



UNIVERSITY OF JAMMU

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

NOTIFICATION

(20/Jul/Adp/14)

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 Cardiac Care Technology (B.Sc. Cardiac Care 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/20/1235-1240
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

Sumitasharma
5/8/2020
Deputy Registrar (Academic)
5/8/20
4/8/20

Regulations & Curriculum for Bachelor of Science Degree Courses In

B.Sc Cardiac Care 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

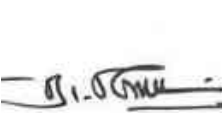
B.Sc (Allied Health Sciences) course is aimed at training students to prepare them as qualified physician assistants who will be able to meticulously assist the concerned specialist in handling the various illnesses. This program is a taught course that covers relevant topics and specialized areas of 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.

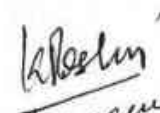

(MR. J. C. FRANK)


Shalini Sharma


Manish Dhar


(Sonam Sharma)


Jaw


Kheema Keshin

- 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.

✚ 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.

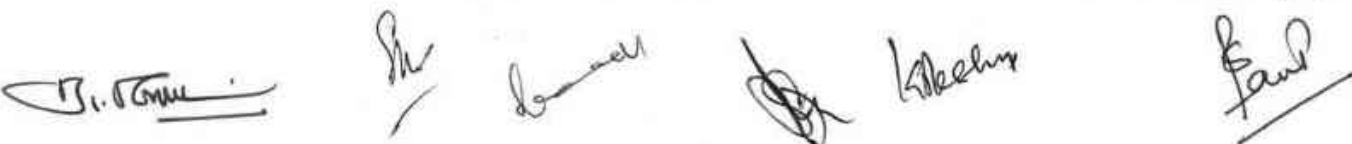
Practical - 10 marks. [Lab work- 06 marks and Record-04 marks]

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

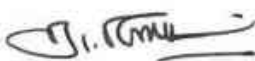
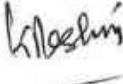
    

Table – II Distribution of Teaching Hours in Second Year Subjects

Main Subjects

S.No	Subject	Theory No. of Hours	Practical No. of Hours	Clinical posting	Total No. of Hours.
1	Medicine relevant Cardiac Care Technology	50			50
2	Section A Applied Pathology Section B Applied Microbiology	30 30	30 30		120
3	Introduction to Cardiac Technology	80	100	650	830
	Total	240	160	650	1050

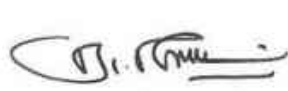
Subsidiary Subjects

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	Cardiac Care Technology – Clinical	50	50	250	350
2	Cardiac Care Technology – Applied	50	50	250	350
3	Cardiac Care 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:

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					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	Section A – Applied Pathology Section B – Applied Microbiology	50 50	30	20	150	40	10	50	200
2	Introduction to Cardiac Care Technology	100	30	20	150	40	10	50	200
3	Applied Pharmacology	80		20	100	No Practicals			100
4	Medicine relevant to Technology	80		20	100	No. Practicals			100

[Handwritten signatures and initials]

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

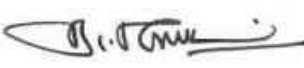
** Subsidiary subjects: Examination for subsidiary Subjects shall be conducted by respective colleges.

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

Paper	Subjects	Theory		IA	Sub Total	Practicals			
		Theory	Viva-Voca			Univ Practicals	IA	Sub total	Grand Total
1	Cardiac Care Technology – Clinical	100	30	20	150	40	10	150	200
2	Cardiac Care Technology – Applied	100	30	20	150	40	10	150	200
3	Cardiac Care Technology – Advanced	100	30	20	150	40	10	150	200
	Total					120	30	450	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:

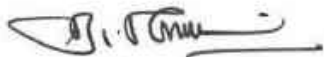
No person shall be appointed as an examiner in any of the subjects of the professional examinations leading to the award of the degree unless :

- 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.

