Part - II

PG Diploma Courses

(Paraclinical)

SECTION - I
REGULATIONS FOR POST GRADUATE DIPLOMA COURSES IN MEDICAL SCIENCES

1. Postgraduate Diploma Courses:

Postgraduate diploma course may be pursued in the following subjects:

1. Clinical Pathology (DCP)
2. Public Health (DPH)
3. Forensic Medicine (DFM)

and such other subjects as might be introduced in future from time to time, and recognized by Medical Council of India.

2. Eligibility for Admission

SELECTION OF POSTGRADUATE STUDENTS

A. Students for postgraduate medical courses shall be selected strictly on the basis of their academic merit.

B. For determining the academic merit, the KAHER shall adopt the following procedure for diploma courses:

i. On the basis of the merit as determined by centralised competitive test held at National level ie NEET-PG (National eligibility cum entrance test) conducted by National board of examination.

2.1. A candidate affiliated to this KAHER and who has passed final year M.B.B.S. examination after pursuing a study in a medical college recognized by Medical Council of India, from a recognized Medical College affiliated to any other KAHER recognized as equivalent thereto ard has completed one year compulsory rotating internship in a teaching Institution or other Institution recognized by the Medical Council of India, and has obtained permanent registration of any State Medicle Council shall be eligible for admission.

3. Obtaining Eligibility Certificate by the KAHER before making Admission

No candidate shall be admitted for any postgraduate diploma course unless the candidate has obtained and produced the eligibility certificate issued by the

KAHER. The candidate has to make an application to the KAHER with the following documents along with the prescribed fee:

i. MBBS pass / degree certificate issued by the KAHER.

ii. Marks cards of all the KAHER examinations passed during MBBS course.

iii. Attempt Certificate issued by the Principal.

iv. Certificale regarding the recognition of the medical college by the Medical Council of India.

v. Completion of internship certificate.

vi. In case internship was done in a non-teaching hospital, a certificate from the Medical Council of India that the hospital has been recognized for internship.

vii. Registration by any State Medical Council.

Candidates should obtain the Eligibility Certificate before the last date for admission as notified by the KAHER.

A candidate who has been admitted to postgraduate course should register his / her name in the KAHER within a month of admission after paying the registration fee.

4. Intake of Students

The intake of students to each course shall be in accordance with the MCI approval.

5. Duration of diploma courses:

The course of study shall be for a period of 2 years consisting of 4 terms.

6. Method of training

The training of postgraduate for diploma shall be residency pattern with graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Even,' candidate should take part in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meeting. Every candidate should be required to participate in the teaching and

:raining programme of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies. Students should be posted to basic medical sciences and allied speciality departments or institutions.

7. Attendance, Progress and Conduct

7.1 A candidate pursuing diploma course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to run a clinic/laboratory/nursing home while studying postgraduate course.

7.2 Each year shall be taken as a unit for the purpose of calculating attendance.

7.3 Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons.

7.4 Every candidate is required to attend a minimum of 80% of the training during each academic year of the post graduate course. Provided further, leave of any kind shall not be counted as part of academic term without prejudice to minimum 80% attendance of training period every year.

7.5 Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the KAHER Examinations.

8. Monitoring Progress of Studies:

8.1 Work diary / Log Book - Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc (Please see Section 3 for model check lists and log book specimen copy). Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. The work diary shall be scrutinised and certified by the Head of the Department and Head of the Institution, and presented to the KAHER practical/clinical examination.

8.2 The concerned departments may conduct two tests, one of them be at the end of first year and the other in the second year three months before the final examination. The tests may include written papers, practicals, clinicals and viva voce.

8.3 Records: Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the KAHER.

9. Schedule of Examination

The examination for the diploma courses shall be held at the end of two academic years (four academic terms). The KAHER shall conduct two examinations in a year at an interval of four to six months between the two examination. Not more than two examinations shall be conducted in an academic year.

10. Scheme of Examination

Diploma examination in any subject shall consist of Theory (written papers), Practical / Clinical and Viva - Voce.

Theory Examination for Diploma (Written Paper)

(There shall be 3 theory papers, each of 3 hours duration, carrying 100 marks each).

Type of Questions	Number of questions	Marks for each question	Total Marks
Long Essay questions	02	20	40
Short Essay questions	06	10	60
GRAND TOTAL	100		

10.1 Theory: There shall be three written question papers each carrying 100 marks. Each paper will be of three hours duration. In clinical subjects one paper out of this shall be on basic medical sciences.

10.2 Practical Clinical Examination:

In case of practical examination it should be aimed at assessing competence, skills related to laboratory procedures as well as testing students ability to make relevant and valid observations, interpretation of laboratory or experimental work relevant to his/her subject.

In case of clinical examination, it should aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate should examine at least one long case and two short cases /spotters.

The maximum marks for Practical / Clinical shall be 200.

10.3 Viva Voce Examination: Viva Voce examination should aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 100.

10.4 Criteria for declaring as pass in KAHER Examination. : A candidate shall secure not less than 50% marks in each head of passing which shall include

(1) Theory

2) Practical including clinical and viva voce examination.

The candidate has to pass theory and practical independently.

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Controller of Examinations.

10.5 Declaration of distinction: A successful candidate passing the KAHER examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate marks is 75 percent and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

10.6 Number of Candidates per day: The maximum number of candidates for practical/ clinical and viva-voce examination for diploma shall be maximum 8 per day.

SECTION - II
GOALS AND GENERAL OBJECTIVES OF POSTGRADUATE MEDICAL EDUCATION PROGRAMME

Goals

The goals of postgraduate medical education shall be to produce a competent specialist and / or a medical teacher

(i) 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;

(ii) 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;

(iii) Who shall be aware of the contemporary advances and developments in the discipline concerned;

(iv) Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology;

(v) Who shall have acquired the basic skills in teaching the medical and paramedical professionals.

General Objectives

At the end of the postgraduate training in the discipline concerned, the student shall be able to:

i) Recognize the importance of the concerned speciality in the context of the health needs of the community and the national priorities in the health sector.

ii) Practice the speciality concerned ethically and in steps with the principles of primary health care.

iii) Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.

iv) 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 promotive measures/strategies.

v) Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.

vi) Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the specialty.

vii) Demonstrate skills in documentation of individual case details as well as morbidity and mortality data relevant to the assigned situation.

viii) Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the social norms and expectations.

ix) Play the assigned role in the implementation of national health programmes effectively and responsibly.

x) Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.

xi) Develop skills as a self-directed learner and recognize continuing educational needs; select and use appropriate learning resources.

xii) Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyse relevant published research literature.

xiii) Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.

xiv) Function as an effective leader of a health team engaged in health care, research or training.

Statement of the Competencies

Keeping in view the general objectives of postgraduate training, each discipline shall aim at development of specific competencies, which shall be defined and spelt out in clear terms. Each department shall produce a statement and bring it to the notice of the trainees in the beginning of the programme so that he or she can iirect the efforts towards the attainment of these competencies.

Source: Medical Council of India, Regulations on Postgraduate Medical Education, 2000.

3.1 POSTGRADUATE DIPLOMA COURSE IN PATHOLOGY (DCP)

I. GOALS:

The goal of postgraduate medical education shall be to produce a competent pathologist, diagnostician, research fellow and / or a medical teacher.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings.

1. Knowledge
2. Skills
3. Human values, ethical practice and communication abilities.

1. Knowledge:

At the end of the course a candidate must be able to

- ❖ Understand and explain about the factors in causation of diseases.
- ❖ Understand processes involved in the gross and microscopic changes of organs and tissues and explain these changes.
- ❖ Understand and explain the basis of evolution of clinical signs and symptoms.
- ❖ Should be able to perform procedures designed for Laboratory detection of diseases and overall well being of the ill.
- ❖ Should be able to recognise and report morphological changes in cells, tissues and organs.
- ❖ Should be able to identify, plan, perform and report specific laboratory based research projects.
- ❖ Should be able to perform clinical autopsy and present a CPC (clinico pathological correlation).
- ❖ Should be able to plan and teach pathology for Laboratory Technology, Nursing, Dental and Medical students.

