

CHETTINAD ACADEMY OF RESEARCH AND EDUCATION

(Deemed to be University under section 3 of the U.G.C. Act 1956)



REGULATIONS & SYLLABUS

D.M. Cardiology

2013-14 onwards

**CHETTINAD ACADEMY OF RESEARCH AND EDUCATION
REGULATIONS FOR D.M. PROGRAMS**

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CHETTINAD ACADEMY OF RESEARCH & EDUCATION

Regulations for DM (Doctor Medicine) Post Graduate Super speciality Courses

In exercise of the powers conferred by Rule 12(IV) of Memorandum of Association and Chapter III of Bye-laws of Chettinad Academic of Research and Education, the Academic Council of the University hereby makes the following Regulations;

1. SHORT TITLE AND COMMENCEMENT

- a. These Regulations may be called DM Doctor of Medicine Postgraduate super speciality course Regulations 2013
- b. They shall come into force from the Academic Year 2013-14
- c. These Regulations are subject to modification as may be approved by the Academic Council from time to time.

2. GOALS AND GENERAL OBJECTIVES OF DM POSTGRADUATE SUPER SPECIALITY PROGRAMME TO BE OBSERVED BY POSTGRADUATE TEACHING INSTITUTION

The goal of postgraduate medical education shall be to produce competent specialists and/or Medical teachers.

- a. who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy
- b. who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- c. who shall be aware of the contemporary advance and developments in the discipline concerned;
- d. who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology;
- e. who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

3. GENERAL OBJECTIVES OF POST-GRADUATE TRAINING EXPECTED FROM STUDENTS AT THE END OF POST-GRADUATE TRAINING.

At the end of the postgraduate super speciality training in the discipline concerned the student shall be able to;

- a. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
- b. Practice the speciality concerned ethically and in step with the principles of primary health care.
- c. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and primitive measure/strategies.

- d. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
- e. Plan and advise measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality.
- f. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
- g. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations.
- h. Play the assigned role in the implementation of national health programme, effectively and responsibly.**
- i. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
- j. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
- k. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
- l. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
- m. Function as an effective leader of a health team engaged in health care, research or training.

4. COMPONENTS OF THE POSTGRADUATE CURRICULUM

The major components of the Postgraduate curriculum shall be:

- a. Theoretical knowledge
- b. Practical and clinical skills
- c. Writing Thesis / Research articles
- d. Attitudes including communication skills.
- e. Training in research methodology, Medical Ethics and Medico legal aspects.

5. NOMENCLATURE OF PG COURSE IN DM SUPER SPECIALITY COURSES

The nomenclature of PG degree super speciality course should be as laid down in the PG Medical regulations prescribed by the Medical Council of India.

6. ELIGIBILITY FOR ADMISSION

- i) DM (Doctor of Medicine) for which Candidates must possess recognized degree of MD (or its equivalent recognized degree) in the subject shown against them.
- ii) A person possessing DNB in the concerned broad-specialty, is eligible for admission in the Super-Speciality / Higher course (D.M.)

Sl.No.	Area of Specialisation	Prior Requirement
1	Cardiology	MD (General Medicine) MD (Paediatrics) MD (Respiratory Medicine)
2	Neonatology	MD (Paediatrics)
3	Nephrology	MD (General Medicine) MD (Paediatrics)
4.	Neurology	MD (General Medicine) MD (Paediatrics)
5.	Reproductive Medicine	MD (General Medicine) MD (Obstetrics & Gynaecology)
6.	Clinical Haematology	MD (General Medicine) MD (Pathology) MD (Paediatrics) MD (Biochemistry)
7.	Clinical Pharmacology	MD (Pharmacology)
8.	Endocrinology	MD (General Medicine) MD (Paediatrics)
9.	Immunology	MD (General Medicine) MD (Pathology) MD (Microbiology) MD (Paediatrics) MD (Biochemistry) MD (Physiology)
10.	Medical Gastroenterology	MD (General Medicine)
11.	Medical Genetics	MD/MS in any subject
12.	Medical Oncology	MD (General Medicine) MS (Radiotherapy) MD (Paediatrics)
13.	Neuro-radiology	MD (Radio-Diagnosis)
14.	Rhematology	MD (General Medicine) MD (Paediatrics)