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

Subjects having Maximum Marks = 100		
Type of Question	Number of Questions	Marks for each question
Essay Type	3 (2 X10)	10
Short Essay Type	12 (10 x 5)	5
Short Answer Type	12 (10 x 3)	3

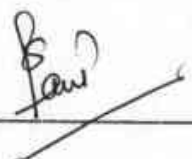
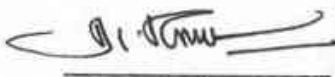
Subjects having Maximum Marks = 80		
Type of Question	Number of Questions	Marks for each question
Essay Type	3 (2 x 10)	10
Short Essay Type	8 (6 x 5)	05
Short Answer Type	12 (10 x 3)	03

Subjects having Maximum Marks = 60		
Type of Question	Number of Questions	Marks for each question
Essay Type	3 (2 x10)	10
Short Essay Type	7 (5 x5)	05
Short Answer Type	7 (5x3)	03

Subjects having Maximum Marks =50		
Type of Question	Number of Questions	Marks for each question
Essay Type	3 (2 x10)	10
Short Essay Type	5(3 x5)	05
Short Answer Type	7 (5 x 3)	03

[Handwritten signatures and marks at the bottom of the page]

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. Rafiq Bashir	Member	
Smt. Rajni Sharma	Member	

B.SC CARDIAC CARE TECHNOLOGY

COURSE CODE FOR B.SC CARDIAC CARE TECHNOLOGY COURSE

YEAR	COURSE TITLE	COURSE CODE
FIRST YEAR	Human Anatomy	BCCT101
	Physiology	BCCT102
	Biochemistry	BCCT103
	Pathology – [Clinical Pathology, Hematology & Blood Banking	BCCT104
	Microbiology	BCCT105
	English	BCCT106
	Health Care	BCCT107
SECOND YEAR	Medicine relevant Cardiac Care Technology	BCCT201
	Section A Applied Pathology Section B Applied Microbiology	BCCT202
	Introduction to Cardiac Care Technology	BCCT203
	Sociology	BCCT204
	Constitution of India	BCCT205
	Environmental Science & Health	BCCT206
THIRD YEAR	Cardiac Care Technology – Clinical	BCCT301
	Cardiac Care Technology – Applied	BCCT302
	Cardiac Care Technology – Advanced	BCCT303
	Research & Biostatistics	BCCT304
	Computer application	BCCT305
	Ethics, Database Management	BCCT306

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Human Anatomy

COURSE CODE: BCCT101

DURATION OF EXAMINATION: 3 HOURS

Course Contents First Year

Main Subjects

ANATOMY

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

Blood supply of heart

Systemic & pulmonary circulation

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Human Anatomy

COURSE CODE: BCCT101

DURATION OF EXAMINATION: 3 HOURS

Branches of aorta, common carotid artery, subclavian artery, axillary artery, brachial artery, superficial palmar arch, femoral artery, internal iliac artery

Peripheral pulse

Inferior vena cava, 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

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Human Anatomy

COURSE CODE: BCCT101

DURATION OF EXAMINATION: 3 HOURS

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 gland - gross

Practical: demonstration of section of male and female pelvis with organs in situ

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

Radiographs of pelvis - hysterosalpingogram

9. Endocrine glands

Theory:

Names of all endocrine glands in detail on pituitary gland, thyroid gland, parathyroid gland, suprarenal gland - (gross & histology)

Practical: Demonstration of the glands

Histology of pituitary, thyroid, parathyroid, suprarenal glands

10. Nervous system

Theory:

Neuron

Classification of NS

Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (gross & histology)

Meninges, Ventricles & cerebrospinal fluid

Names of basal nuclei

Blood supply of brain

Cranial nerves

Sympathetic trunk & names of parasympathetic ganglia

Practical: Histology of peripheral nerve & optic nerve

Demonstration of all plexuses and nerves in the body

Demonstration of all part of brain

Histology of cerebrum, cerebellum, spinal cord

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

First Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Cardiac Care Technology 1st Year
COURSE TITLE: Human Anatomy
COURSE CODE: BCCT101
DURATION OF EXAMINATION: 3 HOURS

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BCCT102

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

Cross matching

Rh system - Rh factor, Rh in compalibility.

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.
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. Intrapulmonary 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

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BCCT102

DURATION OF EXAMINATION: 3 HOURS

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 ear 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 nephron, vasculature, 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 affecting 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 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.