2. Skills

- ❖ Interpret and correlate clinical and laboratory data so that clinical manifestations of disease can be explained.
- ❖ Advice on the appropriate specimens, diagnose routine and complex clinical problems on the basis of Histopathology (Surgical Pathology) and Cytopathology specimens, Blood and Bone Marrow examination and various tests of Laboratory Medicine (Clinical Pathology, Clinical Biochemistry) as well as Blood Banking (Transfusion Medicine) and tests necessary to arrive at a diagnosis.
- ❖ Correlate clinical and laboratory findings with pathology findings at autopsy, identify discorrelations and the causes of death due to diseases (apart from purely metabolic causes).
- ❖ Plan, execute, analyze and present research work.
- ❖ Make and record observations systematically and maintain accurate records of tests and their results for reasonable periods of time. Identify problems in the laboratory, offer solutions thereof and maintain a high order of quality control.
- ❖ Capable of safe & effective disposal of laboratory waste.
- ❖ Able to perform most of the routine tests in a Pathology Laboratory including grossing of specimens, processing, cutting of paraffin and frozen sections making smears, and staining.
- ❖ Able to collect specimens by routinely performed non-invasive out-patient procedures such as vene-puncture, finger-prick, fine needle aspiration of superficial lumps and bone-marrow aspirates, and provide appropriate help to colleagues performing an invasive procedure such as a biopsy or an imaging guided biopsy.
- ❖ Perform an autopsy, dissect various organ complexes and display the gross findings.

Should be familiar with the function, handling and routine care of equipment in the laboratory.

3. Human values, Ethical practice and Communication abilities

- Adopt ethical principles in all aspects of his/her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standard while carrying out human or animal research.
- Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed,
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS:

i) Theory

- General Pathology including Immunopathology
- Systemic pathology
- Hematology
- Blood Banking including Transfusion medicine
- Cytopathology
- Laboratory organization including Quality Control
- Basic Microbiology & Clinical biochemistry

ii) Practical

General

- Principles of sample collection for Hematology and Clinical Pathology,

- Processing histopathology and cytology specimens, urine analysis, stool examination.
- Pregnancy tests, semen analysis, microbiological and biochemical tests
- Waste disposal management.

Cytology

1. Fine needle aspiration cytology — Aspiration, staining & interpretation.
2. Cytology of body fluids- Processing, staining and Interpretation

Histopathology

1. Histopathologic techniques including section cutting
2. Haematoxylin and Eosin stain and special stains which include PAS stain, Alcian blue stain, Reticulin stain, Masson's Trichrome and Perl's stain
3. Principles of immunohistochemistry and immunofluorescence

Hematology

1. Anticoagulants
2. Preparation of Leishman's and Wrights stain and diluting fluids for blood counts
3. Hands on experience in different methods of Hemoglobin estimation, Blood counts, Platelets and Reticulocyte counts, Absolute eosinophil count, Packed cell volume, Erythrocyte sedimentation rate and Absolute indices and Coagulation profile.
4. Preparation and interpretation of Peripheral smear and Bone marrow
5. Hemolytic workup including sickle cell preparation, Hb F & electrophoresis.
6. Cytochemistry- Peroxidase, Sudan black B, PAS, LAP, NSE and Perl's stain.
7. Quality control and use of automated cell counters
8. Cleaning of Glassware

Blood bank

1. Blood grouping and Rh typing
2. Cross matching
3. Coomb's test
4. Donor screening and blood collection
5. Testing for Syphilis, HIV, Hepatitis B & C
6. Rh antibody titration
7. Cold agglutinin titre
8. Quality control

Microbiology

1. Experience in interpretation and reporting of

a) Grams stain

b) Z.N. Stain.

c) Hanging drop preparation.

d) KOH / Lactophenol preparation for fungi.

2. Sterilization techniques, culture methods, identification and reporting.
3. Hands on experience and interpretation of serological tests like widal, VDRL, HIV, HBV, CRP, RF, ASO.

Clinical Biochemistry

Basic Biochemistry applied to biochemical investigations: Handling of Photo colorimeter, Spectrophotometer, pH - meter, Flame photometer, Semi Autoanalyser and Autoanalyser, Electrophoresis.

Carrying out biochemical investigations like blood sugar, urea, creatinine, proteins, bilirubin, SGOT, SGPT, alkaline phosphatase.

IV. TEACHING AND LEARNING ACTIVITIES:

A) Theoretical Teaching:

1. **Lectures:** Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.

   Biopsy/Slide review: Recommended to be held every fortnightly. Interesting and difficult cases in histopathology, cytology and haematology should be selected for these discussions. The presentations are evaluated for individual performances and carry weightage for internal assessment.

   Grossing sessions: Recommended to be held every fortnightly. Interesting and rare surgical specimans shall be discussed. The post fgraduates will be thought regarding discripction and diagnosis of individuals specimens. They will also be trained on how to give the bits with special reference to radical surgical specimens The presentations are evaluated for individual performances and carry weightage for internal assessment.

   Autopsy discussion: Recommended to be held every fortnightly. Interesting cases are selected which are announced in advance. All the staff members and post graduates should have interaction on gross and microscopic findings of individual organs, so as to arrive to a final diagnosis regarding the cause of death. These presentations will be evaluated individually and would carry weightage for internal assessment.

2. **Journal Club:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.

3. **Subject Seminar:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A timetable for the subject with names of the students and the moderator should be announced in advance.

4. **Case Discussion:** Recommended to be held once a week. All the PG students

are expected to attend and actively participate in discussion and enter in the Log Book relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A timetable for the case presentation with names of the students should be announced in advance.

5. **Clinico-Pathological Conference:** Recommended once a month for all post graduate students. Presentation to be done by rotation. Presentations will be assessed using checklist. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs.

6. **Inter Departmental Meetings:** Strongly recommended particularly with Clinical and Radio-Diagnosis departments at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

7. **Teaching Skills:** Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, tutorials, lectures etc.

   Assessment is made using a checklist by medical faculty as well as by the students.

   Record of their participation is to be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.

8. **Continuing Medical Education Programmes (CME):** Recommended that at least 1 state level CME programme should be attended by each student during the course.

9. **Conferences:** Attending conference is compulsory. Post-graduate student should attend one national and one state level conference during the course.

10. **Research Activities:** The Post-graduate students to be encouraged to carry out research activities in the department, institution and or community.

B) Clinical / Practical Training:

1. **Rotational Postings in other Departments:**

Biochemistry	-3 months
Microbiology	- 3 months

Histopathology	- 6 months
Cytopathology	- 2 months
Museum Techniques	-2 month
Clinical Pathology, Haematology and Blood Bank	- 8 months

V. OTHER CRITERIA TO FULFILL FOR THE DIPLOMA COURSE:

1. Internal evaluation:

During the course of two years, the department will conduct two tests. One at the end of first year and other at the end of second year. The second test will be a preliminary examination which may be held three months before the final examination. The test may include the written papers, practicals and viva-voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the KAHER when called for.

Results of all evaluations should be entered into P.G's logbook / diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures preformed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the KAHER practical/clinical examination.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory.

i) Theory : 300 Marks

There shall be three papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below **except** Paper – I to have two sections A & B

Section – A of 50 marks will be Pathology and Section – B of 50 Marks to be allotted to Microbiology, with following pattern of questions.

One Long question of 20 marks.

Three short essay questions of 10 marks each.