- a) He/ She having qualified for the Post-graduate degree of this University or any other Universities recognised as equivalent thereto by the authority of this University and the Indian Medical Council and obtained permanent registration from any of the State Medical Council(s) or shall obtain the same within a period of one month from the date of his / her admission, failing which his/her admission shall stand cancelled
- a. Provided that in the case of a foreign national, the Medical Council of India may, on payment of the prescribed fee for registration, grant temporary registration, for the duration of the post graduate course limited to the medical college/institution to which the candidate is admitted for the time being exclusively for pursuing post graduate studies.
- c) Provided further the temporary registration to such foreign national shall be subject to the condition that such person is duly registered with appropriate registering authority in his own country wherefrom he has obtained his basic medical qualification, and his duly recognized by the corresponding Medical Council or concerned authority.

7. RECOGNITION FEE AND ELIGIBILITY CERTIFICATE:

Candidates who have passed the M.D. Degree Examination other than that conducted by Chettinad University shall obtain Eligibility Certificate from this University at the time of admission and also remit recognition fee as prescribed.

8. REGISTRATION:

A candidate admitted to the Post Graduate Super Speciality Course shall register with the University by submitting the prescribed application form for registration, duly filled in along with the prescribed fee, through the Head of the Institution.

9. DURATION OF THE COURSE

The period of training for obtaining the degree shall be three completed years including the examination period) after obtaining MD / Degree or equivalent/recognised qualifications in the required subject.

10.ADMISSION AND COMMENCEMENT OF COURSES

On the basis of academic merit as determined based on the competitive All India Common Entrance Examination conducted by the Chettinad Academy of Research and Education.

Time schedule for the completion of admission process for super speciality courses is as per statutory norms prevalent at that point of time.

11.SYLLABUS

The Syllabus for the course shall be as specified in the annexure to these

regulations.

12.MEDIUM OF INSTRUCTION:

English shall be the medium of instruction for D.M. Super Speciality Courses.

13.WORKING DAYS / ATTENDANCE

All candidates joining the Super Speciality Course shall work as full time residents during the period of training, attending not less than 80% (Eighty percent) of the training during each academic year, and given full time responsibility, assignments assessed full time responsibilities and participation in all facets of the educational process.

It is desirable that the candidates should have 100 per cent attendance to enable their objective to be achieved. However, a minimum of atleast 80 per cent attendance and achievement of satisfactory standards in both theoretical and clinical would be required for every academic year before they are allowed to appear for the University Examination.

The Attendance details may be submitted to the Controller of Examinations at the end of every academic year. The student should also be intimated quarterly regarding the lack of attendance.

13. (a)STIPEND AND GRANT OF LEAVE

The Post Graduate students undergoing Post Graduate Degree / Diploma/Super-Specialty course shall be paid stipend on par with the stipend being paid to the Post Graduate students of State Government Medical Institutions / Central Government Medical Institutions, in the State / Union Territory where the institution is located. Similarly, the matter of grant of leave to Post Graduate students shall be regulated as per the respective State Government rules.

14.CONDONATION FOR LACK OF ATTENDANCE

There shall be no condonation for lack of attendance.

15.MIGRATION

Under no circumstances, Migration/ Transfer of student in super speciality course shall be permitted by the University.

16.TRAINING PROGRAMME

The training given with due care to the Post Graduate students in the recognised institutions for the award of various Post Graduate medical degrees / super speciality degrees shall determine the expertise of the specialist and / or medical teachers produced as a result of the educational programme during the period of stay in the institution.

- (a) Every institution undertaking Post Graduate training programme shall set up an Academic cell or a curriculum committee, under the chairmanship of a senior faculty member, which shall work out the details of the training programme in each

speciality in consultation with other department faculty staff and also coordinate and monitor the implementation of these training Programmes.

The training programmes shall be updated as and when required. The structured training programme shall be written up and strictly followed, to enable the examiners to determine the training undergone by the candidates and the Medical Council of India inspectors to assess the same at the time of inspection.