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BCCT102

DURATION OF EXAMINATION: 3 HOURS

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

Reproductive system

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

Muscle nerve physiology

Classification of muscle, structure of skeletal muscle, Sarcomere contractile proteins, Neuromuscular junction. Transmission across, Neuromuscular junction. Excitation contraction coupling. Mechanism of muscle contraction muscle tone, fatigue Rigor 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 Cardiac Care Technology 1st Year

COURSE TITLE: Physiology

COURSE CODE: BCCT102

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

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BCCT103

DURATION OF EXAMINATION: 3 HOURS

BIOCHEMISTRY

No. Theory classes : 70 hours

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

Definition, Principle, svedberg unit, centrifugal force, centrifugal field rpm, ref. Conversion of G

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BCCT103

DURATION OF EXAMINATION: 3 HOURS

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 of electrons, protons, neutrons, and nucleus, Rutherford's model of atomic structure, Bohr's model of atomic structure, orbit and orbital, Quantum numbers, Heisenberg's uncertainty principle.

Electronic configuration - Aufbau principle, Pauli's exclusion principle, etc.,

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., 1N Na₂CO₃, 0.1N 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.

Standard solutions. Technique for preparation of standard solutions eg: Glucose, urea, etc.,

Significance of volumetric flask in preparing standard solutions. Volumetric flasks of different

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BCCT103

DURATION OF EXAMINATION: 3 HOURS

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, 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, 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: Digoxin, Theophyllines

Regulation of Acid Base status:

Henderson Hasselback Equations

Buffers of the fluid

pH Regulation

Disturbance in acid Base Balance

Anion Gap

Metabolic acidosis

Metabolic acidosis

Metabolic alkalosis

Respiratory acidosis

Respiratory alkalosis

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BCCT103

DURATION OF EXAMINATION: 3 HOURS

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

Practicals: 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.

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Biochemistry

COURSE CODE: BCCT103

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Pathology

COURSE CODE: BCCT104

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,
Blood Bank

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Pathology

COURSE CODE: BCCT104

DURATION OF EXAMINATION: 3 HOURS

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Microbiology

COURSE CODE: BCCT105

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, 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

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Microbiology

COURSE CODE: BCCT105

DURATION OF EXAMINATION: 3 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 Compound Microscope. | 20 hours |

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 & 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 Cardiac Care Technology 1st Year

COURSE TITLE: Microbiology

COURSE CODE: BCCT105

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

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: English

COURSE CODE: BCCT106

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 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.

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: English

COURSE CODE: BCCT106

DURATION OF EXAMINATION: 3 HOURS

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%

HEALTH CARE

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

CLASS: B.Sc Cardiac Care Technology 1st Year

COURSE TITLE: Health Care

COURSE CODE: BCCT107

DURATION OF EXAMINATION: 3 HOURS

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.

THE JOURNAL OF THE
ROYAL ANTHROPOLOGICAL INSTITUTE
OF GREAT BRITAIN AND IRELAND
Volume 47, Part 1
1917

THE JOURNAL OF THE

ROYAL ANTHROPOLOGICAL INSTITUTE
OF GREAT BRITAIN AND IRELAND
Volume 47, Part 1
1917

THE JOURNAL OF THE
ROYAL ANTHROPOLOGICAL INSTITUTE
OF GREAT BRITAIN AND IRELAND

Volume 47, Part 1
1917

THE JOURNAL OF THE

ROYAL ANTHROPOLOGICAL INSTITUTE

OF GREAT BRITAIN AND IRELAND

Volume 47, Part 1

1917

THE JOURNAL OF THE

ROYAL ANTHROPOLOGICAL INSTITUTE
OF GREAT BRITAIN AND IRELAND

THE JOURNAL OF THE

Second Year Annual Examination to be held in the year 2022, 2023, 2024
CLASS: B.Sc Cardiac Care Technology 2nd Year
COURSE TITLE: Medicine relevant Cardiac Care Technology
COURSE CODE: BCCT201
DURATION OF EXAMINATION: 3 HOURS

MEDICINE RELEVANT TO CARDIAC CARE TECHNOLOGY

Cardiovascular System

- Ischaemic heart diseases
- Rheumatic heart disease
- Congenital heart disease
- Hypertension
- Aortic Aneurysms
- Cardiomyopathy
- Peripheral vascular disease
- Pulmonary edema and LV failure

Hematology

- Anaemia
- Bleeding disorders
- Laboratory tests used to diagnose bleeding disorders (in brief)

Respiratory System

- Chronic obstructive airway diseases (COPD)
- Concept of obstructive versus restrictive pulmonary disease
- PFT and its interpretation

Renal System

- ARF & CRF
- End stage renal disease
- Role of dialysis and renal transplantation in its management