Type of Questions	No. of Questions	Marks for each question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

PAPER I - General pathology including Basic Microbiology 100 Marks

PAPER II - Systemic pathology 100 Marks

PAPER III - Haematology, Cytology, Clinical pathology, Biochemistry 100 Marks

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

ii) Practical: 200 marks

DAY 1:

1. Microbiology Exercise 50 Marks
2. Clinical case- 45 Marks
   (Examination, discussion, relevant haematology and Biochemistry tests and Urine Analysis)
3. Histopathology and Cytology Techniques 45Marks
   (Section cutting, Histopathology stains, Cytology stains)

DAY 2:

1. Reporting on Microbiology exercise
2. Histopathology slides – 20 Marks
3. Cytology slides – 20 Marks
4. Haematology slides – 20 Marks

iii) Viva- Voce Examination: 100 Marks & Log Book

Aims: To elicit candidate's knowledge and investigative/ clinical skills.

1). Viva-voce examination – [80 Marks]

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be given case reports, gross specimens, cytology, hematology, clinical biochemistry, histo-pathology slides, etc., for interpretation and questions on these as well as use of instruments will be asked. Student's knowledge on use of instruments and procedures will also be evaluated during viva-voce examination.

Log book - 20 Marks

D. Maximum Marks:

	Theory	Practical 200	Viva 100	Grand Total
Maximum marks for Diploma in Pathology (DCP)	**300**	**(Pathology - 150 & Microbiology 50 Marks)**	**80 Viva 20 Log Book**	**600**

E. Examiners :

One Microbiologist (M.D. Microbiology) shall be one of the Two external examiners

	Internal	External
Examiners	**2 (both Pathology)**	**1 + 1 (1Pathology + 1 Microbiology)**

VII. RECOMMENDED BOOKS (Latest editions):

Sr. No.	Name of the Textbook	Authors	Publisher
1.	Robbins and Cotrans. Pathologic Basis of Disease,	Kumar V, Abbas AK, Fausto N	W.B.Saunders.
2.	Anderson's Pathology Vol I & II	Damjanov I, Linder J	C.V.Mosby Company
3.	Oxford Text Book Of Pathology Vol. 1,2a, 2b,	Mc Gee, Isaacson and Wright	Oxford University Press
4.	General Pathology	J.B.Walter, M.S.Israel	Churchill Livingstone
5.	Systemic Pathology 16 Volumes,	W. Symmers	Churchill Livingstone
6.	Ackerman's Surgical Pathology	Jaun Rosai	C.V. Mosby company
7.	Surgical Pathology	Walter F Coalson	Lippincott
8.	Soft Tissue Tumours	Enzinger and Weiss	B.I.Publications
9.	Histopathology Of The Skin	W Lever - GS Lever	J.B. Lippin Cott Company
10.	Evan's Histological Appearances Of Tumours	David J. B.Ashley	Churchill Livingstone
11.	Novak's Gynecologic And Obstetric Pathology	Novak & Woodruff	Kiaku Shoin/ Saunders
12.	Diagnostic Cytology And Its Histopathologic Basis	Leopold G Koss	J.G.Lippincott Company
13.	Comprehensive Cytopathology	Marluce Bibbo	W.B. Saunders

14.	Diagnostic Cytopathology	Winnifred Grey	Churchill Livingstone
15.	Fine Needle Aspiration Cytology (Manual & Atlas)	Orell, Sterrett, Walters & Whittaker	Churchill Livingstone
16.	Neoplastic Haematopathology	Daniel M Knowles	Williams & Wilkins
17.	Clinical Haematology	Maxwell M Wintrobe	K. M. Varghese & Company
18.	De Gruchy's Clinical Haematology In Medical Practice	Firkin, Chesterman, Penington, & Rush	Blackwell Publishing
19.	Ophthalmic Pathology	Prema V Iyer & Robert Rowland	Churchill Livingstone
20.	Clinical Diagnostis And Management By Laboratory Methods	Todd, Sanford, Davidson	W.B.Saunders and Company
21.	Surgical Pathology And Laboratory Techniques	Dr. Shameem Sharif	Prism publications
22.	Diagnostic Histopathology of Tumours Vol. 1 & 2	Christopher D.M.Fletcher	Churchill Livingstone
23.	Laboratory Techniques in Surgical Pathology	Shameem Shariff	Prism Pvt. Ltd.

VIII. RECOMMENDED JOURNALS:

Sr. No.	Name of the Journal
1.	British Journal of Haematology
2.	CANCER, International journal of the American cancer society
3.	American journal of Clinical Pathology
4.	Hematology /Oncology Clinics of North America
5.	Histopathology
6.	Academy of pathology
7.	The American journal of Surgical Pathology
8.	ACTA Cytologica, The journal of clinical cytology and cytopathology.
9.	Archives of pathology and Laboratory medicine
10.	The Indian Journal of Pathology & Microbiology
11.	The Indian Journal of Cancer
12.	Human Pathology
13.	Jour nal of cytology

POST GRADUATE COURSE IN COMMUNITY MEDICINE
DIPLOMA IN PUBLIC HEALTH (DPH)

I. GOALS

At the end of two years course, the student should be able to

1. Recognise the need of "Health for All" for the community.
2. Understand the National Health Policy and must be able to implement the same.
3. Achieve competency to practice holistic Medicine (Preventive, Promotive, Curative and Rehabilitative Medicine)
4. Acquire proficiency in Health Administration
5. Fulfill Social and Professional obligations to the society
6. Acquire leadership qualities.

II. OBJECTIVES

The following objectives are laid out to achieve the goals of the course. These objective are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings.

1. Knowledge
2. Skills
3. Human values, ethical practice and communication abilities.

1. KNOWLEDGE :

a. List of factors influencing health and disease.

b. The principles, methods and application of epidemiology and statistics.

c. The demographic characteristics and its impact on the development of the country.

d. The Health Information System.

e. The principles and the components of Primary Health Care and Health Administration.

2. SKILLS :

a. Use epidemiology and statistics as scientific tool

b. Investigate an out break of a disease

c. Manage community health problems

d. Diagnose and manage health problems pertaining to women and children

e. Implement and evaluate health education programmes by using simple audio visual aids.

f. Successfully interact with health care team

g. Plan, organize and conduct various health camps.

3. Human values, Ethical practice and Communication abilities

a. Adopt ethical principles in all aspects of his/her practice, professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.

b. Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.

c. Provide leadership and get the best out of his team in a congenial working atmosphere.

d. Apply high moral and ethical standards while carrying out human or animal research.

e. Be humble and accept the limitations in his knowledge and skills and to ask for help from colleagues when needed.

f. Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS

A. THEORY:

1. BASIC SCIENCES

a. History of public health in India.

b. Concepts in Community health

c. Health and Environment.

d. Report of various health committees.

e. Principles and levels of prevention.

2. MICROBIOLOGY

a. Microbes of public health importance including various parasites and their morphology, mode of transmission, Laboratory diagnosis and control and prevention.

b. Bacteriological examination of water & milk (collection, transportation and lab diagnosis of microbes).

c. Disinfection, sterilization and insecticides.

d. Entomology.

e. Basic principles of Immunology

3. EPIDEMIOLOGY

a. Definition, concept, scope, objectives and uses.

b. Measurements in epidemiology.

c. Association and causation.

d. Disease transmission and principles of control.

e. Analysis of descriptive study; time, place & person characteristics.

f. Studies in epidemiology – Techniques and analysis.

g. Epidemiology of Communicable and Non communicable diseases in India.

h. General principles of investigation of an epidemic.

4. EPIDEMIOLOGICAL SERVICES AT P.H.C.

a. Surveillance of communicable and non-communicable diseases. Identification of Epidemic and Epidemic nature of diseases and calculation of seasonal index, etc.,

b. Surveillance and impact of health services.

c. Development of Health Information Systems.

d. Updating epidemiological skills of peripheral worker.

e. Investigation and control of epidemics.

5. NUTRITION

a. Social factors influencing nutrition.

b. Nutrients.

c. Nutritional requirements, Nutritional deficiency diseases.

d. Balanced diet, Nutritional Assessment.

e. Prevention of nutritional diseases.

f. National nutritional programs and nutritional rehabilitation.

