific Energy, Exposure & Exposure Rate, Absorbed Dose And Absorbed Dose Rate, Concept Of Karma.

Protection Quantities (Dose Equivalent & Effective Dose Equivalent).

RADIATION PHYSICS (SECTION B)

Principles Of Radiation Detection And Measurement:

Gas-Filled Detectors (Ion Chambers, Proportional Counters and Geiger Muller Counters) Scintillation Detectors, Thermoluminescent Dosimeters (TLD). Reasons For Choice of Airionization Roentgen And Rad. Simple Principles of Dosimeters.

Biological Effects Of Radiation :

Chemical Effects Of Radiation - Radiolysis Of Water ; Production Of Free Radicals, Radicals Reactions, G-Value. Effects Non-Stochastic Effects, Chromosome Aberrations And Mutations. Radiation Effects On Whole Body (Early Effects And Late Effects). Concept Of Doubling Dose. Risk Factors.

Radiation Protection:

Philosophy Of Radiation Protection - Historical Development, Maximum Permissible Exposure Concept ; Annual Dose Equivalent Limits (Adel) Alara Concept ; International Recommendations And Current Code Of Practice For The Protection Of Persons Against Ionizing Radiation's From Medical And Dental Use.

Protective Materials:

Lead, Lead - Impregnated Substances, Building Materials, Concept Of Barriers, Lead Equivalents And Variations With Quality. Design Of X-Ray Tubes Related To Protection. Structural Shielding Design (Work-Load, Use Factor, Occupancy Factor, Distance) Departmental Protection. Radiation Protection Of Staff Members, Patients And Public. Protection Instruments & Personnel And Area Monitoring.

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Physics of Radiography, Radiation & Medical Physics

COURSE CODE: BRT201

DURATION OF EXAMINATION: 3 HOURS

MEDICAL PHYSICS (SECTION B)

Mains Supply:

Generation Of Electrical Energy, Distribution Of Electrical Energy, Use Of Electrical Energy, Polyphase Supplies, Availability Of Different Voltages, Feeder Cables, Line Voltage Drop, Mains Switches, Fuses, Circuit Breakers, Earthing, Insulation, High Tension Cables Construction, Design.

Diagnostic High Tension Circuits :

Self Rectified, Half-Wave, Full-Wave, 4 Rectifier, 3 Phase, Capacitor Discharge, Constant Potential, Main Voltage Compensation, Mains Resistance Compensation, Compensations For Mains Frequency Variation, Control Of Tube Voltage, Kilovoltage Compensation, Filament Circuit, Control Of Tube Current, Space Charge Compensation, High Tension (Tube Selector) Switch, Meters-Function; Use Of Shunts, Meters Commonly Found In Diagnostic X-Ray Equipment, Position In Circuits, Reading Meters.

Switching And Timing:

Exposure Timers, Spring Activated, Synchronous, Electronic, Auto Timers, Exposure Switching - Mechanical Contactors, Electronic Switching In Low Tension And High Tension Circuits, Interlocking Circuits - Use Of Relays, Tube Overload Protection, Circuit Diagrams - Simple Circuit Diagrams As Illustration Of Sequence From Mains Supply To Controlled X-Ray Exposures, Block Diagrams.

X-Ray Tubes:

Rotating Anode X-Ray Tubes, Design, Rating, And Use Of Rating Charts, Care Of The X-Ray Tubes; Inherent Filtration And Additional Filtration; Practical Considerations In The Choice Of Focus; Speed Of Anode Rotation; Angle Of Anode Inclination, Grid-Controlled X-Ray Tube.

Control of Scattered Radiations:

Cones, Tube Diaphragms, Single And Multileaf Grids, Structure And Materials; Grid Ratio And Lines /Cm. Parallel And Focussed Grids, Stationary Grids, Crossed Hatched Grids, Gridded Cassettes, Grid Movements, Potter-Bucky Diaphragms ; Single Stroke, Reciprocating And Oscillating Mechanisms; Beam Centring Devices - Centre Finders, Optical Centring Devices, Light Beam Collimators.

Equipments:

I Fluoroscopy and Image Intensifiers:

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Physics of Radiography, Radiation & Medical Physics

COURSE CODE: BRT201

DURATION OF EXAMINATION: 3 HOURS

Direct Fluoroscopy, Fluoroscopy Image, Fluoroscopic Screen, Explorators (Serial Changers, Spot Film Devices) And Accessories. Radiation Protection Including Integrating Timer, Tilting Tables, Principles And Construction Of Image Intensifiers, Television Camera Tubes And Cathode Ray Tubes, Recording The Intensified Image, Methods Of Viewing The Intensified Image, Equipment For Fluorography And Cine-Fluorography, Radiographic and Fluoroscopic Tables, Telecommand Tables.

ii Equipment for Special Procedures:

Special Trolleys And Chairs, Portable And Mobile X-Ray Units, Cordless Mobile X-Ray Equipment, Capacitor Discharge Mobile Equipment, Equipments For Q.T. Bi-Plane Radiography, Cranial And Dental Equipment, Skull Tables, Mammography, Mass-Miniature Radiography, Tomography, Multi Section Cassettes, Rapid Cassette Changer, Rapid Film Changer, Magnification Radiography, Subtraction Radiography.

iii Care and Maintenance of X-Ray Equipment:

General Principles Of Cleaning Routines. General Care In Use And Special Care Of Mobile Equipments. Simple Test. Uses Of Spinning Top And Step Wedge, Checks On Generator Output; Check For Integrity Of Tomographic Equipment; Procedure For Obtaining Radiograph Of The Focal Area. Use Of Ma And Timer Wisconsin Test Tool, Test Of Kilo Voltage, Wisconsin Test Cassette, Use Of Focal Spot Test Tool, Testing Light Beam Diaphragm, Failures Of X-Ray Tubes And Ht Cables.

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 Physics of Radiology, Radiation Physics and Medical Physics Shall Be As Given Under.

Duration : 3 Hrs

Max Marks: 80

Type of Questions	No of Questions	Marks For Each Questions	Total
Long Essay	4 Questions to answer 2 Section A - 2 to answer 1 Section B - 2 to answer 1	10	20
Short Essay	8 questions to answer 6 Section A - 4 to answer 3 Section B - 4 to answer 3	05	30
Short Answers	12 questions to answer 10 Section A - 6 to answer 5 Section B - 6 to answer 5	03	30
Total			80

1. The first part of the report is a general introduction to the project. It describes the purpose of the study, the objectives, and the scope of the work. It also provides a brief overview of the methodology used in the study.

2. Literature Review

The second part of the report is a literature review. It discusses the current state of knowledge on the topic and identifies the gaps in the literature. It also provides a critical analysis of the existing research and highlights the contributions of the study.

3. Methodology

The third part of the report is a methodology section. It describes the research design, the data collection methods, and the data analysis techniques used in the study. It also provides a detailed description of the sample and the procedures used to ensure the validity and reliability of the results.

4. Results

The fourth part of the report is a results section. It presents the findings of the study and discusses the implications of the results. It also provides a detailed description of the statistical analysis used to interpret the data.

5. Conclusion

The fifth part of the report is a conclusion section. It summarizes the main findings of the study and discusses the implications for future research. It also provides a brief overview of the limitations of the study and the strengths of the research.

6. References

The sixth part of the report is a references section. It lists the sources of information used in the study and provides a detailed description of the research design, the data collection methods, and the data analysis techniques used in the study. It also provides a detailed description of the sample and the procedures used to ensure the validity and reliability of the results.

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE: Radiographic Techniques I

COURSE CODE: BRT202

DURATION OF EXAMINATION: 3 HOURS

2. Radiography Techniques -I

Theory

Principles Of Radiography:

Preparation Of The Room, Apparatus And Instruments

Positions Of The Patient: Erect, Sitting, Supine, Prone, Lateral, Oblique, Decubitus Etc.,

Relative Position Of X-Ray Tube And Patient, Relevant Exposure Factors. Use Of Accessories Such As Radiographic Cones, Grid And Positioning Aids.

Anatomic And Physiological Basis Of The Procedure, Association With Theory With Practical Work. Radiographic Appearances, Both Normal And Common Abnormal Conditions Where Elementary Knowledge Of The Pathology Involved Will Ensure The Application Of The Appropriate Radiographic Technique. Modifications In Technique For Various Disabilities And Types Of Subject. Radiation Protection, Use Of Gonad Shield, Practical Methods Reducing Radiation Dose To The Patient.

Upperlimb:

Routine Projections For The Whole Hand, Fingers, Wrist Joint, Forearm, Elbow Joint And Humerus. Supplementary Projections For Scaphoid, Carpal Tunnel Ball Catchers Projections, Head Of The Radius, Supracondylar Fracture And Olecranon Process.

Lowerlimb:

Routine Projections For The Whole Foot, Toes, Calcaneum, Ankle Joint, Leg, Knee-Joint, Patella And Femurs.

Supplementary Projections For Talo-Calcaneal Joint, Forced Projections For Torn Ligaments, Flat Feet, Club Feet, Intercondylar Projections For Loose Bodies In The Knee, Axial Projection For Patella.

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Radiographics Technique I

COURSE CODE: BRT202

DURATION OF EXAMINATION: 3 HOURS

Shoulder Girdle And Thorax:

Routine Projections For The Shoulder Joint, Scapula, Acromio-Clavicular Joint, Clavicle, Sternoclavicular Joint, Sternum And Ribs.

Supplementary Projections For The Axial Projection Of Clavicle, Bicipital Groove Carotid Process, Classification Of Tendons, Subluxation, Upper Ribs, Lower Ribs And Axillary Ribs.

