UNIVERSITY OF JAMMU

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

NOTIFICATION
(20/Jul/Adp/15)

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 Anesthesia Technology (B.Sc. Anesthesia Technology)** 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/ 1241-1246
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

Sumitra Sharma 5/8/2020.
Deputy Registrar (Academic)
4/8/20

Regulations & Curriculum For Bachelor of Science Degree Courses In

B.Sc Anesthesia Technology

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.

(MR. J.C. FRANK)

Shalini Sharma

-Meenu Khar

(Sonam Sharma)

Khanna

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 1 st , 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 np condition in shortage shall be permitted by the Vice-Chancellor unless endorsed and recommended by the Head of the Department / Principal of the College.

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	20	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	Medicine relevant to Anesthesia technology	50	-		50
2	Section A Applied Pathology	30	30		120
3	Section B Applied Microbiology	30	30		120
4	Applied Pharmacology	50			50
5	Introduction to Anesthesia Technology	80	100	650	830
	Total	**240**	**160**	**650**	**1050**

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	Anaesthesia Technology – Clinical	50	50	250	350
2	Anaesthesia Technology – Applied	50	50	250	350
3	Anaesthesia Technology – Advanced	50	50	250	350
	Total	**150**	**150**	**750**	**1050**

Subsidiary Subjects

Ethics, Database Management	50 Hours
Research & 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:

Two practical examinations, at the end 2nd Year and one 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				Praticals			
		Theory	Viva-Voca	IA	Sub Total	Univ Practicals	IA	Sub total	Grand Total
I	Section A – Applied Pathology	50	30	20	150	40	10	50	200
2	Section B – Applied Microbiology	50	30	20	150	40	10	50	200
3	Introduction to Anesthesia Technology	100	30	20	150	40	10	50	200
4	Applied Pharmacology	80		20	100				100
5	Medicine relevant to technology								100

Distribution of Subsidiary Subjects and marks for Second Year Examination.

B	Subsidiary Subject *	Written Paper		Internal Assessment	Total
		Duration	Marks	Theory (Marks)	Marks
1	Sociology	3 Hours	80	20	100
2	Constitution of India	3 Hours	80	20	100
3	Environmental Science & Health	3 Hours	80	20	100

** Subsidiary subjects: Examination for subsidiary Subjects shall be conducted by respective colleges.

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

Paper	Subjects	Theory				Praticals			
		Theory	Viva-Voca	IA	Sub Total	Univ Practicals	IA	Sub total	Grand Total
I	Anaesthesia Technology – Clinical	100	30	20	150	120	30	150	600
2	Anaesthesia Technology – Applied	100	30	20	150	120	30	150	600
3	Anaesthesia Technology – Advanced	100	30	20	150	120	30	150	600

Distribution of Subsidiary Subjects and marks for Third Year Examination.

B	Subsidiary Subject *	Written Paper		Internal Assessment	Total
		Duration	Marks	Theory (Marks)	Marks
1	Ethics, Database Management	3 Hours	80	20	100
2	Research & Biostatistics	3 Hours	80	20	100
3	Computer Application	3 Hours	80	20	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
   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 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/se must pass the carry over subjects before appearing for second year examination; otherwise he/she shall not permitted to proceed to third year.

Members of Board of Studies

Dr Sunanda Raina	Convener	
Smt.Shakuntla Sharma	Member	
Mr. J.C. Frank	Member	
Smt Munni Dhar	Member	
Smt.Sonam Sharma	Member	
Smt.Rafiqa Bashir	Member	
Smt. Rajni Sharma	Member	

B.SC ANESTHESIA TECHNOLOGY

COURSE CODE FOR B.SC ANESTHESIA TECHNOLOGY COURSE

YEAR	COURSE TITLE	COURSE CODE
FIRST YEAR	Human Anatomy	BAT101
	Physiology	BAT102
	Biochemistry	BAT103
	Pathology – [Clinical Pathology, Hematology & Blood Banking	BAT104
	Microbiology	BAT105
	English	BAT106
	Health Care	BAT107
SECOND YEAR	Medicine relevant to Anesthesia technology	BAT201
	Section A Applied Pathology	BAT202
	Section B Applied Microbiology	BAT203
	Applied Pharmacology	BAT204
	Introduction to Anesthesia Technology	BAT205
	Sociology	BAT206
	Constitution of India	BAT207
	Environmental Science & Health	BAT208
THIRD YEAR	Anesthesia Technology – Clinical	BAT301
	Anesthesia Technology – Applied	BAT302
	Anesthesia Technology – Advanced	BAT303
	Research & Biostatistics	BAT304
	Computer application	BAT305
	Ethics, Database Management	BAT306

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Human Anatomy
COURSE CODE: BAT101
DURATION OF EXAMINATION: 3 HOURS

Course Contents First Year
Main Subjects

ANATOMY

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

1. **Introduction: human body as a whole**
   Theory:
   Definition of anatomy and its divisions
   Terms of location, positions and planes
   Cell and its organelles
   Epithelium-definition, classification, describe with examples, function
   Glands- classification, describe serous & mucous glands with examples
   Basic tissues - classification with examples
   Practical: Histology of types of epithelium
   Histology of serous, mucous & mixed salivary gland