6. OCCUPATIONAL HEALTH

a. Environmental health hazards in industries.

b. Health hazards due to chemical and biological agents.

c. Prevention of occupational diseases.

7. PUBLICH HEALTH ADMINISTRATION

a. General Administration at Centre, State, District and Panchayat Raj.

b. Principles of organization and administration.

c. Health administration at State, Centre and Municipal Corporation.

d. National health policy.

e. National health programmes

f. Primary health care in India.

g. Planning and evaluation of programmes.

h. Management concepts.

i. Health care administrator – roles, tasks and functions.

j. Motivation.

k. Team concept and functioning.

l. Management of district health services

- Structure and function of organization at district level.

- Community diagnosis.

- Action plan analysis.

- Monitoring performances of P.H.C.

m. Mobilizing community resources and creating demand for services.

n. Management of human resources.

o. Management of supportive system, including man power planning and development system.

p. Managing conflict and interpersonal behavior and understanding inter personal behavior.

q. Communication and coordination.

r. Office management.

s. Finance, material and vehicle management.

t. Public health legislations.

8. SOCIOLOGY

a. The study of family.

b. Rural community- Characteristics & health problems

c. Urban Community- Characteristics & health problems.

d. Social factors in health and disease.

e. Medico- social worker.

f. Culture and health.

g. Leadership in health.

h. Socialization and social control, Social stratification.

i. Social Psychology,

9. HEALTH EDUCATION AND INFORMATION, EDUCATION AND COMMUNICATION (I.E.C.)

a. Theories of learning

b. Communication.

c. Principles and planning of health education.

d. Methods in Health Education.

10. DEMOGRAPHY, FAMILY PLANNING, REPRODUCTIVE AND CHILD HEALTH

a. Family welfare: Population explosion, reasons, need for population control measures, National Population Policy.

b. Family Planning: Identify and describe methods and their advantages and disadvantages.

c. Indicators of MCH Care

d. Concept and components of RCH, NRHM

e. ICDS

f. MTP Act and PNDT (Prenatal diagnostic technique) Act

g. School health services: objectives, services / activities, programmes related to nutrition

h. Handicap child: Care of disabled

i. Geriatrics : Health problems of aged and preventive care and welfare of aged population.

11. MENTAL HEALTH

a. Mental health problem in India.

b. National mental health programme.

12. BIO STATISTICS

a. Introduction to basic statistics.

b. Data: types, collection and presentation.

c. Simple statistical method for the analysis of data.

d. Frequency distribution.

e. Measures of central tendency

f. Measures of variability

g. Standard error

h. Tests of significance: $\mathbf{X^2}$ test, **t** test etc.

i. Sampling techniques, survey methods, calculation of various rates and ratios, standardization of rates.

j. Life table

13. MEDICAL ETHICS

Apply ethical principles in collection, maintenance and dissemination of data and information

B. CLINICAL / PRACTICALS

1. Microbiology as applied to public health (posting in Dept. of Microbiology)

a) Interpretation of the following slides

- Gram's stain
- Albert's stain
- Ziehl – Neelsen's stain
- Peripheral blood examination of thick and thin smears and reporting

b) Microscopic examination of stool and interpretation

c) Interpretation of commonly used serological tests such as Widal / HIV/ Hepatitis B/ VDRL / Viral antibody titers

2. Medical Entomology

a) Identification of various vectors

b) Entomological survey

3. Statistical exercise to illustrate principles and its application

4. Investigation of an outbreak of a disease and measures to control

5. Exercise in public health administration

   a. Planning exercises

   b. VED analysis etc

   c. Beneficiary need analysis

   d. Preparation of annual plan

   e. Budgeting at the PHC level

   f. Supervision of a PHC/ SC

   g. Requirement of vaccines, medicines, stationary at the PHC level

   h. Organization of a family welfare camp

   i. Conduct of health camps

6. Diet survey and Nutritional assessment of a community

7. Study of environment and its influence on health in

   a. Work places, House hold and Community

   b. Meteorological factors and their effect on health (study of air pollution, temperatures, humidity and other factors)

8. Study visits to places like Slaughter house, Cinema hall, Hotel, Milk Dairy, Food and beverages processing units and reporting.

9. Family study

   a. Urban and Rural.

IV. TEACHING AND LEARNING ACTIVITIES:

A. Theoretical Teaching:

1. **Lectures:** Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.

2. **Journal Club:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists. A time table with names of the students and the moderator should be announced in advance.

3. **Subject Seminar:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. The presentations would be evaluated using check lists. A timetable for the subject with names of the students and the moderator should be announced in advance.

4. **Clinico - Social Case Discussion:** Recommended to be held once in 2 months. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. The presentations would be evaluated using check lists. A timetable for the case presentation with names of the students should be announced in advance.

5. **Integrated Seminars:** arranged with departments of Paediatrics and Obstetrics and Gynaecology at least once in three months.

6. **Teaching Skills:** Post-graduate students must teach under graduate students by taking Practicals & lectures. Assessment is made using a checklist by medical faculty. Record of their participation is to be kept in Log Book.

7. **Continuing Medical Education (CME) Programmes & Conference:** Every student should attend one CME, one Conference (National/State/ Regional) every year.

During the 2 years of PG training every student should present a scientific paper at state/national conference and may publish the article in scientific journal.

8. **Research Activities:** The Post-graduate students to be encouraged to carry out research activities in the department other than project work.

B) Clinical / Practical Training:

1. **Rotational Postings in other Departments:**

TRAINING IN PAEDIATRICS

1. Pediatric Infectious diseases

2. Nutritional problems

3. Immunization

4. Neonatal problems

5. Growth monitoring and child development

TOTAL DURATION OF POSTINGS :

MICROBIOLOGY **:** 15 days

HOSPITAL POSTING : 1 Month Pediatrics

RURAL POSTING **:** 1 Year at PHC

2. TRAINING ACTIVITIES

The entire training and the facilitation of the learning process will be aided through the following methods of learning in the department.

a. Practical demonstrations

b. Community Health Survey

c. Epidemiology exercises

d. Involvement in specific departmental project works

3. Institutional visits

a. District health office

b. District hospital

c. Taluka hospital

d. CHC

e. Field publicity office

f. Meteorology department

g. Visit to factory

h. Other visits

- Slaughter house
- Hotel
- Milk dairy
- Cinema house
- Food and beverages processing units

i. Project work

V. OTHER CRITERIA TO BE FULFILLED FOR THE DEGREE COURSE:

1. Internal evaluation:

During the course of two years, the department will conduct two tests. One at the end of first year and other at the end of second year. The second test shall be a preliminary examination which may be held six weeks before the final examination. The test shall include the written papers, practicals / clinicals and viva-voce. Records and marks obtained in such tests shall be maintained by the head of the department and shall be sent to the University when called for.

Results of all evaluations should be entered into P.G's diary and departmental file for documentation purposes. Main purpose of periodic examination and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. All the procedures performed by the post graduate students shall be entered in the Log book.

All the daily activities performed on day to day basis shall be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized by the guide and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

Maintenance of other records:

The Student will maintain the following records, which will be verified periodically by the Guide and Head of the Department.

i. Practical Records: Microbiology, Entomology and Water Problems

ii. Records of Field Work / visits.

iii. Records of Statistical Problem etc.

VI. SCHEME OF EXAMINATION:

Candidates are eligible to appear for university examination if the attendance is 80% and project work is accepted.

A. THEORY: Total 300 Marks

There shall be three papers, each of three hours duration. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below:

Type of Questions	Number of questions	Marks for each question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper I – ... 100 Marks

Basic Sciences related to Public Health, Environmental Sanitation, Nutrition, Microbiology, Biostatistics, Sociology.

Paper II – ... 100 Marks

General Epidemiology, Epidemiology of Communicable and Non-communicable diseases, Screening for disease, Investigation of an epidemic, RCH, Demography, Family Welfare, Mental Health.