CNS

- Automatic nervous system
(Sympathetic & Parasympathetic system)
- Brief mention of CNS disorders & their etiology

Others

- DM
- Obesity
- Pregnancy
- Paediatric Patient (neonate/Infant)
- Elderly patient

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

CLASS: B.Sc Cardiac Care Technology 2nd Year

COURSE TITLE: Medicine relevant Cardiac Care Technology

COURSE CODE: BCCT201

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 Medicine relevant to Cardiac Care 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

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

CLASS: B.Sc Cardiac Care Technology 2nd Year

COURSE TITLE: Section A Pathology, Section B Microbiology

COURSE CODE: BCCT202

DURATION OF EXAMINATION: 3 HOURS

APPLIED PATHOLOGY

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.

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

CLASS: B.Sc Cardiac Care Technology 2nd Year

COURSE TITLE: Section A Pathology, Section B Microbiology

COURSE CODE: BCCT202

DURATION OF EXAMINATION: 3 HOURS

- 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 each. 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 Cardiac Care Technology 2nd Year

COURSE TITLE: Section A Pathology, Section B Microbiology

COURSE CODE: BCCT202

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 *Clostridium difficile*, 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 syncytial 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's10 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.

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

CLASS: B.Sc Cardiac Care Technology 2nd Year

COURSE TITLE: Section A Pathology, Section B Microbiology

COURSE CODE: BCCT202

DURATION OF EXAMINATION: 3 HOURS

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. each
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)	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.	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 Cardiac Care Technology 2nd Year
COURSE TITLE: Introduction to Cardiac Care Technology
COURSE CODE: BCCT203
DURATION OF EXAMINATION: 3 HOURS

INTRODUCTION TO CARDIAC CARE TECHNOLOGY

I. Electrocardiography (ECG)

1. Basic Principles

The Electrocardiographic paper
The Electrocardiograph
The Electrical field of Heart
The leads: Standard limb, Precordial lead, 'V' lead & 'AV' lead
Basic ECG deflections
Basic action of electrocardiograph

2. Normal ECG

The 'P' wave
The 'qrs' complex
The genesis of 'qrs' complex
T wave; the S-T segment
The 'U' wave
Rate & rhythm
So called rotation of the heart - The Q-T interval

3. The Electrical axis

4. Precordial pattern of ECG

5. Chamber enlargement - atrial enlargement, LV hypertrophy & RV hypertrophy

6. Bundle branch block

General principles
Right Bundle branch block
Left bundle branch block
The Hemi blocks (Fascicular block)

II. Exercise stress Testing

1. Exercise
2. Exercise protocols
3. Electrocardiography measurements
4. Exercise testing - Indication and techniques

III. Echocardiography

1. Principles of Echocardiography
 - Basic principles of ultrasound

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

CLASS: B.Sc Cardiac Care Technology 2nd Year

COURSE TITLE: Introduction to Cardiac Care Technology

COURSE CODE: BCCT203

DURATION OF EXAMINATION: 3 HOURS

- M-Mode of Echocardiography
 - Two dimensional Echocardiography
 - Doppler Echocardiography; color flow
 - Transoesophageal Echocardiography
2. Instrumentation
- Basic pulse Echo system
 - Transducers
 - Pulse generation
 - Echo detection
 - A mode, B-Mode, M-Mode
 - Display & recording
3. Echocardiographic Examination
- Selecting transducers
 - Position of the patient
 - Placement of the transducer
 - Setting control
 - M-Mode labelling
 - 2D Echo
 - Normal variants
 - Terminology
 - Identification of segments
4. Doppler Echocardiography
- a. Introduction to Doppler color Echocardiography
- The Doppler principles
- Doppler ultrasound techniques
- Color Doppler flow imaging
- Clinical application of Doppler Echocardiograph
- b. Physical principles & instrumentation in spectral & color Doppler flow imaging
- c. Physical principles and Doppler effect. The Doppler Echocardiography system display
- d. Blood flow pattern - Laminar & non-laminar flow
- e. Doppler Echo cardiograph modes
- Continuous wave Doppler system
 - Pulsed Doppler system
 - High pulse repetition frequency
 - Problems of color imaging
5. Contrast Echo
6. Echo measurements-'ASE' recommendation

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

CLASS: B.Sc Cardiac Care Technology 2nd Year

COURSE TITLE: Introduction to Cardiac Care Technology

COURSE CODE: BCCT203

DURATION OF EXAMINATION: 3 HOURS

**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 Cardiac Care 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 Cardiac Care Technology 2nd Year
COURSE TITLE: Sociology
COURSE CODE: BCCT204
DURATION OF EXAMINATION: 3 HOURS

PRACTICAL EXAMINATION -

40 Marks.

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.

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

1944

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 Cardiac Care Technology 2nd Year

COURSE TITLE: Constitution of India

COURSE CODE: BCCT205

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 1946-1949.

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 Cardiac Care Technology 2nd Year

COURSE TITLE: Environmental Science & Health

COURSE CODE: BCCT206

DURATION OF EXAMINATION: 3 HOURS

ENVIRONMENT SCIENCE & 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

Recommended Books

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF THE HISTORY OF ARTS
AND ARCHITECTURE
1100 EAST 58TH STREET
CHICAGO, ILLINOIS 60637

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF THE HISTORY OF ARTS
AND ARCHITECTURE

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF THE HISTORY OF ARTS
AND ARCHITECTURE
1100 EAST 58TH STREET
CHICAGO, ILLINOIS 60637
TEL: 773-936-5000
FAX: 773-936-5001
WWW: WWW.CHICAGO.EDU

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

CLASS: B.Sc Cardiac Care Technology 3rd Year

COURSE TITLE: Cardiac Care Tech. - Clinical

COURSE CODE: BCCT301

DURATION OF EXAMINATION: 3 HOURS

Course Contents Third Year
Main Subjects

Paper-I Cardiac Care Technology - Clinical

1. Interpretation of Normal ECG and Basic abnormalities of ECG in RHD, IHD & CHD
2. Echo in rheumatic heart disease - Echo in mitral stenosis, mitral incompetence, aortic stenosis, aortic incompetence, pulmonary hypertension. Post AVR, post MVR. Prosthetic valve malfunction, LA clot.
3. Echo in congenital heart disease - Echo in ASD, VSD, PDA pulmonary stenosis, aortic stenosis, contraction of aorta, TOF. dextrocardia.
4. Echo in ischemic heart disease - Echo in acute myocardial infarction, old myocardial infarction and other ischemic heart disease related conditions, LV aneurysm
5. Echo in other cardiovascular disease- Echo in various types of cardio myopathy infective endocarditis diseases of aorta, mitral valve prolapse, myxoma and other cardio vascular diseases.
6. Assessment of Cardiac function- measurements of all cardiac chambers and assessment of cardiac function
7. Echo in pericardial disease- pericardial effusion, cardiac tamponade, constrictive pericarditis
8. Cardiac catheterisation laboratory - general details of cardiac catheterisation equipment, how to handle the machine, common problems one may come across and how to overcome it, radiation hazards
9. Materials used in the cathlab- all catheters, balloons, guidewires, pacemakers contrast material and other material used in the cardiac catheterisation laboratory and sterilization of all these materials
10. Right heart catheterisation - procedure, cath position, oxymetry at various levels, angios done and its interpretation
11. Left heart catheterisation - procedure, cath position, oxymetry at various levels, angios done and its interpretation
12. Coronary angiogram - procedure, materials used, type and amount dye used, indications and contraindications, various pictures recorded in various angles and gross interpretation.
13. Peripheral angiogram - procedure, indication and contraindication

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

CLASS: B.Sc Cardiac Care Technology 3rd Year

COURSE TITLE: Cardiac Care Technology - Clinical

COURSE CODE: BCCT301

DURATION OF EXAMINATION: 3 HOURS

Scheme of Examination

Theory

There shall be one theory paper of three hours duration carrying 100 marks. Distribution of type of

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 Cardiac Care Technology 3rd Year
COURSE TITLE: Cardiac Care Tech. - Applied
COURSE CODE: BCCT302
DURATION OF EXAMINATION: 3 HOURS