2. **Locomotion and support**
   Theory:
   Cartilage - types with example & histology
   Bone - Classification, names of bone cells, parts of long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc, fontanelles of fetal skull
   Joints - Classification of joints with examples, synovial joint (in detail for radiology)
   Muscular system: Classification of muscular tissue & histology
   Names of muscles of the body
   Practical: Histology of the 3 types of cartilage
   Demo of all bones showing parts, radiographs of normal bones & joints
   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
   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

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Human Anatomy
COURSE CODE: BAT101
DURATION OF EXAMINATION: 3 HOURS

Peripheral pulse
Inferior venacava, portal vein, portosystemic anastomosis
Great saphenous vein
Dural venous sinuses
Lymphatic system- cisterna chyli & thoracic duct
Histology of lymphatic tissues
Names of regional lymphatics, axillary and inguinal lymph nodes in brief
Practical: Demonstration of heart and vessels in the body
Histology of large artery, medium sized artery & vein, large vein
Microscopic appearance of large artery, medium sized artery & vein, large vein pericardium
Histology of lymph node, spleen, tonsil & thymus
Normal chest radiograph showing heart shadows
Normal angiograms

4. **Gastro-intestinal system**
   Theory:
   Parts of GIT, Oral cavity (lip, tongue (with histology), tonsil, dentition, pharynx, salivary glands, Waldeyer's ring)
   Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas
   Radiographs of abdomen

5. **Respiratory system**
   Parts of RS, nose, nasal cavity, larynx, trachea, lungs, bronchopulmonary segments
   Histology of trachea, lung and pleura
   Names of paranasal air sinuses
   Practical:Demonstration of parts of respiratory system.
   Normal radiographs of chest
   Histology of lung and trachea

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

7. **Urinary system**
   Kidney, ureter, urinary bladder, male and female urethra
   Histology of kidney, ureter and urinary bladder
   Practical:demonstration of parts of urinary system
   Histology of kidney, ureter, urinary bladder
   Radiographs of abdomen-IVP, retrograde cystogram

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

Histology of testis, vas deferens, epididymis, prostate, uterus, fallopian 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
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

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Human Anatomy
COURSE CODE: BAT101
DURATION OF EXAMINATION: 3 HOURS

* 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 (To attempt 2)	2 x 10	20
SHORT ESSAY (SE)	8 (To attempt 6)	6 x 5	30
SHORT ANSWER (SA)	12 (To Attempt 10)	10 x 3	30
TOTAL MARKS			80

PHYSIOLOGY

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Physiology
COURSE CODE: BAT102
DURATION OF EXAMINATION: 3 HOURS

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
Cross matching
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, examplesand uses Anaemias : Classification - morphological and etilogical. effects of anemia on body Blood indices - Colour index, MCH, MCV, MCHC Erythrocyte sedementation Rate (ESR) and Paced cell volume Normal values, Definition, determination, Blood Volume - Normal Value, determination of blood volume and regulation of blood volume Body fluid - pH, normal value, regulation and variation Lymph - lymphoid tissue formation, circulation, composition and function of lymph

Cardiovascular system

Heart - Physiological Anatomy, Nerve supply
Properties of cardiac muscle, Cardiac cycle - systole, diastole. Intraventricular pressure curves.
Cardiac Output - only definition
Heart sounds Normal heart sounds Areas of auscultation.
Blood Pressure - Definition, normal value, clinical measurement of blood pressure.
Physiological variations, regulation of heart rate, cardiac shock, hypotension, hypertension.
Pulse - Jugalar, radial pulse, Triple response

Heart sounds - Normal heart sounds, cause characteristics and signification. Heart rate Electrocardiogram (ECG) -significance.

Digestive System - Physiological anatomy of Gastro intestinal tract, Functions of digestive system Salivary glands Stucture and functions. Deglutination -stages and regulation Stomach - structure and fuctions
Gastric secretion - Composition function regulation of gastric juice secretion
Pancrease - structure, function, composition, regulation of pancreatic juice
Liver - functions of liver
Bile secretion, composition, function regulation of bile secretion .Bilirubin metabolism types of bilirubin, Vandernberg 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. Hearing Brier, Reflexes.

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

Endocrine System - Definition Classification of Endocrine glands & their Harmones Properties of Harmones.

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

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

Pituitary hormones - Anterior and posterior pituitary hormones, secretion, function Pancreas - Hormones of pancreas Insulin - secretion, regulation ,function and action. Diabetes mellitus - Regulation of blood glucose level.

Parathyroid gland - function, action, regulation of secretion of parathyroid hormone. Calcitonin - function and action

Special senses

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

Nervous system:

Functions of Nervous system, 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 nepron, vasarecta, cortical and juxtamedullary nephrons - Comparision, Juxta Glomerular Apparatus -Structure and function. Renal circulation peculiarities.