Paper III – ... 100 Marks

Medical Ethics, Health Education & IEC, Public Health Administration, Occupational Health.

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Clinical Examination: 200 Marks

Types of Cases	No. of Cases	Marks	Total Marks
Family Case in the Community	1	50	200 Marks
Clinico Social Case in Hospital	1	50	
Exercises in Microbiology and Public Health Chemistry	Interpretation of stained slide & stool sample Water problem - 1	5 5 10	
Exercises in Epidemiology	3 (7 + 7 + 6 = 20)	20	
Spotters	5	30	
Visit to Slaughter house / Hotel / Cinema Hall : Reporting and discussion	Any one	30	

C. Viva – Voce Examination: **... 100 Marks**

Aims: To elicit candidate's knowledge and investigative / therapeutic skills.

1) Viva - Voce examination:

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be given case reports, charts for interpretation.

D. Maximum Marks:

Maximum marks for Diploma in Community Medicine (DPH)	Theory	Practical	Viva	Grand Total
	300	200	100	600

E. Passing Criterion:

1) A Candidate shall secure an aggregate of 50% in all the three theory papers considered together.

2) A Candidate shall secure not less than 50% marks in practical / clinical including viva- voce examination.

3) A Candidate shall secure a minimum 50% marks in each of two components separately i.e., theory and practical (clinical examination and viva – voce) in the same examination to be declared as pass.

VII. RECOMMENDED BOOKS (LATEST EDITIONS):

Sl. No.	Name of the Textbook	Authors	Publisher
1.	Maxcy-Rosenau Public Health and Preventive Medicine	Maxcy Rosenau John. M. Last	Appleton-Century-Crofts,
2.	The Theory and Practice of Public Health	Hobson W	Oxford Med. Publication
3.	Epidemiology in Medical Practice	Barker D.J.P	Churchill Livingstone.
4.	Text Book of P & S M	Park. J. E. & K . Park.	M/s. Banarasidas Bhanot
5.	Text Book of P & S M	Mahajan. B. K and M.C. Gupta	Jaypee Publications.
6.	Principles of Medical Statistics	Bradford Hill	The Lancet Ltd.
7.	Public Health Administration and Practice	John J. Hanlon	Mosby.

8.	Epidemiology	MacMahon & Pugh	Little Brown & Co.
9.	Modern Nutrition in Health	Robert S. Goodheart, Mulice E.Shills	K M Varghese & Co.
10.	Epidemiology : An Introductory Text	Mawner & Kramer	W B Saunders Co.
11.	Hunter's Diseases of Occupations	P.A.B. Raffle, P.H. Adams, P.J. Baxter and W.R. Lee	Edward Arnold Publishers, Great Britain.
12.	National Health Programmes of India	J. Kishore	Century Publication New Delhi
13.	Text Book of Community Medicine	Sunderlal, Adarsh, Pankaj,	CBS Publishers, Darya Ganj, New Delhi : 110 002.
14.	Medical Ethics	Francis C.M	J.P. Publications, Bangalore
15.	Essentials of Medical Statistics	Kirkwood B.R	Oxford; Blackwell Scientific Publications.
16.	Methods in Bio statistics for medical students	Mahajan B.K	Jaypee Brothers Medical Publishers New Delhi,
17.	Occupational Medicine	Carl Zenz	Mosby, USA.
18.	Epidemiology and Management for Health Care for all	Sathe P. V. Sathe A. P.	Popular Prakashan Pvt. Ltd. Mumbai
19.	Principles of Community Medicine	Sridhar Rao. B.	AITBS publishers and Distributors New Delhi
20.	Community Medicine with Recent advances	Suryakantha	Jaypee Brothers

VIII. RECOMMENDED JOURNALS:

Sl. No.	Name of the Journal
1.	Indian Journal of Community Medicine
2.	Indian Journal of Public Health
3.	Indian Journal of Community Health
4.	Journal of Communicable Diseases,
5.	Indian Journal of Maternal & Child Health.
6.	Indian Journal of Occupational Health & Environmental Medicine.
7.	Indian Journal of Medical Research.
8.	Indian Journal of Malariology.
9.	Indian Journal of Environmental Health.
10.	Indian Journal of Medical Education
11.	Journal of Indian Medical Association
12.	Journals of Medicine, Pediatrics, OBG, Skin & STD, Leprosy, Tuberculosis & Chest Diseases (for reference)
13	Indian Journal of Social Work
14.	Journal of Environmental Science and Engineering

International Journals	
1.	WHO Publications
2.	Journal of Epidemiology & Community Health.
3.	Tropical Diseases Bulletin.
4.	Vaccine.
5.	American Journal of Public Health.
6.	Lancet
7.	New England Journal of Medicine.
8.	American Journal of Epidemiology.
9.	Health Promotion and Education in South East Asia
10.	W.H.O. Technical Report Series.
11.	Pan American Journal of Public Health
E – Journals	
1.	American Journal of Public Health
2.	Applied Health Economics & Health Policy
3.	Epidemiology
4.	International Journal of Epidemiology
5.	Journal of Acquired Immune Deficiency Syndromes & Human Retrovirology
6.	Journal of Epidemiology & Community Health
7.	Journal of Medical Ethics
8.	Journal of Occupational & Environmental Medicine
9.	Health Care Management Review
10.	Quality in Health Care

COMMITTEE REPORTS AND POLICY DOCUMENTS – MEDICAL EDUCATION AND HEALTH POLICY.

1. **Bhore Committee Report (1946)** Health Survey and Development Committee, Govt. of India, Delhi.

2. **Mudaliar Committee Report (1961)** Health Survey and Planning Committee, Govt of India. Delhi.

3. **Shrivastav Report (1974),** Health Services and Medical Education – A Programme for immediate action, Group on Medical Education and Support Manpower, Ministry of Health and Family Welfare, Govt. of India. New Delhi.

4. ICSSR/ICMR (1981), **Health for All – An alternative strategy – Report of a Joint study group of ICSSR/ICMR,** Indian Institute of Education, Pune.

5. **National Health Policy,** (2001) Ministry of Health and Family Welfare, Government of India, New Delhi.

6. Compendium of Recommendations of various committees on Health and Development (1943 – 1975), Central Bureau of Health Intelligence (1985) Directorate General of Health services, Ministry Family Planning, New Delhi.

7. Bajaj, J.S. etal. (1990) Draft **National Education Policy for Health Sciences**, I.J.M.E. Vol. 1 & 2 (Jan – August 1990)

8. Indian Council of Medical Research, "Policy Statement of Ethical considerations involved in Research on Human Subjects", I.C.M.R, New Delhi.

9. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, Medical Council of India, Kotla Road, New Delhi.

10. Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi.

3.3 POST GRADUATE DIPLOMA COURSE IN FORENSIC MEDICINE AND TOXICOLOGY (DFM)

I. GOALS:

A Post Graduate student at the end of the course should become

1. A competent expert to guide Doctor, Medical Officers handling Medico-Legal cases both in living and dead.
2. Practice the speciality ethically and uphold the dignity of medical profession.

II. OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the course. The objectives may be considered under the subheadings.

1. Knowledge
2. Skills
3. Human values, ethical practice and communication abilities.

1. Knowledge:

1. One should acquire basic skills in teaching.
2. One should keep abreast of contemporary advances and development in the subject, so as to act as an able expert.

2. Skills:

1. One should be well equipped with theoretical and practical knowledge.
2. Must be competent enough to teach subject to undergraduates and solve Medico-legal problems of police officers, lawyers and judiciary.

3. Human values, Ethical practice and Communication abilities

- Adopt ethical principles in all aspects of his/her practice; professional honesty and integrity are to be fostered. Care is to be delivered irrespective of the social status, caste, creed or religion of the patient.