During the training for Super Speciality Courses to be awarded in clinical disciplines, there shall be proper training in basic medical sciences related to the disciplines concerned; during the training for the degree to be awarded in basic medical sciences, there shall be training in applied aspects of the subject; and there shall be training in allied subjects related to the disciplines concerned. In all Post Graduate training programmes, both clinical and basic medical sciences, emphasis is to be laid on preventive and social aspects and emergency care facilities for autopsies, biopsies, cytopsies, endoscopic and imaging etc. also be made available for training purposes.

The Post Graduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.

Training in Medical Audit, Management, Health Economics, Health Information System, basics of statistics, exposure to human behaviour studies, knowledge of pharmaco – economics and introduction to non- linear mathematics shall be imparted to the Post Graduate students.

Implementation of the training programs for the award of various Post Graduate Super Speciality Degree shall include the following:-

Basic Medical Sciences

- (i) Lectures, Seminars, Journal Clubs, Group Discussions, Participation in laboratory and experimental work, and involvement in research studies in the concerned speciality and exposure to the applied aspects of the subject relevant to clinical specialities.

Clinical disciplines

- (ii) In service training, with the students being given graded responsibility in the management and treatment of patients entrusted to their care; participation in Seminars, Journal clubs, Group Discussions, Clinical Meetings, Grand rounds, and Clinico - Pathological Conferences; practical training in Diagnosis and medical and Surgical treatment; training in the Basic Medical Sciences, as well as in allied clinical specialities.

The training programme shall be on the same pattern as for M.D. / M.S. in clinical disciplines; practical training including advanced Diagnostic, Therapeutic and Laboratory techniques, relevant to the subject of specialisation.

17.MAINTENANCE OF LOG BOOK

- a) Every Post Graduate student shall maintain a record (Log) book containing skills, the candidate has acquired during the training period certified by the various heads of department where the candidate has undergone training including outside the institution.
- b) The students shall maintain a Record Book (Log Book) of the work carried out by them & training program undergone during the period of training including details of procedures carried out independently or assisted by the candidate. The log book will be checked by the faculty members imparting the training.
- c) At the end of the course, the candidate should summarise the contents and get the record (Log) book certified by the Head of the Department.
- d) The record (Log) book should be submitted at the time of practical examination for the scrutiny of the Board of Examiners.
- e) It would be the constant endeavour of the faculty to develop desirable attitudes in the PG trainees during the course by personal examples, interaction and group discussion. Constant watch will be maintained during their work in the wards to ensure that this objective is being met. Although there will be no formal evaluation of attitude, some aspects of this domain would be covered during the formative evaluation as noted below for continued internal assessment. Formative evaluation will be carried out over following activities of the P.G. resident.
 - i. Ward work
 - ii. Case presentation
 - iii. P.G.Lecture
 - iv. Journal club
 - v. General assessment of affective function attitude by medical & paramedical staff;
 - vi. Internal Assessment

Candidates can appear for theory examination only after being certified on the basis of Internal assessment.

18.THESIS / DISSERTATION AND EVALUATION

- a) All Candidates admitted to undergo D.M. super speciality courses shall be assigned a topic for dissertation / thesis by the Head of the concerned unit and the title of the topic assigned to the candidates be intimated to the Controller of Examination of the University by the Head of the Department through the Head of the Institution before end of the First year.