Pelvic Girdle And Hip Region :

Routine Projections For The Whole Pelvis, Sacro-Ileac Joints, Hip Joint And Neck Of Femur.

Supplementary Projections For The Greater And Lesser Trochanters Of Femur, Frog Leg Projection, Ischeum Symphysis Pubis, Ileum, Acetabulum And Congenital Dislocation Of Hip Arthrodesis.

Vertebral Column :

Routine Projections For Atlanto Occipital Joint, Cervical Spine, Cervico Thoracic Junction, Thoracic Spine, Lumbar Spine, Lumbo Sacral Region, Sacrum And Coccyx.

Supplementary Projections For The Intervertebral Foramina, Posterior Arch Of Atlas, Flexion And Extension Of Cervical Spine, Scoliosis And Kyphosis, Sacro Ileac Joint.

Skeletal Survey :

Skeletal Survey For Metabolic Bone Diseases, Metastases, Hormonal Disorders, Renal Disorders.

Skull :

Routine Projections For Cranium And Facial Bones.

Supplementary Projections For Trauma, Towne's & Method, Sella, Turcica, Optic Foramina, Jugular Foramina, Temporal Bones, Mastoids Petrous Bone, Zygomatic Arches, Orbits, Maxillae, Nasal Bones, Mandible, Temporomandibular Joints.

Nasal Sinuses :

Techniques For Frontal, Maxillary, Ethmoidal And Sphenoid Sinuses, Erect And Horizontal Projections For Fluid Levels.

Teeth :

Routine Projections Of All Teeth - Intra Oral And Extra Oral Projections.

Supplementary Projections For Localisation Of Roots, Children, Edentulous Subjects And Use Of Occlusals And Bitewings, Orthopantomography.

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Radiographics Technique I

COURSE CODE: BRT202

DURATION OF EXAMINATION: 3 HOURS

Chest:

Routine Projections For Lungs, Cardia And Diaphragm.

Supplementary Projections For Opaque Swallow, Thoracic Inlet, Soft Tissue Neck, Decubitus, 'Apicograms, Paediatric Cases.

Abdomen :

Kub, Erect Abdomen And Decubitus Projection, Supplementary Projections For Acute Abdomen.

PRACTICAL

RADIOGRAPHIC TECHNIQUE I

(Total: 500 Hours)

Radiography - Plain Views of Upper Limb: Hands

Fingers

Thumb

Wrists

Forearm

Elbow

Humerus

Radiography - Plain Views of Shoulder:

Shoulder Joint

Acromio - Clavicular Joint

Scapula Various Views And Projections

Clavicle

Sterno - Clavicular Joint

Radiography - Plain Views of Lower Limb:

Foot

Toes

Tarsus & Os calcis

Ankle

Tibia, Fibula & Patella

Knee Joint

Femur

Hip Joint

Pelvis & Sacro-Iliac Joint

Radiography Of Vertebrae:

Cervical Spine Upper, Cervical Spine Lower

Cervico-Thoracic, Cervico-Middle

Thoraco Lumbar

Lumbo-Sacral

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Radiographics Technique I

COURSE CODE: BRT202

DURATION OF EXAMINATION: 3 HOURS

Sacrum & Coccyx
Ribs Upper & Lower
Sternum

Radiography of Skull Plain Views:

Ap, Lateral & Towns
Sinuses, Mandible,
Teeth Mastoids

Radiography Of Chest:

Lungs & Trachea; Heart-Diaphragm
Radiography of G.I. Tract
Plain X-Rays Abdomen-Erect; Liver, Spleen.

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE: Radiographic Photography and Image Processing

COURSE CODE: BRT203

DURATION OF EXAMINATION: 3 HOURS

3. Radiographic Photography And Image Processing

Dark Room Planning:

For A Small Hospital, For A Large Hospital

Location Of Dark Room

Construction Of Dark Room

Ventilation

Wall Protection

Entrance To Dark Room - Single Door, Double Door, Labyrinth

Dark Room:

Instruction To Staff

Dry Bench

Hopper, Drawer, Cupboard

Loading And Unloading Cassettes

Hangers, Types Of Hangers And Storage Of Hangers

Printing

Wet Bench

Cleanliness, Control Of Dust, Dark Room Sink

Second Year Annual Examination to be held In the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Radiographic Photography and Image processing

COURSE CODE: BRT203

DURATION OF EXAMINATION: 3 HOURS

Hatches

Drier

Safe Lights, Direct And Indirect, Uses, Factors Affecting Safelight Performance, Safelight Tests

Viewing Room, Film Dispensing

X-Ray Films:

Glass, Cellulose And Polyester Bases

Structure of X-Ray Films - Emulsion, Gelatin, Base And Supercoating

Types of X-Ray Films

Single Coated, Duplitised

Spectral Sensitivity

Colour Sensitivity

Graininess of Films

Speed Of Films

Screen & Non Screen Films

Various Formats of Films

Films For Special Procedures

Storage of Film Materials And Radiographs

Record of Film Stock And Radiographs

Deterioration of Films On Storage

Characteristic Curves - Uses of Step Wedge

Information on Basic Fog, Film Gamma, Contrast, Speed, Film Latitude, Effects On Development

Intensifying Screens:

Fluorescence - Phosphors

Phosphors Employed	-	Calcium Tungstate
	-	Barium Fluochloride
	-	Rare Earths

Construction of Intensifying Screens

The Influence of Kilovoltage In Different Phosphors

Intensification Factor

Resolving Power of Intensifying Screens

Speed of Screens

Screen Film Contact Tests

Types of Intensifying Screens

Advantages and Limitations of Intensifying Screens.

X-Ray Cassette:

Construction of X-Ray Cassettes

Types of Cassettes

Mounting Intensifying Screens On Cassettes

Identification of Cassettes

Care of Cassettes

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Radiographic Photography and Image processing

COURSE CODE: BRT203

DURATION OF EXAMINATION: 3 HOURS

Photochemistry:

Chemistry Of Image Formation
Formation Of Latent Image
Conversion Of Latent Image To Visible Image
Meaning Of Ph
Importance Of Ph In Processing Films

Processing Methods:

Preparation Of Solution
Manual Processing Apparatus
Control Of Temperature
Rapid Processing

Automatic Processor - Principle And Features, Water Supply, Use Of Thermostat, Regeneration Of Solutions, Maintenance, Advantage And Limitations. Processing Of Cut Films And Roll Films.

Computer Photography.
Digital Radiography - Principles, Processing, Equipments, Advantages.
Radiological Information Systems.

The Radiographic Image:

The Emergent Beam Related To Densities On Film Contrast -
Objective And Subjective
Long Scale And Short Scale
Radiation Contrast, Film Contrast And Radiographic Contrast

Density
Sharpness
Sources Of Unsharpness
Avoiding Different Unsharpness

Resolution

Factors Affecting Resolution Choice Of Kilovoltage And Milliamperage Choice Of Short Focus And Broad Focus Selection Of Focus To Film Distance And Object To Film Distance Selection Of Cassettes

Avoiding Scatter Radiation, Magnification, Distortion, Penumbra Presentation of a Radiograph - Identification Markers

- Name Printer

Viewing Equipment Magnifiers for Cut Films and Roll Films

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Radiographic Photography and Image processing

COURSE CODE: BRT203

DURATION OF EXAMINATION: 3 HOURS

Developer:

Constituents
Characteristic
Manual and Automatic Processors
Effects on Developing Time, Temperature, Agitation
Replenisher
Exhaustion

Rinsing:

Acid Stop-Bath
Methods
Objects

Fixer:

Constituents
Characteristics
Manual and Automatic Processors
Fixing Time and Clearing Time
Factors Affecting Fixing Time
Replenisher
Exhaustion

Washing and Drying:

Objects
Methods
Factors Affecting Washing and Drying
Wetting Agents
Comparison of Different Methods

Day Light Film Handling:

Day Light System Using Cassettes
Day Light System without Cassettes

Film Faults:

Fog - Various Fogging In Films, Causes And Prevention. Stains - Types, Causes And Prevention
Spots And Splashes - Types, Causes And Prevention Marks And Prints - Types, Causes And
Prevention Drying Marks - Types, Causes And Prevention Faults In Automatic Processor - Types,
Causes.

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Radiography Technology 2nd Year
COURSE TITLE : Radiographic Photography and Image processing
COURSE CODE: BRT203
DURATION OF EXAMINATION: 3 HOURS

Reproduction Of Radiographs:

Copying Radiographs
Magnification and Magnification
Contact Prints
Types Of Paper
Equipment

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 Radiographic photography and Image processing Shall Be as Given Under.

B. Duration : 3 Hrs

Max Marks:60

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (2 x 10)	10	20
SHORT ESSAY (SE)	7 (5 x 5)	5	25
SHORT ANSWER (SA)	7 (5 x 3)	3	15
TOTAL MARKS			60

Practicals Scheme Of Examination

- A. Cassette And Intensifying Screens - 20 Marks
- B. Chemical Used In Film Processing - 20 Marks
- C. Films Used In Photography And Printers - 20 Marks
- D. Diagnostic Image Processing - 20 Marks

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE: Sociology

COURSE CODE: BRT204

DURATION OF EXAMINATION: 3 HOURS

SOCIOLOGY

Teaching Hours: 20

Course Description

This Course Will Introduce Student To The Basic Sociology Concepts, Principles And Social Process, Social Institutions [In Relation To The Individual, Family And Community And The Various Social Factors Affecting The Family In Rural And Urban Communities In India Will Be Studied.

Introduction:

Meaning - Definition And Scope Of Sociology

Its Relation To Anthropology, Psychology, Social Psychology

Methods Of Sociological Investigations - Case Study, Social Survey, Questionnaire, Interview And Opinion Poll Methods.

Importance Of Its Study With Special Reference To Health Care Professionals

Social Factors In Health And Disease:

Meaning Of Social Factors

Role Of Social Factors In Health And Disease

Socialization:

Meaning And Nature Of Socialization

Primary, Secondary And Anticipatory Socialization

Agencies Of Socialization

Social Groups:

1. Concepts Of Social Groups, Influence Of Formal And Informal Groups On Health And Sickness. The Role Of Primary Groups And Secondary Groups In The Hospital And Rehabilitation Setup.

Family:

The Family, Meaning And Definitions

Functions Of Types Of Family

Changing Family Patterns

Influence Of Family On Individual's Health, Family And Nutrition, The Effects Of Sickness In The Family And Psychosomatic Disease And Their Importance To Physiotherapy

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE : Sociology

COURSE CODE: BRT204

DURATION OF EXAMINATION: 3 HOURS

Community :

Rural Community: Meaning And Features - Health Hazards To Rural Communities, Health Hazards To Tribal Community.

Urban Community - Meaning And Features - Health Hazards Of Urbanities

Culture And Health :

Concept Of Health

Concept Of Culture

Culture And Health

Culture And Health Disorders

Social Change :

Meaning Of Social Changes

Factors Of Social Changes

Human Adaptation And Social Change

Social Change And Stress

Social Change And Deviance

Social Change And Health Programme

The Role Of Social Planning In The Improvement Of Health And Rehabilitation

Social Problems Of Disabled :

Consequences Of The Following Social Problems In Relation To Sickness And Disability Remedies To Prevent These Problems

Population Explosion

Poverty And Unemployment

Beggary

Juvenile Delinquency

Prostitution

Alcoholism

Problems Of Women In Employment

Social Security:

Social Security And Social Legislation In Relation To The Disabled

Social Work:

Meaning Of Social Work

The Role Of A Medical Social Worker

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Radiography Technology 2nd Year
COURSE TITLE: Constitution of India
COURSE CODE: BRT205
DURATION OF EXAMINATION: 3 HOURS

Indian Constitution

Prescribed For The First Year Students Of All Degree Classes

- Unit-i:** Meaning Of The Term 'Constitution' Making Of The Indian Constitution 1946-1940.
- Unit-ii:** The Democratic Institutions Created By The Constitution Bicameral System Of Legislature At The Centre And In The States.
- Unit-iii:** Fundamental Rights And Duties Their Content And Significance.
- Unit - iv:** Directive Principles Of States Policies The Need To Balance Fundamental Rights With Directive Principles.
- Unit - v:** Special Rights Created In The Constitution For: Dalits, Backwards, Women And Children And The Religious And Linguistic Minorities.
- Unit-vi:** Doctrine Of Separation Of Powers Legislative, Executive And Judicial And Their Functioning In India.
- Unit - vii:** The Election Commission And State Public Service Commissions.
- Unit - viii:** Method Of Amending The Constitution.
- Unit - ix:** Enforcing Rights Through Writs:
- Unit - x:** Constitution And Sustainable Development In India.
- Unit - xi:** Consumer Protection Act And Other Acts Pertaining To Medical Profession.

Second Year Annual Examination to be held in the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 2nd Year

COURSE TITLE: Environmental Science & Health

COURSE CODE: BRT206

DURATION OF EXAMINATION: 3 HOURS

Environment Science and Health

Introduction To Environment and Health

Sources, Health Hazards And Control Of Environmental Pollution
Water

The Concept Of Safe And Wholesome Water.

The Requirements Of Sanitary Sources Of Water.

Understanding The Methods Of Purification Of Water On Small Scale And Large Scale.

Various Biological Standards, Including Who Guidelines For Third World Countries.

Concept And Methods For Assessing Quality Of Water.

Domestic Refuse, Sullage, Human Excreta And Sewage Their Effects On Environment And Health,
Methods And Issues Related To Their Disposal.

Awareness Of Standards Of Housing And The Effect Of Poor Housing On Health.

III Year B.Sc. (Radiography) Diagnostic Imaging Techniques

Third Year Annual Examination to be held in
the year 2022, 2023, 2024

CLASS: B.Sc Radiography Technology 3rd Year

COURSE TITLE: Diagnostic Imaging Techniques

COURSE CODE: BRT301

DURATION OF EXAMINATION: 3 HOURS

Theory and Practicals

Theory: 200 Hrs

Practicals: 300 Hrs

Imaging Technique:

Computed Tomography:

History

Principles Of Computed Tomography

Generations - Spiral C.T.

Instrumentation.