- Develop communication skills, in particular the skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standard while carrying out human or animal research.
- Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed,
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

III. COURSE CONTENTS:

i) Theory

i. BASIC SCIENCES IN RELATION TO THE FORENSIC MEDICINE

1. Anatomy

- Applied aspects in relation to Forensic Medicine.
- Brain and Cerebral Circulation.
- Heart and Coronary Circulation.
- Foetal circulation.
- Surface Landmark.
- Comparative Anatomical study of Male and Female Skeleton.
- Forensic Dentistry.

2. Physiology

Applied aspects in relation to Forensic Medicine

Physiology of Thermoregulation.

Physiology of Shock.

Blood grouping and Rh. Incompatibility.

3. Biochemistry

Applied aspects in relation to Forensic Medicine.

Postmortem Chemistry of Blood and other body fluids and their Forensic aspects.

4. Pathology

Applied aspects in relation to Forensic Medicine

General Pathology- Ischemia. – Embolism.

- Infarction. - Wound healing.

- Thrombosis. - Pathology of Scar.

Gross and Microscopy in Myocardial Infarction and about common diseases in other organs.

5. Microbiology

Applied aspects in relation to Forensic Medicine

Principles of immunoserological test.

Precipitin test. Pregnancy test.

Anaphylaxis and Hypersensitivity. Wound infection.

Entomology of Cadaver.

6. Pharmacology

Applied aspects in relation to Forensic Medicine.

Pharmacology of addictive drugs and their effects.

Drugs used to procure abortion. Drugs causing impotency.

Anaesthetic drugs and their forensic aspects.

ii. CLINICAL FORENSIC MEDICINE, FORENSIC PATHOLOGY, FORENSIC RADIOLOGY AND RELATED SECTIONS OF INDIAN PENAL CODE, CRIMINAL PROCEDURE CODE AND INDIAN EVIDENCE ACT.

1. Identification of the living and dead, determination of race, religion, sex &

age. External peculiarities such as moles, birthmarks, occupational marks, tattoo marks, finger prints, foot prints and their Medico Legal aspects.

2. Medico legal autopsy and rules regarding it. Facilities for autopsy and autopsy suite. Autopsy of a fresh/recent dead, decomposed, and mutilated body or its fragments / skeleton. Exhumation and rules regarding it.

3. Death, Moment of Death, Modes of death, brain and brainstem death, Causes of death and Sudden death.

4. Signs of death and changes following death.

5. Injuries and Thermal death from cold, heat, electricity, lightning and radiation.

6. Violent asphyxial death, hanging, strangulation, suffocation and drowning, traumatic asphyxia and other forms and types of violent asphyxial deaths.

7. Mechanical Injuries and their Medico-Legal aspects in relation to nature of injuries, Accidental, suicidal and homicidal, differences between antemortem and postmortem injuries. Medico-legal examination of injuries in a person. Regional injuries of skull, Brain, chest, abdomen, causes of death from wounds. Road Traffic Accidents, Railway accidents, Fire arm and Bomb Blast Injuries.

8. Impotence, sterility, artificial insemination, sterilization, test tube babies and their Medico-legal aspects.

9. Virginity, pregnancy, delivery in relation to suit of nullity of marriage, divorce and legitimacy.

10. Abortion criminal and justifiable laws in relation to the criminal abortion, M.T.P. Act of 1971. Duties of medical person in cases of criminal abortion.

11. Sexual offences, rape, incest, unnatural sexual offences such as sodomy, tribadism, Bestiality, buccal coitus and sexual perversions, etc.,

12. Infanticide.

13. Forensic Radiology.

14. Related section of Indian Penal Code, Criminal Procedure Code and Indian Evidence Act.

❖ FORENSIC TOXICOLOGY, FORENSIC PSYCHIATRY, MEDICAL JURISPRUDENCE AND RECENT ADVANCES

1. FORENSIC TOXICOLOGY

Law on poisons, Medico-legal aspects of poisons and duties of a Medical practitioner in a case of suspected poisoning.

General consideration and management of a case of poisoning.

1. Corrosive poisons.
2. Non metallic poisons.
3. Insecticides and weed killers.
4. Metallic poisons.
5. Organic & inorganic irritant poisons.
6. Somniferous poisons.
7. Inebriant Poisons.
8. Deliriant poisons.
9. Drug dependence.
10. Food Poisoning.
11. Spinal Poisons.
12. Cardiac Poisons.
13. Asphyxiants.
14. Miscellaneous Poisons.

a. FORENSIC PSYCHIATRY

Various acts in relation to Forensic Psychiatry, classification of mental disorder, medico-legal aspects of mental illness as regards to civil, criminal responsibility and rules regarding admission, treatment and discharge of mentally ill person to the mental hospitals, feigned insanity, juvenile delinquency, Mental Health Act 1987.

b. MEDICAL JURISPRUDENCE, LEGAL AND ETHICAL ASPECTS OF PRACTICE OF MEDICINE.

Ethics, Etiquette, Oath of Hippocrates, Declaration of Geneva, International Code of Medical Ethics, Acts related to Medical Practice e.g.- Indian Medical Council and State Medical Council Acts. Rights and Privileges of a registered Medical Practitioner, Infamous conduct, codes laid down by M.C.I. Duties of a registered Medical Practitioner, detail description of duties, professional secrecy, privileged communication, malpractice or negligence-civil and criminal, medical maloccurrence, therapeutic misadventure, corporate negligence, novus actus intervenins, duties of a patient, product liability, contributory negligence, vicarious responsibility etc., Precautions against charge of negligence, euthanasia, consent, maintenance of Medical records,

different acts, C.P.A. or COPRA, Code of Ethics related to research on human subjects and animals etc.,

ii) Practical:

Autopsy: medicolegal autopsy of both adult and foetal cases

Examination of injury cases

Age estimation by physical, dental and radiological examination

Examination of Alcoholic cases

Examination of Sexual offence cases

Examination of Psychiatry cases

Examination of Skeletal Remains

Examination of Photographs

Examination of Toxicology specimen, test to diagnose poisons

Examination of Weapons

Examination of X-ray films

Expert opinion; medical and medicolegal reports, video graph, Photographs etc

Procedures to preserve viscera, body, trace evidence etc

Preparation of histopathology slides etc.

Spot diagnosis of common poison and suggestion of its treatment /antidote, Autopsy and giving evidence in the court to be done independently.

IV. TEACHING AND LEARNING ACTIVITIES:

A) Theoretical Teaching:

1. **Lectures:** Lectures are to be kept to a minimum. Certain selected topics can be taken as lectures. Lectures may be didactic or integrated.

2. **Journal Club:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A time table with names of the students and the moderator should be announced in advance.

3. **Subject Seminar:** Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion and enter in the Log

Book relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A timetable for the subject with names of the students and the moderator should be announced in advance.

4. **Case Discussion:** Recommended to be held once a week. Interesting cases may be chosen from ward or casualty or autopsy cases and presented by the post graduate students and discussed by them as well as the senior staff of the department and with the doctors involved in the cases. All the PG students are expected to attend and actively participate in discussion and enter in the Log Book relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A timetable for the case presentation with names of the students should be announced in advance.

5. **Clinico-Pathological Conference:** Recommended once a month for all post graduate students. Presentation to be done by rotation. Presentations will be assessed using checklist. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs.

6. **Inter Departmental Meetings:** Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a month. These meetings should be attended by post-graduate students and relevant entries must be made in the Log Book.

   Pathology: Interesting cases shall be chosen and presented by the post-graduate students and discussed by them as well as the senior staff of Pathology department. The staff of Pathology department would then show the slides and present final diagnosis. In these sessions the advanced immuno-histo-chemical techniques, the burgeoning markers, other recent developments can be discussed.

   Radio-diagnosis: Interesting cases and the imaging modalities should be discussed. Emphasis should be given for the radiological differential diagnosis.

7. **Mortality Meeting (Post – Mortem Review):** The mortality meeting should be conducted in the department every month. The post graduate student should prepare the details regarding the cause of death after going through the case records in detail, and should present during the mortality meeting. The death records will be discussed in detail during this meeting.