Mechanism of Urine formation: Ultrafiltration criteria for filtration GFR, Plasma fraction, EFP, factors effecting EFR. Determination of GFR selective reabsorption - sites of reabsorption substance reabsorbed, mechanisms of reabsorption Glucose, urea. H + Cl aminoacids etc. TMG, Tubular lead, Renal threshold % of reabsorption of different substances, selective e secretion.

Properties and composition of normal urine, urine output. Abnormal constituents in urine , Mechanism of urine concentration.

Counter - Current Mechanisms : Micturition, Innervation of Bladder, Cysteurethrogram.

Diuretics: Water, Diuretics, osmotic diuretics, artificial kidney Renal function tests - plasma clearance Actions of ADH, Aldosterone and PTH on kidneys. Renal function tests

Reproductive system:
Function of Reproductive system, Puberty, male reproductive system. Functions of testes, spermatogenesis site, stages, factors influencing semen. Endocrine functions of testes.

Androgens: Testosterone structure and functions. Female reproducive syustem. 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.

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Physiology
COURSE CODE: BAT102
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 Physiology shall be as given under.

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

NO PRACTICAL EXAMINATION

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Biochemistry
COURSE CODE: BAT103
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

1. **Introduction to Laboratory apparatus**

Pipettes- different types (Graduated, volumetric, Pasteur, Automatic etc.,) Calibration of glass pipettes Burettes, Beakers, Petri dishes, depression plates. Flasks - different types)Volumetric, round bottmed, Erlemeyer conical etc.,) Funnels - different types (Conical, Buchner etx.,) Bottles - Reagent bottles - graduated and common, Wash bottles - different type Specimen bottles etc.,

2. **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 Distilation 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 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. Guidelines 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 electrods, 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 uncertainly 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 H 2S04 etc.,

Preparation of normal solutions. eg., IN Na2C03, O IN Oxalic acid, 0.1 N HCl, 0.1N H2504, 0.66 N H2S04 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 NHCl 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. Standard solutions. Technique for preparation of standard

solutions. Eg., Glucose, urea, etc.,

Significance of volumetric flask in preparaing standard solutions. Volumetric flasks of different sizes, Preparation of standard solutions of deliquesent 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. Arrehenius concept of acids and bases, Lowery - Bronsted theory of acids and bases classification of acids and bases. Different between bases and alkali, acidity and basicity, monoprotonic and polyprotonic 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, deliquescentand hygroscopic salts

Acid- base indicators: (Theory and Practical)

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

Practical - 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 andInterpretations

Special Investigations:
- Serum Electrophoresis
- Immunoglobulins
- Drugs: Digitoxin, Theophyllines

Regulation of Acid Base status:
- Henderson Hasselback Equations
- Buffers of the fluid

pH Regulation
Disturbance inacid 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

Internal Assessment
Theory - Average of two exams conducted. 20

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Biochemistry
COURSE CODE: BAT103
DURATION OF EXAMINATION: 3 HOURS

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.

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

NO PRACTICAL EXAMINATION

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Pathology
COURSE CODE: BAT104
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
- 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.

BloodBank

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.
- Histopathlogy - Section cutting and H &E Staining.[For BSc MLT only]

Internal Assessment

Theory - Average of two exams conducted. 20
Practical: Record & Lab work* 10

* There shall be no University Practical Examination and internal assessment marks secured in Practical need not be sent to the University.

Scheme of Examination Theory

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

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

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Microbiology
COURSE CODE: BAT105
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 dispatch of specimens for routine microbiological investigations. Interpretation of commonly done bacteriological and serological investigations. Control of Hospital infections, Biomedical waste management and Immunization schedule.

Theory - 70 hours

1. Morphology — 4 hours
   Classification of micro organisms, 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 sterlization namely Hot Air oven, Autoclave and serum Inspissrator. 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 avoid)

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) Staphyloccci, Streptococci, Pneumococci, Gonococci, Menigococci, C diphtheriae, 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

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

10. Principles and practice Biomedical waste management 4 hours

Practical **20 hours**

Compound Microscope.
Demonstration and sterlization of equipments - Hot Air oven, Autoclave, Bacterial filters.
Demonstration of commonly used culture media, Nutrient broth, Nutrient agar, Blood agar, Chacolate agar, Mac conkey medium, LJ media, Robertson Cooked meat media, Potassium tellurite media with growth, Mac with LF & NLF, 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.
Anaerobic 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 Microbiology shall be as given under.

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Microbiology
COURSE CODE: BAT105
DURATION OF EXAMINATION: 3 HOURS

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

ENGLISH

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: English
COURSE CODE: BAT106
DURATION OF EXAMINATION: 3 HOURS

COURSE OUTLINE

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

BEHAVIOURAL OBJECTIVES:

The student at the end of training is able to

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

UNIT - I: INTRODUCTION :

Study Techniques
Organisation of effective note taking and logical processes of analysis and synthesis Use of the dictionary
Enlargement of vocabulary
Effective diction

UNIT - II: APPLIED GRAMMAR:

Correct usage
The structure of sentences
The structure of paragraphs
Enlargements of Vocabulary

UNIT - III:WRITTEN COMPOSITION:

Precise writing and summarising
Writing of bibliography
Enlargement of Vocabulary