Data Acquisition

Data Presentation

Image Reconstruction

2 D And 3 D Images

Image Display

Pixel And Voxel

C.T. Number

Window Level And Window Width

Scan Artefacts

Patient Positioning In Computed Tomography

Contrast Materials And Administration.

Basic Diagnostic Aspects

Interventional C.T. Guided Procedures

Documentation.

Safety Consideration - Radiation Dose

Quality Assurance.

Magnetic Resonance And Imaging:

History

The Spinning Proton - Magnetisation, Precession, Larmor Frequency

Radio Frequency Pulse And Proton - Resonance, Free Induction Decay, Relaxation, T-1 & T-2

Instrumentation - Magnet, Shim Coils, Gradient Coils, Radio Frequency Transmitter And Receiver Coils, Computer.

Pulse Sequences - Saturation Recovery, Spin Echo, Inversion Recovery.

Image Production - 2d And 3d Pictures.

Image Quality - Signal To Noise Ratio, Contrast To Noise Ratio.

Image Artefacts.

Flow Techniques - Magnetic Resonance Angiography Spectroscopy. Mr Contrast Agents -

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Paramagnetic And Ferromagnetic Documentation. Safety Consideration Quality Assurance.

Ultrasound Imaging:

History

Ultrasound Characteristics - Nature, Propagation, Frequency, Wavelength, Velocity, Amplitude, Intensity, Acoustic Impedance, Reflection, Refraction Etc. Interference With Media, Interface, Attenuation.

Transducer - Piezoelectric Effect, Construction, Types Of Arrays - Mechanical & Electronic - Acoustic Coupling Media.

Ultrasound Instrumentation.

Display Modes - A Mode, B Mode, M Mode, Real Time.

Grey Scale Imaging

Doppler Methods - Continuous Wave Doppler, Pulsed Doppler, Duplex, Real Time Colour Flow Imaging.

Ultrasound Artefacts.

Patient Preparation And Handling

Basic Diagnostic Aspects

Interventional Techniques - Transducer Sterilisation, Needles, Diagnostic Procedures, Therapeutic Procedures.

Documentation

Safety Consideration - Effects Of Heating, Cavitation.

Quality Assurance - Phantoms, Performance, Accuracy, Sensitivity, Spatial Resolution Tests.

Nuclear Medicine Imaging:

History

Isotopes And Radionuclides

Production Of Radionuclides

Radio Activity

Radio Active Transformations

Specific Activity

Radiopharmaceuticals And Their Preparation

Precautions While Handling Radiopharmaceuticals

Principles Of Tracer Techniques

Instrumentation - Multihole Collimator, Crystal, Photomultiplier, Computer, Monitor.

Scanning Technique

Resolution - Spatial Temporal

Gamma Camera

Rectilinear Scanner.

Position Emission Tomography (Pet)

Single Photon Emission Computed Tomography (Spect)

Radio Immuno Assay (Ria)

Documentation

Safety Considerations - Radiation Dose

Quality Assurance.

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COURSE TITLE : Diagnostic Imaging Techniques

COURSE CODE: BRT301

DURATION OF EXAMINATION: 3 HOURS

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 Diagnostic Imaging Techniques Shall Be As Given Under.

B. Duration : 3 Hrs

Max Marks:60

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (2 x 10)	10	20
SHORT ESSAY (SE)	7 (5 x 5)	5	25
SHORT ANSWER (SA)	7 (5 x 3)	3	15
TOTAL MARKS			60

RADIOGRAPHIC TECHNIQUES - II

Introduction :

Responsibility Of Radiographer During Radiological Procedures.
Preparation Of Patient For Different Procedures.
Contrast Media - Positive And Negative, Ionic & Non-Ionic
Adverse Reactions To Contrast Media And Patient Management
Emergency Drugs In The Radiology Department
Emergency Equipments In The Radiology Department
Asepsis
Radiation Protection - Ten Day Rule.

The Following Should Be Dealt With Indication, Contraindications, Patient Preparation, Contrast Media Used, Method Of Administration Of Contrast Media, Accessories Required, Technique To Be Adopted, Variation In Normal Technique In Specific Circumstances, Films Taken, Complications, Precautions And After-Care Of The Patient.

Gastro - Intestinal Tract:

Barium Swallow - Tracheo - Oesophageal Fistula
Barium Meal - Single Contrast And Double Contrast
Hypotonic Duodenography
Barium Meal Follow Through
Small Bowel Enema
Barium Enema - Gastrografin Enema, For Reducing Intussusception Loopogram
Additional Investigation - Computed Tomography, Radio Isotope Scanning.

Biliary Tract:

Oral Cholecystography
Intravenous Cholelithography
Pre Operative Cholelithography
Post Operative Cholelithography - Percutaneous Extraction Of Retained Biliary Calculi
Percutaneous Transhepatic Cholelithography - Biliary Drainage.
Endoscopic Retrograde Cholelithopancreatography
Additional Investigation : Ultrasound Scanning
Radio Isotope Scanning
Computed Tomography
Urinary System:
Excretion Urography
Percutaneous Renal Puncture

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**COURSE TITLE : Radiographic B
Techniques II**

COURSE CODE: BRT302

**DURATION OF EXAMINATION:
3 HOURS**

Percutaneous Nephrostomy
Percutaneous Nephrolithotomy
Lithotripsy
Retrograde Pyeloureterography
Micturating Cysto Urethrography – Urodynamic Investigations
Ascending Urethrography
Additional Investigation : Ultrasound Scanning
Radio-Isotope Scanning
Computed Tomography
Magnetic Resonance And Imaging

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2023, 2024**

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Technology 3rd Year**

**COURSE TITLE : Radiographic
Techniques II**

COURSE CODE: BRT302

**DURATION OF EXAMINATION:
3 HOURS**

Reproductive System:

Hystero Salpingogram
Gynaecography
Pelvimetry
Vesiculography
Additional Investigations : Ultrasound Scanning
Computed Tomography
Magnetic Resonance And Imaging

Cardio-Vascular System:

Angiography:

Percutaneous Catheterization
Catheterization Sites, Asepsis
Guide Wire, Catheter, Pressure Injector And Accessories
Use Of Digital Subtraction, Single Plane And Biplane
Head And Neck Arteriography
Pulmonary Arteriography
Coronary Arteriography
Ascending Aortography
Trans Lumbar Aortography
Celiac Axis, Superior Mesenteric And Inferior Mesenteric Arteriography
Renal Arteriography
Trans Femoral Arteriography
Interventional Vascular Radiography
Additional Investigations : Echo Cardiogram (Doppler)
Radio-Isotope Scanning
Computed Tomography
Magnetic Resonance And Imaging

Venography:

Peripheral Venography - Lower Limb, Upper Limb
Central Venography Superior Venacavography
Inferior Venacavography
Pelvic Venography
Ascending Lumbar Venography
Intra Osseous Venography
Percutaneous Splenoportography
Transhepatic Portography
Selective Retrograde Venography - Renal Venography
Adrenal Venography
Hepatic Venography
Internal Jugular Venography
Orbital Venography
Interventional Vascular Radiography
Additional Investigation: Ultrasound Imaging
Radio Isotope Scanning
Computed Tomography

Central Nervous System:

Cervical Myelography - Cisternal Puncture And Lateral Cervical Puncture
Lumbar Myelography
Myelography With Water Soluble And Oily Contrast Media
Air Encephalography
Ventriculography
Lumbar Discography
Addition Investigations: Computed Tomography
Radio Isotope Scanning
Magnetic Resonance And Imaging
Ultrasound Imaging

Respiratory System:

Nasopharyngography
Larynography
Bronchography
Percutaneous Lung Biopsy
Additional Investigations: Radio Isotope Scanning
Computed Tomography
Ultrasound Imaging
Magnetic Resonance And Imaging

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**DURATION OF EXAMINATION:
3 HOURS**

Miscellaneous:

Arthrography
Sialography
Lymphography
Sinography
Fistulography
D Aery Ocy Stography
Mammography
Xeroradiography
Thermography
Kymography
Stereo-Radiography
Duplication Radiography
Macro Radiography
High Kilo Voltage Technique
Soft Tissue Radiography
Multiple Radiography
Subtraction Radiography
Foreign Body Localisation
Mobile Radiography
Theatre Radiography
Domiliary Radiography
Forensic Radiography
Tomography.

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COURSE TITLE : Radiographic Techniques II

COURSE CODE: BRT302

DURATION OF EXAMINATION: 3 HOURS

RADIOGRAPHIC TECHNIQUE II (PRACTICALS)

Barian Swallow Exam (E) Radiology Technique II
 Barian Meal Exam (E)
 Barian Follow Through Exam
 Barian Cinema Exam (E)
 Hypotonic Duodenography
 Barian Double Contrast Study (E)
 Intravenous Pyelography (E)
 Angiographic Studies 1. Arterial 2. Venous
 Lymphangiographic Studies
 Myelographic Studies
 Ventriculographic Studies
 Bronchographic Studies
 Macro Radiography Studies
 M.M.R.
 Mammography

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**COURSE TITLE : Radiographic
Techniques II**

COURSE CODE: BRT302

**DURATION OF EXAMINATION:
3 HOURS**

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 Radiographic Techniques II Shall Be As Given Under.

B. Duration : 3 Hrs

Max Marks : 60

Type of Questions	No of Questions	Marks For Each Questions	Total
Long Essay	4 to answer 2 Section A - 2 to attempt 1 Section B - 2 to attempt 1	10	20
Short Essay	6 questions to answer 4 Section A - 3 to answer 2 Section B - 3 to answer 2	05	20
Short Answers	12 questions to answer 10 Section A - 6 to answer 5 Section B - 6 to answer 5	02	20
Total			60

Practicals Scheme Of Examination
Practicals III Rd Year

Practical - I

Diagnostic Imaging Techniques - 40 Marks

- A. Spotters - 10 Marks
- B. Positioning & Factors - 10 Marks
- C. Film & Image Discussions - 20 Marks

Practical - II

Radiography Techniques - 40 Marks

- A. Spotters - 10 Marks
- B. Positioning & Factors - 10 Marks
- C. Radiography - 20 Marks

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CLASS: B.Sc Radiography Technology 3rd Year

COURSE TITLE : Radiographic Techniques II

COURSE CODE: BRT302

DURATION OF EXAMINATION: 3 HOURS

BIO STATISTICS

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CLASS: B.Sc Radiography Technology 3rd Year

COURSE TITLE: Biostatistics

COURSE CODE: BRT303

DURATION OF EXAMINATION: 3 HOURS

Time Allotted: 20 Hours

Course Description:

Introduction To Basic Statistical Concepts: Methods Of Statistical Analysis; And Interpretation Of Data

Behavioural Objectives:

Understands Statistical Terms.

Possesses Knowledge And Skill In The Use Of Basic Statistical And Research Methodology.

Unit - i : Introduction

Meaning, Definition, Characteristics Of Statistics.

Importance Of The Study Of Statistics.

Branches Of Statistics.

Statistics And Health Science Including Nursing.

Parameters And Estimates.

Descriptive And Inferential Statistics.

Variables And Their Types.

Measurement Scales

Unit - ii: Tabulation Of Data

Raw Data, The Array, Frequency Distribution.

Basic Principles Of Graphical Representation.

Types Of Diagrams – Histograms, Frequency Polygons, Smooth Frequency Polygon,

Commulative Frequency Curve, Ogive.

Normal Probability Curve.

Unit - iii : Measure Of Central Tendency

Need For Measures Of Central Tendency

Definition And Calculation Of Mean - Ungrouped And Grouped

Meaning, Interpretation And Calculation Of Median Ungrouped And Grouped.

Meaning And Calculation Of Mode.

Comparison Of The Mean, And Mode.

Guidelines For The Use Of Various Measures Of Central Tendency.

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CLASS: B.Sc Radiography Technology 3rd Year

COURSE TITLE : Biostatistics

COURSE CODE: BRT303

DURATION OF EXAMINATION: 3 HOURS

Unit - iv : Measure Of Variability

Need For Measure Of Dispersion;
The Range, The Average Deviation.
The Variance And Standard Deviation.
Calculation Of Variance And Standard Deviation Ungrouped And Grouped.
Properties And Uses Of Variance And So

Unit - v : Probability And Standard Distributions.

Meaning Of Probability Of Standard Distribution.
The Binominal Distribution.
The Normal Distribution.
Divergence From Normality - Skewness, Kurtosis.

Unit - vi : Samling Techniques

Need For Sampling - Criteria For Good Samples.
Application Of Sampling In Community.
Procedures Of Sampling And Sampling Designs Errors.
Sampling Variation And Tests Of Significance.

Unit - vii :Health Indicator

Importance Of Health Indicator.
Indicators Of Population, Morbidity, Mortality, Health Services.
Calculation Of Rates And Ratios Of Health.

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COURSE TITLE: Computer Application

COURSE CODE: BRT304

DURATION OF EXAMINATION: 3 HOURS

Basics In Computer Applications

The Course Enables The Students To Understand The Fundamentals Of Computer And Its Applications.

Introduction To Data Processing :

Features Of Computers, Advantages Of Using Computers. Getting Data Into / Out Of Computers. Role Of Computers. What Is Data Processing? Application Areas Of Computers Involved In Data Processing. Common Activities In Processing. Types Of Data Processing. Characteristics of Information. What Are Hardware And Software?

Hardware Concepts :

Architecture Of Computers, Classification Of Computers, Concept Of Damage. Types Of Storage Devices. Characteristics Of Disks, Tapes, Terminals, Printers, Network. Applications Of Networking Concept Of Pc System Care, Floppy Care, Data Care.

Concept Of Software.

Classification Of Software : System Software. Application Of Software. Operating System. Computer System. Computer Virus. Precautions Against Viruses. Dealing With Viruses. Computers In Medical Electronics

Basic Anatomy Of Computers
Principles of Programming

Computer Application - Principles In Scientific Research; Work Processing, Medicine, Libraries, Museum, Education, Information System.

Data Processing Computers In Physical Therapy - Principles In Emg, Exercise Testing Equipment, Laser.

Scheme of Examination For Medical Electronics Including Computer Applications

One Written (Theory) Paper: Maximum Marks: -80 Marks.
No Practical or Viva Voce Examination