8. **Teaching Skills:** Post-graduate students must teach under graduate students (eg. Medical, Nursing) by taking demonstrations, bedside clinics, tutorials, lectures

etc. Of medico legal cases, Autopsy ect.Assessment is made using a checklist by medical faculty as well as by the students.

Record of their participation is to be kept in Log Book. Training of postgraduate students in Educational Science and Technology is recommended.

9. **Continuing Medical Education Programmes (CME):** Recommended that at least 1 state level CME programmes should be attended by each student during the course.

10. **Conferences:** Attending conference is compulsory. Post-graduate student should attend one national and one state level conference during the course.

11. **Research Activities:** The Post-graduate students to be encouraged to carry out research activities in the department, institution and or community.

B) Clinical / Practical Training:

1. Rotational Postings in other Departments:

Pathology——1month

Microbiology———-2weeks

Dental –oral medicine and radiology———-2weeks

Psychiatry———-2weeks

Radiology———-2weeks

FSL———-3 weeks

Medical education dept. ———-1week

V. Other Criteria to Fulfill for the Diploma Course:

1. Internal evaluation:

During the course of two years, the department will conduct two tests. One at the end of first year and other at the end of second year. The second test will a preliminary examination which may be held three months before the final examination. The test may include the written papers, practicals / clinicals and viva-voce. Records and marks obtained in such tests will be maintained by the head of the department and will be sent to the KAHER when called for.

Results of all evaluations should be entered into P.G's logbook / diary and departmental file for documentation purposes. Main purpose of periodic examination

and accountability is to ensure clinical expertise of students with practical and communication skills and balance broader concept of diagnostic and therapeutic challenges.

2. Maintenance of Log Book:

Every candidate shall maintain a Log book/work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the ward rounds and the routine procedures preformed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member. The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the KAHER practical/clinical examination.

VI. SCHEME OF EXAMINATION:

Candidates will be allowed to appear for examination only if attendance (Minimum 80%) and internal assessment are satisfactory.

i) Theory : 300 Marks

There shall be three papers, each of three hours duration. Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions	No. of Questions	Marks for each question	Total Marks
Long essay	02	20	40
Short essay	06	10	60
Grand Total			100

Paper -1.....100 marks

Topics: Applied Basic Sciences- Anatomy, Physiology, Biochemistry, Pathology, Microbiology and Pharmacology in relation to Forensic Medicine.

Paper - 2.....100 marks

Topics: Clinical Forensic Medicine, Forensic Pathology, Forensic Radiology and related sections of Indian Penal Code, Criminal Procedure Code and Indian Evidence

Act (Excluding Medical Jurisprudence, Laws in relation to Medical profession).

Paper- 3.....100 marks

Topics: Forensic Toxicology, Forensic Psychiatry and Medical Jurisprudence and Recent advances.

Note : The distribution of chapters/topics shown against the papers are suggestive only and may overlap or change.

B. Practical: 200 Marks

Type of case	No. of cases	Marks.	Total Marks
Long Case	1	100	200
Short Case	10	100	

A. One long case adult or foetal autopsy 100 marks
(Organs in lieu of body)

B. Short Cases: 100 marks

i. Examination of injury case. 10
ii. Age estimation (child) 10
iii. Alcoholic case 10
iv. Sexual offence case 10
v. Psychiatry 10
vi. Skeletal Remains 10
vii. Photography 10
viii. Toxicology specimen 10
ix. Weapons 10
x. X-ray films 10

C. Viva- Voce Examination: 100 Marks

Aims: To elicit candidate's knowledge and investigative/ therapeutic skills.

1) Viva-voce examination – [100 Marks]

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be given case reports.

Duration of practical and viva-voce ... 2 days.

D. Maximum Marks:

Maximum marks for Diploma in DFM	Theory	Practical	Viva	Grand Total
	300	**200**	**100**	**600**

VII. RECOMMENDED BOOKS (Latest editions):

Sr. No.	Name of the Textbook	Authors	Publisher
1.	Knight's: Forensic Pathology	Knight B. Soukko P.	Arnold Publication
2.	Gunshot Wounds	Vincent J.M., Di Maio	CRC Press
3.	Modi's: Medical Jurisprudence and Toxicology	Mathiharan .K. & Patnaik	Butterworth & Co.
4.	Gradwohl's Legal Medicine	Gradwohl	Camp.I .I
5.	Taylor's Principle and Practice of Medical Jurisprudence	Keith Mant	Churchil Livingstone
6.	Forensic Radiology	Govindaiah D	Paras Medical Book
7.	Text book of Forensic Medicine and Toxicology	Krishan Vij	ELSEVIER INDIA Pvt. Ltd.
8.	The Essentials of Forensic Medicine and Toxicology	Reddy KSN	Suguna devi K., Hyderabad
9.	Text book of Medical Jurisprudence and Toxicology	Parikh C.K.	CBS Publication, Delhi

10.	Text book of Forensic Medicine (Vol. 1,2,3)	Tedeschi, Eckert Tedeschi	W.B.SAUNDERS COMPANY
11.	Forensic Medicine	Gorden, Shapiro	Churchil Livingstone
12.	Pediatric Forensic Medicine and Toxicology	Mason J.K.	Chapman & Hall Medical
13.	Krishnan's Handbook of Forensic Medicine	Patnaik V.P.	Paras Publication
14.	Forensic Medicine	Mason J.K.	Chapman & Hall Medical
15.	Post Mortem Procedures	Grasham & Turner	Wolfe Medical Publications
16.	Medical Jurisprudence and Toxicology	Knight B.	Arnold Publication
17.	Comprehensive Medical Toxicology	Pillay V.V	Paras Publication
18.	Encyclopedia of Forensic Sciences	Siegel JA, Saukko PJ	Academic Press, California
19.	Modern Trends in Forensic Medicine	Simpson K	Butterworth & Co.
20.	Forensic Pathology	Di Maio Vincent, Dimaio Demnik	CRC Press

VIII. RECOMMENDED JOURNALS:

Sr. No.	Name of the Journal
1.	Jnl. of KAMLS. – Published bi-annually – Karnataka medico-legal society
2.	Jnl. of IAFM.- Published quarterly –– By Bibliographic Informatics Division, National Informatics Centre, New Delhi.
3.	American Jnl. of Forensic Medicine and Toxicology- Published quarterly. It is official Journal of National Association of Medical examiners. Editorial office- Juliechase j chase@1ww.com
4.	Jnl. of Forensic Medicine and Toxicology(JFMT) Published bi-annually from Dept. of Forensic Medicine and Toxicology, A.I.I.M.S., New Delhi.
5.	Medicine, Science and Law – Published quarterly. Chairman-A.W. Goode –By Barnsburg publications, London
	1. Forensic Science International- Published monthly. – Elsevier publications.

SECTION - IV
LOG BOOK / WORK DIARY

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Mode! checklists are given in this chapter which may be copied and used.

The learning out comes to be assessed should include: (i) Personal attitudes, (ii) Acquisition of knowledge, (iii) Clinical and operative skills, and (iv) Teaching skills.

i) Personal attitudes. The essential items are:

- Caring attitudes
- Initiative
- Organisational ability
- Potential to cope with stressful situations and undertake responsibility
- Trustworthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues .
- Ability to work in team
- A critical enquiring approach to the acquisition of knowledge

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

ii) Acquisition of knowledge: The methods used comprise of 'Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so, desired.

Journal Review Meeting (Journal Club): The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist - I, Section 3)

Seminars / Symposia: The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth presentation skills and use of audio- visual aids are to be assessed using a : (see Model Checklist-II, Section 3)

Clinico-pathological conferences: This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and ttherapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.

Medical Audit: Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

iii) Clinical skills :

Day to Day work: Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see Model Checklist III, Section 3).

Clinical meetings: Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist IV, Section 3).