- b) The dissertation / thesis shall be a bound volume of minimum 50 pages and not exceeding 75 pages of typed matter (double line spacing and on one side only) excluding certification, acknowledgements, annexure and bibliography.
- c) Four copies of dissertation shall be submitted six months prior to the commencement of the examination on the prescribed date to the controller of examination of the University.
- d) Two copies are to be submitted as an electronic version of the entire dissertation in a standard C.D. format mentioning the details and technicalities used in the C.D. format.
- e) The concerned Professors / Readers are to supervise and to see that the dissertation is done properly utilising the clinical materials of their own department / institution. The students must learn the design and interpretation of research studies, responsible use of informed consent and research methodology and interpretation of data and statistical analysis. They should seek the help of qualified staff members in the conduct of research. They must learn to use library and the computer-based research. This training will help them to develop skills in planning, designing and conduct of research studies.
- f) All candidates on admission will be allotted one of the department faculties who have fulfilled the requirement to be guides for purposes of guiding Dissertation/thesis. The topic for dissertation shall be finalized and discussed in the departmental faculty meeting and allotted to the individual candidates before the completion of 3 months after admission. The purpose of dissertation is to develop in the candidate the ability to perform an independent study keeping the principles and research methodology in mind. The candidate will therefore work on the prospective problem either within the department or in collaboration with other departments. There will be continuous monitoring of the dissertation work by the guides and co-guide and by the other department staff throughout the course. The candidate will present the progress of the dissertation to the faculty on the completion of 1 ½ years for monitoring and feedback. The completed dissertation should be submitted not later than 6 months before final examination.
- g) The theory examinations shall be held sufficiently earlier than the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the start of the Clinical/Practical and Oral examination.
- h) The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical. A candidate shall be allowed to appear for Theory and Practical/Clinical examination only after the acceptance of thesis by the examiners. The thesis shall be evaluated under the following heading:
 - 1) Approved
 - 2) Not approved

In all cases the approval shall be given before 3 months of the date of appearing for the examination and this will be essential before the candidate is allowed to appear for the written examination.

19.SCHEDULE OF EXAMINATIONS:

The examination for D.M courses shall be held at the end of 3rd academic year. An academic term shall mean six months` s training period.

20.SCHEME OF EXAMINATIONS

Post Graduate Examinations shall consist of Dissertation/Thesis, Written Paper (Theory), Clinical and Viva Voce.

The examinations shall be organised on the basis of "Grading" or "Marking system" to evaluate and certify candidate's level of knowledge, skill and competence at the end of the training.

- a) **Dissertation/Thesis:** Every candidate shall carry out and submit a Dissertation/Thesis as explained and approval of Dissertation/Thesis shall be precondition for a candidate to appear for the final year examination.
- b) Students admitted to this course would be required to present one poster presentation to read one paper at a national / state conference and to present one research paper which should be published / accepted for publication / sent for publication during the period of his Postgraduate studies so as to make him eligible to appear at the Postgraduate Super Speciality Degree Examination as prescribed in the Postgraduate Medical Education Regulations.
- c) **Theory:** A Written Examination shall consist of four theory papers each of three hours duration. Each paper carries 100 marks (Total 400 marks). Out of these one shall be of Basic Medical Sciences and one shall be of Recent advances.
- d) **Clinical Examination:** Clinical examination for the subjects in Clinical Sciences shall be conducted to test the knowledge and competence of the candidates for undertaking independent work as a specialist/Teacher, for which candidates shall examine a minimum one long case and two short cases.
- e) **Oral Examination:** The Oral examination shall be thorough and shall aim at assessing the candidate knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the speciality, which form a part of the examination.

THEORY	
No. of Theory Papers	4
Marks for each Theory Paper	*100
Total marks for Theory Paper	400
Passing Minimum for Theory	200/400
Total marks for Clinical	300
Passing Minimum for Clinical	150/300
Viva voce	100
Passing minimum for Clinical including Viva voce	200/400

ii) If any candidate fails even under one head, he/she has to re-appear for whole examination.

ii) Theory paper consists of 2 essay questions of 25 marks each ($2 \times 25 = 50$) & 5 short notes of 10 marks each ($5 \times 10 = 50$). Total = 100 marks each.

Sl.No.20(ii) Amended vide XVIII meeting of Academic Council dated 15.04.2014. Resolved to approve 2 Essay Questions (2 x 20 marks) and 10 short notes (10 x 6 marks) for each theory paper in D.M. /M.Ch courses which will take effect from 2013-14 batch.

Resolved to approve 2 essays (2 x 20 marks) and 6 short notes (6 x 10 marks) for theory paper in all D.M. Courses by the Academic Council in its XX meeting held on 25.03.2015

****Resolved to approve that an examinee should obtain minimum 40% marks in each theory paper and not less than 50% marks cumulatively in all the four papers in P.G. degree examination to be cleared as passed which will be implemented prospectively. (Academic Council in its XX meeting held on 25.03.2015).***

21. EXAMINERS

(a) All the Post Graduate Examiners for super speciality courses shall be recognised super speciality Post Graduate Teachers holding recognised Post Graduate qualifications in the subject concerned.

(b) For all Post Graduate super speciality Examinations, the minimum number of Examiners shall be four, out of which at least two (50%) shall be External Examiners, who shall be invited from other recognised universities from outside the State/outside University. The remaining two will be internal examiners. The qualifications and

teaching experience for appointment of examiners shall be as laid down by the guidelines of Medical Council of India in force from time to time.

(c) 'No person shall be appointed as an internal examiner in any subject unless he/she has three years' experience as recognized PG teacher in the concerned subject. For external examiners, he/she should have minimum six years of experience as recognized PG teacher in the concerned subject'. "An examiner shall ordinarily be appointed for not more than two consecutive terms"

(d) Under exceptional circumstances, examinations may be held with 3 (three) examiners provided two of them are external and Medical Council of India is intimated the justification of such action prior to publication of result for approval. Under no circumstances, result shall be published in such cases without the approval of Medical Council of India.

22. NUMBER OF CANDIDATES

The maximum number of candidates to be examined in Clinical / practical and Oral on any day shall not exceed three for D.M. examinations.

23. *NUMBER OF EXAMINATIONS

The University shall conduct not more than two examinations in a year, for any subject, with an interval of not less than 4 and not more than 6 months between the two examinations. The examination shall be conducted in September and March.

*** SI. No.23 Amended in XXI meeting of Academic Council dated 22.07.2015 Resolved to approve the commencement of D.M. University examination in August (for Regular Batch) and February (for Supplementary Batch).**

24. REVALUATION.

There is no revaluation of answer papers. However, re-totalling is allowed in the failed subjects with payment of required fees fixed by the University (from time to time) within 15 days from the date of receipt of statement of marks.

SYLLABUS FOR D.M. CARDIOLOGY

OVERVIEW AND OBJECTIVES

Clinical Cardiology training

Candidates shall be trained specifically in the art of bed side diagnosis. Curriculum is aimed to improve the overall clinical acumen in problem solving. Candidates will gain specific and focal management skills in all common clinical cardiology problem solving.

Specific Skills

Candidates after completion of course will gain medical communication and presentation skills, will have knowledge about Bio informatics with specific reference to cardiology. Candidates will be encouraged to develop skill in organizing workshops, CMEs and conferences. They will be allowed to attend national cardiology conferences and take part in competitive exams conducted by national and other academic bodies. They will be encouraged to use computer freely for internet access to cardiology journals, take part in cardiology journal club and to utilise Microsoft office tools for powerful presentation. They will be allowed to take part in group discussion and panel discussion to gain confidence and develop skill in discussing cardiology related topics. Candidates will gain knowledge about organization and management of coronary care unit. They will be encouraged to undertake research activities and will be given proper training in biostatistics and in writing scientific papers.

SYLLABUS / COURSE CONTENT:

1. **Applied Anatomy:** Heart and great vessels, congenital anomalies; development of heart.
2. **Applied Physiology:** Cardiac cycle, cardiac output, pressure and volume loops, cardiac contractility, pulmonary circulation, coronary circulation, blood pressure, cardiac failure, acid base balance. Autonomic control of heart and vasculature, pulmonary function tests and their application to cardiology, interpretation of data on PET.
3. **Applied Pathology:** Congenital heart disease, rheumatic fever and lesions, myocarditis, cardiomyopathies, pericarditis, constructive pericarditis, infective endocarditis, coronary artery disease including myocardial infarction, hypertensive heart disease, pulmonary embolism, cardiac tumors.
4. **Applied Pharmacology:** Cardiac glycosides, anti-hypertensives, diuretics, drugs for coronary artery disease, betablockers, calcium channel blockers, inotropic agents, antibiotics, antiarrhythmic agents, metabolic modulators, antiarrhythmics, recent advances in pharmacology pertaining to cardiology.
5. **Cardiovascular Imaging:** Chest x-ray, ECG, Echo, Nuclear medicine imaging, MRI, CT scan, PET scan.
6. **Hemodynamics and interventions:** Cardiac catheterization, oxymetry, hemodynamics, angiogram, interventional procedures in cardiology practices.
7. **Clinical Cardiology:** Coronary artery disease, Rheumatic heart disease, Congenital heart disease and other paediatric cardiac disorders, Pericardial diseases, Cardiac arrhythmias, Heart failure, Peripheral vascular disorders, Pulmonary thromboembolism and pulmonary hypertension. Systemic hypertension, Systemic diseases involving heart, Heart muscle diseases, Traumatic heart disease, Tumors of heart, Genetics, molecular biology and immunology related to cardiology. Geriatric heart disease, General anaesthesia and non-cardiac surgery in patients with heart disease, Pregnancy and heart disease, Epidemiology and preventive cardiology.

Non-invasive Techniques

To perform and interpret various non-invasive techniques including:

1. Electrocardiography
2. Radiography – routine and specialized areas like CT and MRI
3. Stress testing – tread mill test, stress related and other nuclear techniques.
4. Holter monitoring for arrhythmias and ischemic disorders
5. Echocardiography – M –mode, two dimensional, Doppler, color flow imaging, transesophageal echocardiography and echo directed hemodynamic studies.
6. Pacemaker follow up and interpretation of pacemaker ECGs and trouble shooting.
7. Interpretation of results of nuclear cardiac imaging, CT angiograms and Cardiac MRI.

Invasive Cardiology

1. Experience in cardiac catheterization to calculate and interpret various hemodynamic parameters.
2. Right and left heart cath and coronary angiography procedures in adults and children.
3. To perform temporary pacemaker insertion.
4. To assist in various interventions including valvuloplasty, pacemaker implantation, Angioplasty, device implantation and interventions in congenital heart disease.

MINIMUM EXPERIENCE TO BE GAINED.

1. Echocardiography – Transthoracic 1000 cases
2. Transesophageal echocardiography – 25 cases
3. Temporary pacing – 20 cases
4. Diagnostic coronary angiography – 50 cases
5. Right heart catheterization – 10 cases
6. Number of Holter ECGs analyzed – 50 cases
7. Number of Permanent pacemakers assisted – 5 cases
8. Number of Angioplasty assisted – 5 cases

SPECIAL POSTING:

Cardiac Surgery 1 month

Nuclear Cardiology 1 month

Coronary care unit 6 months – candidates will manage patients with acute coronary syndromes and assist in primary angioplasties.

RECOMMENDED BOOKS

1. Heart Disease: Braunwald, 8th Edition
2. The Heart: Hursts, 12th Edition
3. Valvular Heart Disease: Dalan Alpert, 3rd Edition
4. Cardiovascular Medicine: Topol, 3rd Edition
5. Cardiology: Crawford, 3rd Edition

6. Clinical Examination: Joseph K. Perloff, 5th Edition
7. The science and practice of Paediatric Cardiology: Arthur Garson, 2nd Edition
8. Heart Disease in infants' children and Adolescents: Moss and Adams, 6th Edition
9. Nada's Paediatric Cardiology: 2nd Edition
10. Practical Electrocardiography: Marrit: 10th edition
11. Cardiac Electrophysiology: Zipes and J Alife: 2nd Edition
12. Echocardiography: Harvey Feigenbaun, 6th Edition
13. Principles and Practice of Echocardiography: Arthur E. Weymen, 1st Edition
14. The Cardiac Catheterization Hand Book : Morton J. Kern, 4th Edition
15. Cardiac Catheterization Angiography and Intervention: William Grossman 7th Edition
16. The Book of Interventional Cardiology: Eric J. Topol, 5th Edition

PATTERN OF EXAMINATION

Theory

Paper I: Applied Basic Sciences related to Cardiology

Paper II: Clinical Cardiology

Paper III: Hemodynamcis therapeutics and intervention

Paper IV: Recent Advances in Cardiology & Preventive Cardiology.

PRACTICAL SCHEME FOR D.M. CARDIOLOGY

SL.NO.	PARTICULARS	MARKS
01	Long Case - 1 (1 X 100)	100
02	Short Case - 2 (2 X 50)	100
03	Ward Rounds	100
04	Viva Voce	100
	Total	400
	Minimum Required for pass	200

Distribution of marks for Clinical examination is approved by the Academic Council in its XXIII Meeting held on 10.05.2016