UNIT - IV: READING AND COMPREHENSION:

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

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

Paragraph, Essay, Letter, Summary, Practice in writing

UNIT - VI: VERBAL COMMUNICATION:

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

Scheme of Examination

Written (Theory): Maximum Marks: -80 marks.
No Practical or Viva voce examination
This is a subsidiary subject, examination to be conducted by respective colleges. Marks required for a pass is 35%

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 1st Year
COURSE TITLE: Health Care
COURSE CODE: BAT107
DURATION OF EXAMINATION: 3 HOURS

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, sterlization and disinfection. Surgical Dressing: Observation of dressing procedures

First Aid :

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

MEDICINE RELEVANT TO ANAESTHESIA TECHNOLOGY

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

CLASS: B.Sc Anesthesia Technology 2nd Year

COURSE TITLE: Medicine relevant to Anesthesia Technology.

COURSE CODE: BAT201

DURATION OF EXAMINATION: 3 HOURS

Diabetes Mellitus
Hypertension
Ischaemic heart disease
Obesity
Elderly patient
Pregnancy
Shock
COPD
Chronic renal failure
Chronic liver disease/failure
Anaemia
Pediatric patient infant / neonate
Epilepsy
CVA

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 Medicine relevant to Anaesthesia Technology shall be as given under.

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

NO PRACTICAL EXAMINATION

APPLIED PATHOLOGY

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 2nd Year
COURSE TITLE: Section A Applied Pathology
COURSE CODE: BAT202
DURATION OF EXAMINATION: 3 HOURS

I. CARDIOVASCULAR SYSTEM

- Atherosclerosis- Definition, risk factors, briefly Pathogenesis & morphology, clinical significance and prevention.
- Hypertension- Definition, types and briefly Pathogenesis and effects of Hypertension.
- Aneurysms - Definition, classification, Pathology and complications.
- Pathophysiology of Heart failure.
- Cardiac hypertrophy - causes, Pathophysiology & Progression to Heart Failure.
- Ischaemic heart diseases- Definition, Types. Briefly Pathophysiology, Pathology & Complications of various types of IHD.
- Valvular Heart diseases- causes, Pathology & complication. Complications of artificial valves.
- Cardiomyopathy - Definition, Types, causes and significance.
- Pericardial effusion- causes, effects and diagnosis.
- Congenital heart diseases - Basic defect and effects of important types of congenital heart diseases.

II. HAEMATOLOGY

- Anaemia - Definition, morphological types and diagnosis of anaemia.
  Brief concept about Haemolytic anaemia and polycythaemia.
- Leukocyte disorders- Briefly leukaemia, leukocytosis, agranulocytosis etc.,
- Bleeding disorders- Definition, classification, causes & effects of important types of bleeding disorders. Briefly various laboratory tests used to diagnose bleeding disorders.

III. RESPIRATORY SYSTEM

- Chronic obstructive airway diseases - Definition and types. Briefly causes, Pathology and complications of each type of COPD.
- Briefly concept about obstructive versus restrictive pulmonary disease.
- Pneumoconiosis- Definition, types, Pathology and effects in brief.
- Pulmonary congestion and edema.
- Pleural effusion - causes, effects and diagnosis.

IV. RENAL SYSTEM

- Clinical manifestations of renal diseases. Briefly causes, mechanism, effects and laboratory diagnosis of ARF & CRS. Briefly Glomerulonephritis and Pyelonephritis.
- End stage renal disease - Definition, causes, effects and role of dialysis and renal transplantation in its management.
- Brief concept about obstructive uropathy.

PRACTICALS

1. Description & diagnosis of the following gross specimens.
   a. Atherosclerosis.
   b. Aortic aneurysm.
   c. Myocardial infraction.

d. Emphysema
e. Chronic glomerulonephritis.
f. Chronic pyelonephritis.

2. Interpretation & diagnosis of the following charts.
   a. hematology Chart - AML, CML, Hemophilia, neutrophilia, eosinophilia.
   b. Urine Chart - ARF, CRF, Acute glomerulonephritis.

3. Estimation of Hemoglobin.

4. Estimation Bleeding & Clotting time.

Scheme of Examination

Theory

There shall be one theory paper with 2 section of three hours duration carrying 50 marks. Distribution of type of questions and marks for Applied Pathology shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (To attempt 2)	2 x 10	20
SHORT ESSAY (SE)	5 (To attempt 3)	3 x 5	15
SHORT ANSWER (SA)	7 (To Attempt 5)	5 x 3	15
TOTAL MARKS			50

PRACTICAL EXAMINATION - **40 Marks.**

There will be a Combined Practical examination for Applied Pathology & Applied Microbiology.

Sl. No.	Tests	Marks
1.	Interpretation of Hematology Chart	05
2.	Interpretation of Urine Chart	05
3.	Estimation of Hemoglobin	05
4.	Estimation of Bleeding time & Clotting time	05
	Total	20

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 2nd Year
COURSE TITLE: Section B Applied Microbiology
COURSE CODE: BAT203
DURATION OF EXAMINATION: 3 HOURS

APPLIED MICROBIOLOGY

THEORY - 40 HOURS

1. Health care associated infections and Antimicrobial resistance: Infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting like Methicillin Resistant Staphylococcus aureus infections, Infections caused by Clostriduium difficle, Vancomycin resistant enterococci etc. Catheter related blood stream infections, Ventilator associated pneumonia, Catheter Related urinary tract infections, Surveillance of emerging resistance and changing flora. The impact and cost attributed to Hospital Associated infection.
   6 Hours
2. Disease communicable to Healthcare workers in hospital set up and its preventive measure: Occupationally acquired infections in healthcare professionals by respiratory route (tuberculosis, varicella-zoster, respiratory synctial virus etc), blood borne transmission (HIV, Hepatitis B, Hepatitis C, Cytomegalovirus, Ebola virus etc), oro faecal route (Salmonella, Hepatitis A etc), direct contact (Herpes Simplex Virus etc). Preventive measures to combat the spread of these infections by monitoring and control.
   6 Hours
3. Microbiological surveillance and sampling: Required to determine the frequency of potential bacterial pathogens including Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis and also to assess the antimicrobial resistance.

   Sampling: rinse technique, direct surface agar plating technique. 6 Hours
4. Importance of sterilization:
   a. Disinfection of instruments used in patient care: Classification, different methods, advantages and disadvantages of the various methods.
   b. Disinfection of the patient care unit
   c. Infection control measures for ICU's
   10 Hours
5. Sterilization:
   a. Rooms: Gaseous sterilization, one atmosphere uniform glow discharge plasma (OAUGDP).
   b. Equipments: classification of the instruments and appropriate methods of sterilization.
   c. Central supply department: the four areas and the floor plan for instrument cleaning, high-level disinfecting and sterilizing areas.
   8 Hours
6. Preparation of materials for autoclaving: Packing of different types of materials, loading, holding time and unloading.
   4 Hours

PRACTICALS- 30 HOURS

1. Principles of autoclaving & quality control of Sterilization.
2. Collection of specimen from outpatient units, inpatient units, minor operation theater and major

operation theater for sterility testing.

3. The various methods employed for sterility testing.
4. Interpretation of results of sterility testing.
5. Disinfection of wards, OT and Laboratory.

Scheme of Examination

Theory

There shall be one theory paper with 2 section of three hours duration carrying 50 marks. Distribution of type of questions and marks for Applied Microbiology shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (To attempt 2)	2 x 10	20
SHORT ESSAY (SE)	6 (To attempt 4)	4 x 5	20
SHORT ANSWER (SA)	7 (To Attempt 5)	5 x 2	10
TOTAL MARKS			50

PRACTICAL EXAMINATION - **40 Marks.**

There will be a Combined Practical examination for Applied Pathology & Applied Microbiology.

Sl. No.	Tests	Marks
1.	Dry heat / Moist heat: Temperature recording charts interpretation	05
2.	Dry heat / Moist heat: Color change indicators interpretation	05
3.	Air sampling culture plates interpretation of Colony forming units based on air flow rate and sampling time	05
4.	Interpretation of Sterility of Hemodialysis water / Distilled water /Deionised water based on growth of colonies in BHI agar to be reported as X CFU/mL	05
	Total	20

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 2nd Year
COURSE TITLE: Applied Pharmacology
Course Contents Second Year Main Subjects
COURSE CODE: BAT204
DURATION OF EXAMINATION: 3 HOURS

APPLIED PHARMACOLOGY

- General concepts about pharmacodynamic and Pharmacokinetic Principles involved in drug activity.

I. Autonomic nerves system.
- Anatomy & functional organisation.
- List of drugs acting an ANS including dose, route of administration, indications, contra indications and adverse effects.

II. Cardiovascular drugs- Enumerate the mode of action, side effects And therapeutic uses of the following drugs.

a. Antihypertensives
   - Beta Adrenergic antagonists
   - Alpha Adrenergic antagonists
   - Peripheral Vasodilators
   - Calcium channel blockers
b. Antiarrhythmic drugs
c. Cardiac glycosides
d. Sympathetic and nonsympathetic inotropic agents.
e. Coronary vasodilators.
f. Antianginal and anti failure agents
g. Lipid lowering & anti atherosclerotic drugs.
h. Drugs used in Haemostais - anticoagulants Thrombolytics and antithrombolytics.
i. Cardioplegic drugs- History, Principles and types of cardioplagia.
j. Primary solutions - History, principles & types.
k. Drugs used in the treatment of shock.

III. Anaesthetic agents.
- Definition of general and local anaesthetics.
- Classification of general anaesthetics.
- Pharmacokinetics and Pharmacodynamics of inhaled anaesthetic agents.
- Intravenous general anaesthetic agents.
- Local anaesthetics - classification mechanism of action, duration of action and methods to prolong the duration of action. Preparation, dose and routes of administration.

IV. Analgessics
- Definition and classification
- Routes of administration, dose, frequency of administration, Side effects and management of non opioid and opiod analgesics

V. Antihistamines and antiemetics-
- Classification, Mechanism of action, adverse effects, Preparations, dose & routes & administration.

VI. CNS stimulants and depressants

- Alcohol
- Sedatives, hypnotics and narcotics
- CNS stimulants
- Neuromuscular blocking agents and muscle relaxants.

VII. Pharmacological protection of organs during CPB

VIII. Inhalational gases and emergency drugs.

IX. Pharmacotherapy of respiratory disorders

- Introduction - Modulators of bronchial smooth muscle tone and pulmonary vascular smooth muscle tone
- Pharmacotherapy of bronchial asthma
- Pharmacotherapy of cough
- Mucokinetic and mucolytic agents
- Use of bland aerosols in respiratory care.

X. Corticosteroids - Classification, mechanism of action, adverse effects and complications. Preparation, dose and routes of administration.

XI. Diuretics

- Renal physiology
- Side of action of diuretics
- Adverse effects
- Preparations, dose and routes of administrion.

XII. Chemotherapy of infections

- Definition
- Classification and mechanism of action of antimicrobial agents
- Combination of antimicrobial agents
- Chemoperophylaxis.
- Classification, spectrum of activity, dose, routes of administration and adverse effects of penicillin, cephalosporins, aminoglycosides, tetracyclines, chloramphenicol, antitubercular drugs.

XIII. Miscellaneous.

- IV fluids- various preparations and their usage.
- Electrolyte supplements
- Immunosuppressive agents
- New drugs included in perfusion technology.
- Drugs used in metabolic and electrolyte imbalance.

PRACTICALS:

1. Preparation and prescription of drugs of relevance.

2. Experimental pharmacology directed to show the effects of commonly used drugs of relevance and interpretation of few charts.

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 applied Pharmacology shall be as given under.

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

INTRODUCTION TO ANAESTHESIA TECHNOLOGY

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

CLASS: B.Sc Anesthesia Technology 2nd Year

COURSE TITLE: Introduction to Anesthesia Technology

COURSE CODE: BAT205

DURATION OF EXAMINATION: 3 HOURS

1. **Gas physics**
   - States of matter
   - Temperature conversion
   - Humidity
   - Pressure measurement
   - Gas flows and diffusion
   - Gas laws
   - Miscellaneous concepts such as density and specific gravity

2. **Medical Gas Supply**
   - Compressed gas Cylinders
   - Colour coding
   - Cylinders and Cylinder valves
   - Cylinder storage
   - Diameter index safety system
   - Medical gas pipline system and station outlets
   - Air compressors
   - Oxygen concentrators
   - Alarms and safety devices

3. **Gas Administration Devices**
   - Simple oxygen administration devices
   - Methods of controlling gas flow
   - Reducing valves
   - Flow meters
   - Regulators
   - Flow restrictors

4. **Oxygen Therapy**
   - Definition
   - Causes and responses to hypoxemia
   - Clinical signs of hypoxemia
   - Goals of oxygen therapy
   - Evaluation of patients receiving oxygen therapy
   - Hazards of oxygen therapy

5. **Anaesthesia Machine**
   - Hanger and yoke system
   - Cylinder pressure gauge, pin index
   - Pressure regulator
   - Flow meter assembly

- Vaporizers - Types, hazards, maintenance, filling and draining.

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 2nd Year
COURSE TITLE: Introduction to Anesthesia Technology
COURSE CODE: BAT205
DURATION OF EXAMINATION: 3 HOURS

6. Breathing System
- General considerations
- Classification and breathing system
- Mapleson system
- Jackson Rees system of Bain circuit
- Non breathing valves - Ambu valves
- Others

7. Gas Analysers, Pulse Oximeter, CO2 Monitor
- Gas analysis
- Types and care
- Transcutaneous oxygen monitors
- Pulse oximeters
- Capnographs

8. Manual Resuscitators
- Types of resuscitator bags
- Indications
- Hazards
- Methods of increasing oxygen delivery capabilities while using oxygen with resuscitator bags.

9. Artificial air ways (Oral and Nasal endotracheal tubes, tracheostomy tubes)
- Parts of airway and features
- Types, sizes and methods of insertion
- Indications for use
- Care of long term airways and complications
- Protocol for tracheostomy decannulation
- Face masks - Types, sizes and its usage.

10. Methods of cleaning and sterilization of anesthetic equipments.

11. History of Anesthesia
- Prehistoric (Ether) era
- Inhalational anasthetic era
- Regional anasthetic era
- Intravenous anasthetic era
- Modern anasthetic era

12. Minimum Standards for anaesthesia
- Who should give anaesthesia
- Ten golden rules of anesthesia
- Patient assessment and preparation
- Checking the drugs and equipment

- Keeping the airway clear
- Be ready to control ventilation
- Monitor pulse and BP

Scheme of Examination

Theory

There shall be one theory paper of three hours duration carrying 100 marks. Distribution of type of questions and marks for Introduction to Anaesthesia Technology shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (To attempt 2)	2 x 10	20
SHORT ESSAY (SE)	12 (To attempt 10)	10 x 5	50
SHORT ANSWER (SA)	12 (To Attempt 10)	10 x 3	30
TOTAL MARKS			100

PRACTICAL EXAMINATION - **40 Marks.**

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 2nd Year
COURSE TITLE: Sociology
COURSE CODE: BAT206
DURATION OF EXAMINATION: 3 HOURS

SUBSIDIARY SUBJECTS 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

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 Anesthesia Technology 2nd Year
COURSE TITLE: Constitution of India
COURSE CODE: BAT207
DURATION OF EXAMINATION: 3 HOURS

INDIAN CONSTITUTION

Prescribed for the First Year students of all degree classes

Unit-I: Meaning of the team '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.

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 2nd Year
COURSE TITLE: Environmental Science & Health
COURSE CODE: BAT208
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.
Role of arthropods in the causation of diseases, mode of transmission of arthropods borne diseases, methods of control

Course Contents Third Year
Main Subjects

B.Sc. ANAESTHESIA TECHNOLOGY

Paper-I - Anaesthesia Technology - Clinical

Third Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 3rd Year
COURSE TITLE: Anaesthesia Technology - Clinical
COURSE CODE: BAT301
DURATION OF EXAMINATION: 3 HOURS

1. **Pre operative preparation**
   Pre Anaesthetic Assessment
   History of present assessment
   Past history with emphasis on previous illness and surgery
   Personal history - Smoking, alcohol
   Physical examination - General and systemic

2. **Informed consent**

3. **Premedication: Aims**
   a. Narcotics
   b. Antihistamines
   c. Antacids
   d. Others - NTG

4. **Investigations**
   Biochemistry - Blood, glucose, Urea, Creatinine
   Haematology - Haemogram, Prothrombin Time, Partial thromboplastin time, BT, CT
   Urine - Complete urine analysis
   ECG
   Chest X-ray
   ABG

5. **Criteria used for accepting the case for surgery**

6. **Equipment**
   Checking the machine, laryngoscopes, tubes, airways etc. suction apparatus, oxygen Cylinder, anaesthetic drugs and emergency drugs.

7. **Monitoring system**

8. **Induction - Anaesthesia**
   Endotracheal intubation, confirming the tube position and securing the tube
   Maintenance of anaesthesia
   Fluid / Blood and electrolyte balance
   Reversal from anaesthesia - drugs used

9. **Preparations**
   a. Identification
   b. Consent

c. NPO
d. Prosthesis
e. Lab results
f. Consultation
g. Blood

10. Testing Machine

a. Gas supply
b. Flow meters
c. O2 bypass
d. Valves
e. Vaporises

11. Emergency Drugs

a. Atropine
b. Epinephrine
c. Isoprenaline
d. Ephedrine
e. Aminophylline
f. Hydrocortizone
g. Soda Bicarb
h. Dopamine
i. Norepinephrine
j. Dobutamine

12. I. V. Infusion

a. Site of cannulations
b. Finding a vein
c. Technique of venupuncture
d. Special difficulty

13. Protection of the Patient

a. The eyes
b. The ears
c. The skin
d. The lips, tongue, teeth
e. Veins, arteries
f. Peripheral nerves

14. Intubation

a. Choice of ETT
b. Choice of Laryngoscope
c. Techniques of intubation
d. Complications
e. Difficult intubation

15. Emergence, Termination and Recovery

1. Reversal
2. Oropharyngeal toilet
3. ET Suction
4. Deflation of the cuff
5. Removal of the tube
6. Transfer of the patient
7. In the recovery room
   a. Patient identification
   b. Diagnosis & Surgery
   c. Type of anesthesia used
   d. Fluid balance
   e. BP
   g. Any complications
   h. Instructions about ventilation, vital sings
8. Problems in RR
   a. B.P hypo, hypertension
   b. HR- Tachy, bradycardia
   c. Pallor, cyanosis, dyspnea
   d. Restlessness
   e. Neurological- Seizures
   f. Sweating

Scheme of Examination

Theory

There shall be one theory paper of three hours duration carrying 100 marks. Distribution of type of questions and marks for Paper-I - Anaesthesia Technology - Clinical shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (To attempt 2)	2 x 10	20
SHORT ESSAY (SE)	12 (To attempt 10)	10 x 5	50
SHORT ANSWER (SA)	12 (To Attempt 10)	10 x 3	30
TOTAL MARKS			100

PRACTICAL EXAMINATION

One common practical for all the three papers with equal weight age of marks i.e. 40 practical marks for each paper.

B.Sc. ANAESTHESIA TECHNOLOGY

Third Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 3rd Year
COURSE TITLE: Anaesthesia Technology - Applied
COURSE CODE: BAT302
DURATION OF EXAMINATION: 3 HOURS

Paper-II - Anaesthesia Technology - Applied

History of anaesthesia in detail
Methods of anaesthesia
Inhalational Anaesthesia
Minimum alveolar anaesthetic concentration
Stages of ether anaesthesia
Halothane
Isoflurane
Sevoflurane
Nitrous oxide
Narcotic drugs
Opioids analgesics
Morphine
Pethidine
Fentanyl
Buprenorphine
Tramadol
Difficult intubation
Muscle relaxants
Neuromuscular blockers
Suxamethorium
Pancuronium
Vecuronium
Atracurium
Rocuronium
Reversal agents
Intravenous anaesthetic agents
Thiopentone
Propofol
Ketamine
Intraoperative management
Confirm the identity of the patient
Transferring the patient
Recovery room - setup, things needed expected problems
Post operative complications and management
CPR
Monitoring during anaesthesia and surgery
Regional anaesthesia
Spinal Anaesthesia
Epidural Anaesthesia
Nerve blocks
Benzodiazapines
Phenothazines
Neuromuscular transmission

Nerve stimulators
Reversal of neuromuscular blockage
Drugs acting on sympathetic nervous system
Adrenaline
Noradrenaline
Dopamine
Dobutamine
Milrinone
Isoprenaline
Local anaesthetic agents
Lignocaine
Bupivacaine
Complications and accidents during anaesthesia

Complications:

I. Related to equipment

1. Hypoxemia
2. Hyercapnea
3. Increased airway pressure
4. Decreased airway pressure
5. Deep anesthesia
6. Thermal & electrical injuries
7. Monitoring instruments
8. Presenting anesthesia equipment complications
   a. Being prepared with back up ventilation
   b. Pre-use checkout
   c. Maintenance
   d. User education

II. Related to airway

a. Difficult intubations
b. Airway Trauma

III. Cardiovascular System

a. Hypotension
b. Hypertension
c. Tachycardia
d. Bradycardia
e. Arrhythmias
f. Ischemia & infarction

Scheme of Examination

Theory

There shall be one theory paper of three hours duration carrying 100 marks. Distribution of type of questions and marks for Paper-II - Anaesthesia Technology Applied shall be as given under.

Third Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 3rd Year
COURSE TITLE: Anaesthesia Technology - Applied
COURSE CODE: BAT302
DURATION OF EXAMINATION: 3 HOURS

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (To attempt 2)	2 x 10	20
SHORT ESSAY (SE)	12 (To attempt 10)	10 x 5	50
SHORT ANSWER (SA)	12 (To Attempt 10)	10 x 3	30
TOTAL MARKS			100

PRACTICAL EXAMINATION

One common practical for all the three papers with equal weight age of marks i.e. 40 practical marks for each paper.

Third Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 3rd Year
COURSE TITLE: Anaesthesia Technology - Advanced
COURSE CODE: BAT303
DURATION OF EXAMINATION: 3 HOURS

B.Sc ANAESTHESIA TECHNOLOGY

Paper - III - Anaesthesia Technology - Advanced

Anaesthesia & co-existing diseases
Ischaemic heart disease
Hypertension
Congestive cardiac failure
Arrhythmia & heart blocks
Chronic bronchitis & COPD
Bronchial asthma
Peadiatric anaesthesia
Liver disease and anaesthesia
Renal disease and anaesthesia
Obesity and anaesthesia
Diabetes mellitus and anaesthesia
Thyroid disease and anaesthesia

Obstetric Anaesthesia:

1. Epidural analgesia
2. Anaesthesia for LSCS
3. Special situations: pre -eclampsia

Anaesthesia for common surgical disorders
Anaesthesia for special situations
Shock, low cardiac output & cardiac arrest
Pulmonary function tests & their significance
Ventilators - types & methods of ventilation
Humidification
Aerosal therapy

Third Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 3rd Year
COURSE TITLE: Anaesthesia Technology - Advanced
COURSE CODE: BAT303
DURATION OF EXAMINATION: 3 HOURS

Resuscitation of the Newborn

1. Apgar scoring system
2. Use of drugs
3. Temperature control

Anaesthesia for Thoracic Surgery

1. Use of double lumen tubes
2. Anesthesia for bronchoscopy
3. Thymectomy

Anaesthesia for cardiac surgery

1. Preparations & monitoring
2. Heparin & Protamine
3. Care & use of arterial & venous lines
4. Maintenance of body temperature
5. Anaesthesia for open heart surgery
6. Transport to ICU

Scheme of Examination

Theory

There shall be one theory paper of three hours duration carrying 100 marks. Distribution of type of questions and marks for Paper-III - Anaesthesia Technology Advanced shall be as given under.

TYPE OF QUESTION	NUMBER OF QUESTIONS	MARKS	SUB-TOTAL
LONG ESSAY (LE)	3 (To attempt 2)	2 x 10	20
SHORT ESSAY (SE)	12 (To attempt 10)	10 x 5	50
SHORT ANSWER (SA)	12 (To Attempt 10)	10 x 3	30
TOTAL MARKS			100

PRACTICAL EXAMINATION

One common practical for all the three papers with equal weight age of marks i.e. 40 practical marks for each paper

Third Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 3rd Year
COURSE TITLE: Research & Biostatistics
COURSE CODE: BAT304
DURATION OF EXAMINATION: 3 HOURS

Subsidiary Subjects

BIO STATISTICS

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 calculaton 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.

Unit-IV : Measure of Variability
Need for measure of dispression.
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 rations of health.

Third Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Anesthesia Technology 3rd Year
COURSE TITLE: Computer Application
COURSE CODE: BAT305
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