Clinical and Procedural skills: The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No.3, Section 3).

iv) Teaching skills: Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist V, Section 3).

v) **Periodic tests:** In case of degree courses of three years duration. The departrments may conduct three tests, two of them be annual tests, one at the end of first and the other in the second year. The third test may be held three months before the final examination. In case of diploma courses of two year duration, the departments may conduct two tests. One of them at the end of first year and the other in the second year three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

vi) **Work diary / Log Book:** Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

vii) **Records:** Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the KAHER or MCI.

Log book

The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

Format for the log book for the different activities is given in Tables 1, 2 and 3 of Section 3. Copies may be made and used by the institutions.

Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counselled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing at the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

FORMAT FOR MODEL CHECK-LIST
MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer : Date:

Sl. No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Ver\ Good 4
1	Article chosen was					
2	Extent of understanding of scope &Objectives of the paper by the candidate					
3	Whether cross references have been consulted					
4	Whether other relevant publications consulted					
5	Ability to respond to questions on the paper / subject					
6	AudioA/isual aids used					
7	Ability to defend the paper					
8	Clarity of presentation					
9	Any other observation					
	Total Score					

MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer : Date:

Sl. No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted					
2.	Whether cross references have been consulted					
3.	Completeness of preparation					
4.	Clarity of presentation					
5.	Understanding of subject					
6.	Ability to answer questions					
7.	Time scheduling					
8.	Appropriate use of Audio-Visual aids					
9.	Overall performance					
10	Any other observation					
	Total Score					

MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD / OPD

(To be completed once a month by respective Unit Heads including posting in other departments)

Name of the Student:

Name of the Faculty/Observer : Date:

Sl. No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases during rounds					
6.	Investigations work up					
7.	Bedside manners					
8.	Rapport with patients					
9.	Counselling patient's relatives for blood donation or postmortem and case follow up.					
10.	Over all quality of ward work					
	Total Score					

EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the Student:

Name of the Faculty/Observer : Date:

Sl. No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Completeness of history					
2	Whether all relevant points elicited					
3	Clarity of Presentation					
4	Logical order					
5	Mentioned all positive and negative points of importance					
6	Accuracy of general physical examination					
7	Whether all physical signs elicited correctly					
8	Whether any major signs missed or misinterpreted					
9	Diagnosis: Whether it follows logically from history and findings					
10	Investigations required Complete list Relevant order Interpretation of investigations					
11	Ability to react to questioning Whether it follows logically from history and findings					
12	Ability to defend diagnosis					
13	Ability to justify differential diagnosis					
14	Others					
	Grand Total					

MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

S1. No		Strong Point	Weak Port
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequence of ideas		
5.	The use of practical examples and/or illustrations		
6.	Speaking style (enjoyable, monotonous, etc., specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Asks questions		
10.	Answers questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effectiveness of the talk		
13.	Uses A-V aids appropriately		

MODEL CHECK LIST FOR DISSERTATION PRESENTATION

Name of the Student:

Name of the Faculty/Observer : Date:

Sl. No.	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting a topic					
2.	Appropriate review of literature					
3.	Discussion with guide & other faculty					
4.	Quality of Protocol					
5.	Preparation of proforma					
	Total Score					

CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE /CO-GUIDE

Name of the Student:

Name of the Faculty/Observer : Date:

Sl. No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide/co-guide					
2.	Regular collection of case material					
3.	Depth of analysis / discussion					
4.	Departmental presentation of findings					
5.	Quality of final output					
6.	Others					
	Total Score					

LOG BOOK

Table 1: Academic activities attended

Name :

Admission Year :

College :

Date	Type of Activity Specify - Seminar, Journal Club, Presentation, UG teaching	Particulars

SECTION V

MEDICAL ETHICS SENSITISATION AND PRACTICE

introduction:

There is now a shift from the traditional individual patient, doctor relationship, and medical care. With the advances in science and technology and the needs of patient, their families and the community, there is an increased concern with the health of society. There is a shift to greater accountability to the society. Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary to be prepared to deal with these problems. To accomplish the Coal (i), General Objective (ii) stated in Chapter II, and develop human values it is urged that ethical sensitisation be achieved by lectures or discussion on ethical issues, clinical case discussion of cases with an important ethical component and by including ethical aspects in discussion in ail case presentation, bedside rounds and academic postgraduate programmes.

Course Contents

1. Introduction to Medical Ethics What is Ethics?
   What are values and norms?
   Relationship between being ethical and human fulfillment
   How to form a value system in one's personal and professional life?
   Heteronomous Ethics and Autonomous Ethics
   Freedom and personal responsibility

2. Definition of Medical Ethics
   Difference between medical ethics and bio-ethics
   Major Principles of Medical Ethics
   Beneficence = fraternity
   Justice = equality
   Self determination (autonomy) = liberty

3. Perspective of Medical Ethics The Hippocratic oath
   The Declaration of Helsinki
   The WHO Declaration of Geneva International code of Medical Ethics (1993)
   Medical Council of India Code of Ethics

4. Ethics of the Individual
   The patient as a person
   The Right to be respected
   Truth and Confidentiality
   The autonomy of decision
   The concept of disease, health and healing. The Right to health
   Ethics of Behaviour modification
   The Physician - Patient relationship
   Organ donation

5. The Ethics of Human life
   What is human life?
   Criteria for distinguishing the human and the non-human
   Reasons for respecting human life
   The beginning of human life
   Conception, contraception
   Abortion
   Prenatal sex-determination
   In vitro fertilization (IVF), Artificial Insemination by husband (AIR) Artificial Insemination by Donor (AID),
   Surrogate motherhood, Semen Intrafallopian Transfer (SIFT),
   Gamete, Intrafallopian Transfer (GIFT), Zygote Intrafallopian Transfer (ZIFT),
   Genetic Engineering

6. The Family and Society in Medical Ethics
   The Ethics of human sexuality
   Family Planning perspectives - Prolongation of life
   Advanced life directives - The Living Will Euthanasia
   Cancer and Terminal Care

7. Profession Ethics
   Code of conduct
   Contract and confidentiality / Charging of fees,
   Fee-splitting / Prescription of drugs

Over-investigating the patient

Low - Cost drugs, vitamins and tonics

Allocation of resources in health cares

Malpractice and Negligence

8. Research Ethics

   Animal and experimental research / humanness / Human experimentation Human volunteer research - Informed Consent Drug trials

9. Ethical workshop of cases

   Gathering all scientific factors.

   Gathering all human factors

   Identifying areas of value - conflict, Setting of priorities, Working out criteria towards decisions

   Recommended Reading: (Latest edition)

   Francis CM., Medical Ethics, Jaypee Brothers, New Delhi.

Additional reading for Medical Ethics Sensitization and Practice: (Latest editions)

1. Indian Council of Medical Research, "Ethical Guidelines for Biomedical Research on Human Subjects", I.C.M.R, New Delhi. 2000.
2. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road. New Delhi.
3. Francis C M,Medical Ethics, J P Publications, Bangalore, 1 993.
4. Indian National Science Academ Guidelines for care and use of animals in Scientific Research, New Delhi, 1994.
5. International Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl J Med 1991; 424-8
6. Kirkwood B R, Essentials of Medical Statistics, 1 si Ed., Oxford: Biackwell Scientific Publications 1988.
7. Mahajan B K, Methods in Bio - statistics for medical students, 51 h Ed.. New Delhi, Jaypee Brothers Medical Publishers, 1989.
8. Compendium of recommendations of various committees on Heaith and

Development (1943-1975). DGHS, 1985 Central Bureau of Health intelligence, Directorate General of Health Services, min. of Health and Family Welfare, **Govt,** of India, Nirman Bhawan, New Delhi. P - 335.

9. National Health Policy, Min. of Health & Family Welfare, Nirman Bhawan, New Delhi, 1983.

10. Srinivas D K etal, Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry