EXAM SCHEME AND SYLLABUS

(Applicable for the batches admitted from the Academic Session 2023-24 onwards)

Diploma in Perfusion Technician

(DPT, 2 Year Diploma Programme)

FACULTY OF PARAMEDICAL SCIENCE & ALLIED HEALTH SCIENCE

Chirayu University

Bhopal, MP 462030, Indi

AIMS:

- Aim of the course is to assist the team during various types of cardiac surgical procedure.
- His/her primary responsibility is to operate a Heart/Lung machine that artificially replaces a patient Heart or Lung function during surgery.

OBJECTIVES

To understand the handling of Heart/Lung machine .

- To understand the concept of perfusion and its advantages.
- Technical Competence: Develop technical skills in operating and maintaining equipment used in catheterization procedures, such as perfusion equipments and its sterilization, fluoroscopy machines, angiography equipment, and other specialized tools.
- Patient care: Train students to provide quality care to patients undergoing catheterization procedures. This includes understanding patient needs, ensuring their comfort, and addressing any concerns they may have.
- Medical Knowledge: Provide a strong foundation in medical sciences related to cardiovascular health, anatomy, physiology, and pathology. This knowledge is essential for understanding the context and implications of perfusion procedures.
- Safety and Infection Control: Emphasize the importance of safety protocols and infection control measures within the perfusion laboratory setting to protect both patients and healthcare professionals.
- Clinical Experience: Offer practical, hands-on training through clinical rotations or internships in catheterization laboratories. This allows students to apply their theoretical knowledge in real-world situations under supervision.
- Team Collaboration: Foster teamwork and effective communication skills, as perfusion technicians often work closely with other healthcare professionals such as cardiologists, nurses, and radiologic technologists during procedures.
- Ethics and Professionalism: Instill ethical principles and professional conduct in dealing with patients, colleagues, and the healthcare community. This includes maintaining patient confidentiality, respecting diversity, and upholding the highest standards of integrity.
- Problem-Solving Skills: Develop critical thinking and problem-solving abilities to handle unexpected situations that may arise during heart/lung machine procedures or in the perfusion environment.
- Continuing Education: Encourage a commitment to lifelong learning and staying updated on advancements in perfusion technology, procedures, and healthcare practices.
- Certification and Accreditation: Prepare students for certification and ensure that the program meets the necessary accreditation standards set by the council.

COURSE STRUCTURE:

Diploma in Perfusion Technician (DPT) is 2 Year Diploma Programme.

DURATION OF THE PROGRAM:

1. DPT I YEAR
2. DPT II YEAR

TEACHING DAYS: Each academic year shall consist of 160 teaching days.

SYLLABUS AND SCHEME OF EXAMINATION:

Syllabus and Scheme of examination will be the same for both first and second year.

SCHEME OF EXAMINATION: Diploma in Perfusion Technician

FIRST YEAR EXAMINATION

S. No.	Paper	Subject	Max. Marks	Min. Passing Marks
1	Paper - I	APPLIED ANATOMY & PHYSIOLOGY	100	50
2	Paper - II	PHARMACOLOGY, DISEASE & THEATER TECHNIQUES	100	50
3	Paper - III	EQUIPMENT & CANNULAES	100	50
4	Paper - IV	EXTRACORPOREAL TECHNOLOGY & PROCEDURES	100	50

(There shall be Institutional /College level theory examination as per university notification, marks to be send to University forinternal assessment purposes of university examination)

SCHEME OF EXAMINATION FOR 2nd Year (UNIVERSITY EXAMINATION) :

There shall be University examination at the end of 2nd year curriculum for all Diploma courses.

S. No.	Paper	Subject	Theory	Internal Assessment	Practical	Total
1	Paper - I	APPLIED ANATOMY & PHYSIOLOGY	100	100	100	300
2	Paper - II	PHARMACOLOGY, DISEASE & THEATER TECHNIQUES	100	100	100	300
3	Paper - III	EQUIPMENT & CANNULAES	100	100	100	300
4	Paper - IV	EXTRACORPOREAL TECHNOLOGY & PROCEDURES	100	100	100	300
		TOTAL	**400**	**400**	**400**	**1200**

N.B.- 1. First year institutional /college level theory examination's awarded marks would be consider as Internal assessment marks and candidate have to get min. 50% marks in universitytheory examination in addition to Internal assessment marks i.e. 100 marks collectively for passing the examination.

2. University Practical examination of 100 max. marks is inclusive of viva and candidate shouldget separate 50% marks i.e. 50 marks to get pass.

PAPER-I: APPLIED ANATOMY & PHYSIOLOGY

Paper	Subject	Max. Marks	Min. Passing Marks
Paper - I	APPLIED ANATOMY & PHYSIOLOGY	100	50

The examination shall be of 100 marks with **Section – A: Anatomy** and **Section – B : Physiology** .

The theoryexamination marks for Anatomy shall be 50 and for Physiology 50 marks respectively. There shall be two paper setters / evaluators, one from Anatomy and one from Physiology . Section- A, which will be set by Anatomy examiner (50 marks) and Section-B, by Physiology (50 marks) examiner. Recognized teachers in Anatomy and Physiology with five years of experience shall be on the panel of examiners; 50% shall be the minimum passing marks.

The pattern of theory examination for each section (A and B) will be as under for **50 Max. Marks**.

No. and Type of Questions	Marks for each Question	Total Marks
05 Very short answer Questions *Answer to be given in 50-60 words*	**02**	**20**
03 Short answer Questions *Answer to be given in 250-300 words*	**10**	**50**
01 Essay type Questions *Answer to be given in 450-500 words*	**15**	**30**
Total Marks		**100**

Syllabus for Diploma in Perfusion Technician

PAPER-I: Applied Anatomy & Physiology

General Anatomy (40 Hrs.) **Practical:-40 hrs.**
General Physiology (40 Hrs.) **Practical:-40 hrs.**

ANATOMY AND PHYSIOLOGY - HEART & LUNG

Paper- I

1. Anatomy of Heart Lung blood vessel.
2. Heart as pump &cardiac cycle.
3. Heart blocks and pacemaker.
4. Blood, its components and Haemostatic.
5. Respiration, Gas Exchange& Diffusion.
6. Conduction system of heart.
7. E.C.G. and Defibrillation.
8. Excretory function and Acid base Balance

PAPER-II : PHARMACOLOGY, DISEASE & THEATER TECHNIQUES

Paper	Subject	Max. Marks	Min. Passing Marks
Paper - II	**PHARMACOLOGY, DISEASE & THEATER TECHNIQUES**	100	50

The examination shall be of 100 marks and question paper will be set by Asst Prof. Cardiology or Cardiothoracic surgery, who shall be on the panel of examiners, 50% shall be the minimum passing marks..

The pattern of University theory examination will be as under for **100 Max. Marks in question paper** and distribution of marks for questions will be as under

No. and Type of Questions	Marks for each Question	Total Marks
10 very short answer Questions *Answer to be given in 50-60 words*	**02**	**20**
5 short answer Questions *Answer to be given in 250-300 words*	**10**	**50**
2 essay type Questions *Answer to be given in 450-500 words*	**15**	**30**
Total Marks		**100**

PAPER-II PHARMACOLOGY, DISEASE & THEATER TECHNIQUES

Total Teaching hours- 120 hrs.
Theory – 60 hrs. **Practical- 60 hrs.**

1. Pharmacology of commonly used medicines lonotropes, anti arrhythmias.

2. Rheumatic heart diseases pathology and surgery.

3. Ischemic Heart diseases(Pathology and surgical Management).

4. A cyanotic congenital Heart‘ diseases(Pathology and Surgery)

5. Cyanotic congenital Heart diseases (Pathology and Surgery)

6. Method of Sterilization -Definition, Types, Methods, Central Sterilization.

PAPER-III: EQUIPMENT & CANNULAES

Paper	Subject	Max. Marks	Min. Passing Marks
Paper - III	EQUIPMENT & CANNULAES	100	50

The examination shall be of 100 marks and question paper will be set by qualified examiner Asst Prof. Cardiology or Cardiothoracic surgery who shall be on the panel of examiners of internal or external , 50% shall be the minimum passing marks

The pattern of University theory examination will be as under for **100 Max. Marks in question paper** and distribution of marks for questions will be as under

No. and Type of Questions	Marks for each Question	Total Marks
10 very short answer Questions *Answer to be given in 50-60 words*	**02**	**20**
5 short answer Questions *Answer to be given in 250-300 words*	**10**	**50**
2 essay type Questions Answer to be given in 450-500 words	**15**	**30**
Total Marks		**100**

PAPER-III: EQUIPMENT & CANNULAES

Total Teaching hours- 120 hrs.

Theory – 60 hrs. **Practical- 60 hrs.**

1. Types of Oxygenators and some common oxygenators.
2. Heat Exchange, Filters and Reservoirs.
3. Aortic and Arterial cannula.
4. Venous cannula and techniques.
5. Pumps (Roller Pumps, Centrifugal Pumps, I.A.B.P., Infusion Pumps)

PAPER-IV : EXTRACORPOREAL TECHNOLOGY & PROCEDURES

Paper	Subject	Theory	Internal Assessment	Practical	Total
Paper - IV	EXTRACORPOREAL TECHNOLOGY & PROCEDURES	100	100	100	300

The University theory examination shall be of 100 marks and question paper will be set by qualified examiner M.D. Pathology , who shall be on the panel of examiners of internal or external , 50% shall be the minimum passing marks. Internal assessment will be of 100 marks, which would be counted in theory marks for passing university examination. For practical examination; there will be two examiner M.D. Pathology - one internal Examiner ; from the institute /college and one from other college /institute of the university from the panel of University examiners.

The pattern of University theory examination will be as under for **100 Max. Marks in question paper** and distribution of marks for questions will be as under

No. and Type of Questions	Marks for each Question	Total Marks
10 very short answer Questions *Answer to be given in 50-60 words*	**02**	**20**
5 short answer Questions *Answer to be given in 250-300 words*	**10**	**50**
2 essay type Questions *Answer to be given in 450-500 words*	**15**	**30**
Total Marks		**100**

PAPER-IV : EXTRACORPOREAL TECHNOLOGY & PROCEDURES

Total Teaching hours- 120 hrs.
Theory – 60 hrs. **Practical- 60 hrs.**

1. (Priming fluids, PCV).
2. Technique of Cardiopulmonary Bypass
3. Cardioplegia, additives& techniques
4. Hypothermia, Circulatory arrest and Homeostatic management
5. Body response of Extra corporeal circulation and complications of Cardiopulmonary Bypass.
6. Ultrafiltration during cardiopulmonary Bypass.
7. Emergency during cardiopulmonary Bypass.
8. Perfusion Technology for Minimally Invasive Cardiac Surgery.
   Surgery for Aortic Aneurysm.

Book References:

Anatomy & Physiology

I. Text book of Anatomy – B.D. Chaurasia
II. Text book of Anatomy- Vishram singh 2nd Edit
III. Essential of medical physiology – K sembulingam
IV. Text book of physiology – A.K. Jain
V. Text book of physiology – G.K. Pal

Cardiac Perfusion Tehnician

I. Laboratory text diagnostic procedure Cynthia C Chernecky Barbara J. berga

II. Recent Advance book of – Derek Rowland's CardiologyPractical

III. Electro cardiology Colin Sachmroth

IV. Practical cardiology – Ragavendra R. Baliya

V. Manual of Cardiology – V Jacob Jose

VI. Practical Cardiotocography – A. K. Debdas