Paper-II Cardiac Care Technology - Applied

1. ECG in myocardial infarction- definition of myocardial infarction, diagnosis of myocardial infarction, ECG criteria for myocardial infarction, ECG in anterior wall, inferior wall, true posterior wall and sub endocardial infarction and RV infarction
2. ECG in rheumatic heart disease - definition of rheumatic heart disease, valvular involvement in rheumatic heart disease, ECG in mitral stenosis, mitral incompetence, aortic stenosis and aortic incompetence
3. ECG in hypertension- definition of hypertension, how to record blood pressure, ECG in hypertension
4. ECG in congenital heart disease- common congenital heart disease ASD, VSD, PDA, pulmonary stenosis, aortic stenosis, coarctation of aorta, TOF, definition of all these conditions, ECG changes in all these conditions
5. ECG in other conditions - ECG in various types of cardiomyopathy, myxoedema, pericardial effusion, acute pericarditis and other vascular diseases. Bundle branch block, WPW syndrome, dextrocardia
6. Trans esophageal echocardiogram - indications, procedure, usefulness and complications one may encounter and its management
7. Stress Echo- procedure and indications
8. Peripheral Doppler - Procedure and usefulness of peripheral Doppler
9. Coronary angioplasty-procedure, materials used, complication one may encounter and how to manage it
10. Peripheral angioplasty - materials used and procedure. Angioplasty of coarctation of aorta
11. Fetal echocardiogram - Procedure, basic interpretation
12. Contrast echocardiogram - procedure and usefulness of contrast echocardiogram
13. Myocardial contrast echo- Basic knowledge

Third Year Annual Examination to be held In the year 2022, 2023, 2024
CLASS: B.Sc Cardiac Care Technology 3rd Year
COURSE TITLE: Cardiac Care Technology - Applied
COURSE CODE: BCCT302
DURATION OF EXAMINATION: 3 HOURS

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 Cardiac Care Technology - Applied 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.

Paper-III Cardiac Care Technology - Advanced

1. Cardiac Monitoring - definition, purpose of cardiac monitoring, how to Recognise various arrhythmias how to set up a intensive coronary care unit and usefulness of ICCU
2. Interpretation of TMT report - criteria for TMT positive test contraindication for TMT conditions where TMT is not useful, complications that may occur in TMT room and its management
3. Use of defibrillator- indications, how to use the defibrillator, complications during the procedure and its management
4. Management of cardiac arrest - definition, causes external cardiac massage, artificial respiration and other drugs and procedures used in the management of Cardiac arrest
5. Myocardial perfusion scan - procedures and usefulness of myocardial perfusion scan
6. Cardiac arrhythmias - bradyarrhythmia and tachy arrhythmias and ECG diagnosis of all rhythm disturbances. Sinus arrhythmia, APC, FPC, VPC, VF, VT, AF, SVT, IOHB, IIOHB, complete heart block
7. Electrolyte disturbances - ECG in hypokalemia, hyperkalemia etc.,
8. Holter monitoring - procedure and usefulness
9. Valvoplasties- procedure, indications, complications and treatment of ballons, mitral valvuloplasty, ballon aortic valvuloplasty ballon pulmonary valvuloplasty and balloon tricuspid valvuloplasty.
10. Coil closure and device closure of PDA - procedure, indications and materials used for coil and device closure of PDA
11. Device closure of ASD - procedure, indications and materials used for device closure of ASD
12. Device closure of VSD - procedure, indications and materials used for device closure of VSD
13. Electrophysiological studies - basic knowledge of EP studies mapping and ablation
14. Oxymetry - handling of the instrument and usefulness of the instrument, normal and abnormal values.
15. Pressure recording- handling of the instrument and pressures in various chambers, normal and abnormal values

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

CLASS: B.Sc Cardiac Care Technology 3rd Year

COURSE TITLE: Cardiac Care Technology - Advanced

COURSE CODE: BCCT303

DURATION OF EXAMINATION: 3 HOURS

16. Temporary and permanent pacing - materials used, procedure, complications one may encounter and management. Implantable Cardioverter defibrillator devices
17. CD recording and storage- recording and storage of all the procedures over CD
18. Procedure during pregnancy- precautions to be followed.
19. Nuclear Cardiology - instrumentation, radiopharmaceuticals, patient imaging techniques.

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 Cardiac Care 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.

Subsidiary Subjects

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

CLASS: B.Sc Cardiac Care Technology 3rd Year

COURSE TITLE: Research & Biostatistics

COURSE CODE: BCCT304

DURATION OF EXAMINATION: 3 HOURS

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, cumulative 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.

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 SD

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

CLASS: B.Sc Cardiac Care Technology 3rd Year

COURSE TITLE: Research & Biostatistics

COURSE CODE: BCCT304

DURATION OF EXAMINATION: 3 HOURS

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 Cardiac Care Technology 3rd Year

COURSE TITLE: Computer Application

COURSE CODE: BCCT305

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

