

# FACULTY OF DENTAL SCIENCES



**SWAMI VIVEKANAND SUBHARTI UNIVERSITY  
MEERUT 250005 (U.P.) INDIA**

**ORDINANCE NO. V (47A)**  
**DENTAL HYGIENISTS &**  
**MECHANICS COURSE**

# **Ordinance No. V (47)**

## **Ordinance Relating to Dental Hygienists &**

### **Mechanics**

#### **Course & Syllabus**

1. This ordinance may be called the “Ordinance relating to Dental Hygienists & Mechanics Course & Syllabus”.
2. It shall come into force with immediate effect.
3. The Eligibility Criteria, Curriculum, Examination shall be as prescribed by Dental Council of India in the "Regulations for the Maintenance of Minimum Educational Standard for Dental Hygienists" (vide Annexure-I) as may be amended from time to time.

## DENTAL COUNCIL OF INDIA

## NOTIFICATION

New Delhi, the 19th August, 2008

No.DE-54-2007.— In exercise of powers conferred by clause (1) and sub-clause (g) and (h) of clause (2) of section 20 of the Dentists Act, 1948 (XVI of 1948), the Dental Council of India, after consultations with the State Governments and with the previous approval of the Central Government hereby make the following Dental Hygienists Course Regulations, 2008.

(i) Short title and commencement.— (i) These Regulations may be called the Dental Council of India Dental Hygienists Course Regulations, 2008.

(ii). They shall come into force on the date of their publication in the Official Gazette.

**REGULATIONS FOR THE MAINTENANCE OF MINIMUM EDUCATIONAL STANDARD FOR DENTAL HYGIENISTS:**

**Dental Hygienists Course Regulations:**

“Dental Hygienist” means a person, not being a Dentist or a Medical Practitioner, who scales, cleans or polishes teeth, or gives instructions in dental hygiene. He shall work under the supervision of the Registered Dental Surgeon.

In order to regularize and standardize the conferment of the qualification for Dental Hygienists, it is prescribed that:-

1. **The Dental Hygienists Diploma Course can be started by a recognized Dental College or a Dental College, which got the permission from the Central Government for 3<sup>rd</sup> year BDS Course onwards with maximum of 20 seats.**
2. The Institutions wishing to start courses for Dental Hygienists should obtain essentiality certificate from the concerned state govt. and obtain prior approval of the Dental Council of India.
3. The course of studies should extend over a period of two academic years and lead to the qualification of Dental Hygienist Diploma.
4. A separate course shall be arranged for the training of Dental Hygienists by the Institutions.
5. For the purpose of establishment of uniformity in Dental Education in this course throughout India, it is necessary that the course of instructions to be pursued in all the institutions should be standardized. To achieve this:-
  - (i) a candidate should be at least 17 years of age at the time of admission or within 3 months of it and should be medically fit to pursue the course.
  - (ii) The candidate must have passed 10+2 or two years intermediate or equivalent course thereof with Science subjects (i.e.) Physics, Chemistry and Biology from a recognized Indian University or Pre-University/Intermediate Board.
6. The medium of instruction shall be in English and the course of studies and regulations for the Diploma Examinations and the syllabus to be followed in each subject has been drawn up and appended.

**I. MINIMUM REQUIREMENTS FOR INSTITUTIONS IMPARTING TRAINING FOR DENTAL HYGIENISTS:**

1. The minimum hours devoted to the under mentioned subjects shall be as follows:

	Subject	Lectures	Practicals/ Demonstrations/ Clinical	Total
	<b>Primary</b>			
(1)	Anatomy, General and Dental.	50	100	150
(2)	Physiology & Histology, General and Dental	20	40	60
(3)	Pharmacology General & Dental	15	10	25
(4)	Pathology & Microbiology	30	70	100
(5)	Dental Radiology.	10	40	50
(6)	Food and Nutrition	25	30	55
(7)	Dental Hygiene and Oral Prophylaxis	50	280	330

(8)	Basic knowledge of Computers	20	50	70
			Total	840

	Subject	Lectures	Practicals/ Demonstrations/ Clinical	Total
<b>Final</b>				
(1)	Dental Hygiene and Oral Prophylaxis.	25	350	375
(2)	(i) Dental Health Education; (ii) Community Public Health Dentistry, (iii) Preventive Dentistry	50	200	250
(3)	Dental Ethics and Jurisprudence; Orientation in Dentistry.	15	--	15
(4)	Dental Materials	10	10	20
			Total	660

2. The classes in different subjects of the curriculum should be taught exclusively for this course.

3. There should be atleast one Instructor for every 10 students working in the clinics at any given time.

4. For the teaching of dental subjects no persons except those holding recognized dental qualifications shall be employed as Instructors. For Clinical and Practical/Demonstrations persons holding recognized dental Hygiene Qualification shall be eligible.

5. The institutions imparting training in this course must possess of the following minimum requirements:--

(i) One Histopathological laboratory equipped with as many number of microscopes as is required by half of the admission strength for demonstration purposes.

(ii) Atleast two class room, i.e. one each for 1<sup>st</sup> & 2<sup>nd</sup> year students, one of which must be equipped with a LCD projector and OHP.

(iii) Specific/subject wise Technical Laboratories so that each student of a class is provided with suitable facilities required for the course.

(iv) A dental hygienist clinic fitted with one dental chair, one dental unit with ultrasonic scaler and a set of hand instruments separately for each student and atleast one autoclave for every 5 students for sterilisation.

(v) A Library should be available to the students.

6. Teaching Staff: In addition to the requirement of BDS and MDS Staff, exclusive teaching staff will be as under :

(a)	Reader – MDS (Periodontics)	.....	One
(b)	Lecturer – MDS (Periodontics)	.....	One
(c)	Tutor Dental Hygienist	.....	One
(d)	Other Staff – As per requirement of the syllabus from the dental institution.		

Note: Department to teach the Dental Hygienist Course: That in view of the difficulties experienced by the dental departments and dental teachers of dental colleges, the teaching of Dental Hygienist Course be entrusted to the Department of Peri odontics.

## II. EXAMINATIONS

1. An Examination for the grant of Diploma of Dental Hygienists shall be conducted by a Board of three Examiners imparting training for qualification of Dental Hygienists Course approved by the Dental Council of India. One of the Examiners must be external (from outside that institution).

Note: Qualifications/eligibility to appointment as Examiners for Dental Hygienist Examinations.

a) Out of 3 members of Examining Board, the external and one internal examiner should be a reader in Periodontics (MDS) and third could be tutor (Dental Hygienist Course) involved in teaching of the course.

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- b) That medical persons teaching medical subjects may be appointed as Examiners for medical subjects even though they are not registered under the Dentists Act 1948.
- c) He should be an active teacher of the concerned course or in the concerned subject/s at a recognized dental/medical Institution.

2. The examination shall be held twice a year, on such dates as may be fixed. The Examination shall consist of two parts; (1) Primary and (2) Final Diploma Examination.

#### THE PRIMARY EXAMINATION (FIRST YEAR)

3. The Examination shall be open to any student who;
- has been enrolled during one academic year preceding the examination in an institution approved/recognized by the Dental Council of India for this purpose.
  - The candidate must have passed 10+2 or two years intermediate or equivalent course thereof with Science subjects (i.e.) Physics, Chemistry and Biology from a recognized Indian University or Pre-University/Intermediate Board.**
  - has his/her name, submitted to the Board of Examiners, by the head of the institution in which he/she is enrolled;
  - Produces the following Certificates signed by the Head of the institutions:-
    - of good character;
    - of having attended not less than 75% of the full course of lectures delivered and practicals/demonstrations clinical conducted in each of the subjects of examinations
4. Every candidate shall forward his/her application to the Examining Body by a date fixed by that Body, accompanied by the prescribed fee. A candidate who fails to pass or present himself/herself for examination shall not be entitled to claim a refund of the fee.
5. Every candidate shall be examined in the following subjects comprising of three theory papers as follows:-

Paper I	:	Anatomy, Physiology & Histology.
Paper II	:	Pharmacology, Pathology & Microbiology.
Paper III	:	Food Nutrition & Radiology.

Marks for each of the papers shall be as under:-

Written	75
Oral	25
Practical	<u>100</u>
Total	<u>200</u>

Each written paper shall be of three hours.

6. Every candidate shall be required to take up all subjects of the examination. A candidate failing in any paper or papers of this examination before being permitted to reappear at the subsequent examination shall produce evidence of having pursued such a course of training as the Head of the institution may determine.

A candidate, who passes in any one or more papers of the examination shall be exempted from appearing in which he/she has passed and shall be allowed to re-appear in the rest in which he/she has failed in any subsequent examination within a period of two years. After two years the candidate will have to appear in all the papers of this examination.

7. The minimum number of marks required to pass the examination shall be fifty percent in each paper both in the (i) written with oral and (ii) practical parts of the examination.

Candidates who obtain minimum of seventy five percent marks in any paper under examination and passes in all three subjects in first attempt shall be declared to have passed with distinction in a particular subject/s. Candidates who do not pass in all the papers in the first attempt and later passes with distinction marks, shall be declared as passed but without distinction.

8. As soon as possible after the examination the Board of Examiners shall publish a list of the candidates who have passed. Each successful candidate shall be granted a PRIMARY DIPLOMA

#### THE FINAL DIPLOMA EXAMINATION

9. This examination shall be open to any student who
- has been enrolled for primary academic year preceding the examination in an institution approved by the Dental Council of India for the purpose;
  - has previously passed the Primary examination for the Diploma of Dental Hygienists;
  - has his/her name submitted to the Board of Examiners by Head of the institution in which he/she is enrolled;
  - Produces the following certificates signed by the Head of the Institution :
    - of good character;
    - of having attended not less than seventy-five percent of the full course of lectures delivered and practical/ demonstration/clinical conducted in each of the papers of the examination;

iii. of having passed the Primary Examination in all papers.

iv. There shall not be a gap of more than two academic years between Primary and final diploma exams

10. Every candidate shall forward his/her application to the Examining Body by a date fixed by that Body, accompanied by the prescribed fee. A candidate who fails to pass or present himself/herself for examination shall not be entitled to claim a refund of the fee.

11. Every candidate shall be examined in the following subjects comprising of three papers as follows:-

Paper I	:	Dental Hygiene & Oral Prophylaxis.
Paper II	:	Dental Health Education, Community/Public Health Dentistry, Preventive Dentistry.
Paper III	:	Dental Materials, Dental Ethics & Jurisprudence, Orientation in Dentistry

Marks for each of the papers shall be as under:-

Written	75
Oral	25
Practical	100
Total	200

Each written paper shall be of three hours.

12. Every candidate shall be required to take up all papers of the examination. A candidate failing in any paper or papers of this examination before being permitted to reappear at the subsequent examination shall produce evidence of having pursued such a course of training as the Head of the institution may determine.

A candidate, who passes in any one or more papers under examination shall be exempted from appearing in which he/she has passed and shall be allowed to re-appear in the rest in which he/she has failed in any subsequent examination within a period of two years. After two years the candidate will have to appear in all the papers of this examination.

13. The minimum number of marks required to pass the examination shall be fifty percent in each paper both in (i) written with oral and (ii) practical parts of the examination. Candidates who obtain minimum of Seventy five percent marks in any paper under examination shall be declared to/have passed with distinction in a particular subject provided he/she passed all subjects of examination in first attempt. Candidates who do not pass in all the papers of the FINAL EXAMINATION at one and the same time shall not be declared to have passed with distinction.

14. The college authority will apply two months in advance along with practical examination date sheet to the DCI for recognition of the Diploma Course.

15. As soon as possible after the examination, the Board of Examiners shall publish a list of those candidates who have passed. Each successful candidate shall be granted a Diploma subject to the approval by DCI.

### III. SYLLABUS FOR THE DENTAL HYGIENISTS COURSE PRIMARY (1<sup>ST</sup> YEAR)

#### (1) ANATOMY, GENERAL AND DENTAL

##### Lectures

General structure of mucous membrane(tongue, pharynx, lips), bones, muscles, blood vessels, lymphatics, glands & nerves. Blood and nerve supply in relation to face in general and teeth and associated structures in particular.

Elementary knowledge of development of the jaws and teeth.

Structure, nomenclature and morphology of human teeth.

Eruption, resorption & occlusion of teeth.

Relationship of teeth with investing tissues.

Muscles of mastication and facial expression.

Tempromandibular Articulation.

Course and distribution of Vth and VIIth Cranial nerves.

##### Practical

Osteology of head and neck in general and face, including jaws in particular

Morphology of teeth.

Alveolar process of jaw bones.

Section of tooth in situ.

#### (2) PHYSIOLOGY & HISTOLOGY, GENERAL & DENTAL:

##### Lectures

Cell structure of the human body.

Brief description of the histology and function of various dental and oral tissues e.g.

Gingiva, Periodontal membrane, Alveolar process, Cementum, Enamel, Dentine,

Nasmyths membrane, Pulp etc.

Salivary glands, ducts and their functions.  
 Composition and function of Saliva.  
 Blood : Composition & functions  
 Mastication, deglutition & Phonation.  
 General outlines of the physiological processes of the human body—particularly circulatory.

**Practical**

Study of prepared histological slides of oral and dental tissues, sections of a tooth.  
 Routine blood examination.

**(3) PHARMACOLOGY, GENERAL & DENTAL:****Lectures**

Brief description, nomenclature, derivation, dosage, pharmacological action and therapeutic uses of drugs commonly used in dentistry (Obtundent, astringent, mouth wash, antiseptics)

**Practical**

Preparation of gum paints, mouth washes and dentifrices.

**(4) PATHOLOGY & MICROBIOLOGY, GENERAL AND DENTAL:****Lectures**

General principles of Pathology –  
 Inflammation, degeneration and repair.  
 Application of general principles of pathology to tooth and surrounding tissues.  
 Dental Anomalies.  
 Attrition, Abrasion and Erosion.  
 Oral manifestation of systemic diseases like diabetes, syphilis, anaemia, vitamin deficiencies and infectious diseases like AIDS & Hepatitis B  
 Infection Control in Dental Operatory and Bio-Medical Waste Management and Handling  
 Neoplasm with reference to oral cavity.  
 Elementary knowledge of Bacteriology, Asepsis, Infection, Immunity, Brief description of Pathology and Bacteriology of Dental Caries and Gingival infections.

**Practical**

Study of prepared pathological and bacteriological slides relating to oral and dental conditions.  
 Clinical demonstration of oral and dental manifestation of systemic disorders.

**(5) DENTAL RADIOLOGY:****Lectures**

Fundamental and elementary principle of Dental Radiology including X-Ray machine, its components and maintenance.  
 Basic knowledge of Radio Visio Grapy technique & extra oral radiographs including Panoramic (Ortho-pantographs and cephalostats).  
 Automatic Film processing  
 Cataloging & Indexing of IOPA Films.  
 Knowledge of occlusal, bitewing and digital radiography  
 Technical aspects of Dental Radiographs i.e. the taking, processing and mounting of Dental Radiographs.  
 Characteristics of acceptable image, factors that influence finished radiographs, rules of radiation protection. Radiation Hazards.

**Practical**

Taking, processing and mounting of Intra & Extra Oral Radiographs.

**(6) FOOD AND NUTRITION:****Lectures and Practicals**

Basic 'food chemistry' in relation to general and Oral Health.  
 Physical nature of diet in prevention of dental diseases.  
 Carbohydrates, fats, proteins, vitamins, minerals and water in relation to dental and oral Health.  
 General food requirements for growth, maintenance and repair of the body.  
 Assessment & charting of individual diet & counseling.  
 Effect of malnutrition on oral health.  
 Special diet and its administration in maxillofacial injury cases.

**(7) DENTAL HYGIENE AND ORAL PROPHYLAXIS (Primary and Final)****Lectures**

Definition of Hygiene  
 Objectives of Dental Hygiene  
 Oral Prophylaxis – Various methods.  
 Oral Prophylaxis: treatment system



Stains on teeth – extrinsic, intrinsic and their management.  
 Dental plaque.  
 Brushing & Flossing Technique  
 Dental Calculus  
 Technical knowledge of ultrasonic scaling  
 Brief description and the role of Oral Prophylaxis in Gingivitis, Periodontitis, Periodontal and Alveolar abscess..

**Clinical**

Instruments, technique of Oral Prophylaxis  
 Destaining and polishing of teeth.  
 Topical application of fluorides.  
 Care of oral cavity and appliances during treatment of maxillofacial cases.

**SYLLABUS FOR THE DENTAL HYGIENISTS COURSE FINAL (II YEAR)****(1) DENTAL HYGIENE AND ORAL PROPHYLAXIS:**

Combined courses at para 7 above (as mentioned in 1<sup>st</sup> year (primary) above)

**(2) DENTAL HEALTH EDUCATION, COMMUNITY PUBLIC HEALTH DENTISTRY & PREVENTIVE DENTISTRY:****Lectures**

Definition of Health and Dental Health  
 Aims and objectives of Dental Health Education.  
 Dental Health and Children.  
 Steps in preventive program, patient counselling.  
 Dental Health Education-Parents, mothers (anti and post-natal), infants pre-school  
 Children and grownup Handicapped children.  
 Dental caries- Prevalence and Prevention.  
 Prevention by flouridation.  
 Periodontal Diseases.  
 Saliva in relation to dental health and disease.  
 Dietary habits and Dental Health.  
 Habits and Malocclusion.  
 Oral Cancer.  
 Brief outline of historical background of Public Health, History of dentistry and Public Health Services. Dental Health Team in relation to community health.  
 Technical knowledge of Topical Fluoride Application

**Practical**

Preparation of models of jaws and teeth-normal and pathological dental conditions.  
 Designing, drawing and painting of posters on dental health education.  
 Procedure for arranging short talks, skits and features on dental and oral health, visual aids.  
 Collection of Oral Health related statistics by conducting a small survey of an area.

**(3) DENTAL ETHICS, JURISPRUDENCE AND ORIENTATION IN DENTISTRY****Lectures & Practical**

Difference between ethics and law, types of law.  
 Legal impositions in relation to dental practice, code of ethics.  
 Unlicensed practice of dentistry.  
 Regulatory and professional organisation.  
 Place and function of dental profession in the society and discussion of economic problems involved therein.  
 Social factors in Dental Progress, income and living standard of people.  
 Objective and scope of dentistry.  
 Dental specialities

**(4) BASIC KNOWLEDGE OF COMPUTER**

General office routine economics, record-keeping services, Professional referrals and computing skill;

**(5) DENTAL MATERIALS****Lectures and Practical**

General knowledge of various material used in Dentistry such as impression material, gypsum products, waxes, investing materials and various filling materials, Temporary and Permanent cements, orthodontic material and implant materials, materials used in maxillofacial and surgical prosthesis.  
 Recognition and knowledge of various dental equipment and stores used in dental establishment.  
 Organisation of dental stores, storage and accounting, handling and maintenance of dental items, assembly and minor repair of dental equipment.

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(ii) The candidate must have passed 10+2 or two years intermediate or equivalent course thereof with Science subjects (i.e.) Physics, Chemistry and Biology from a recognized Indian University or Pre-University/Intermediate Board.

5. The medium of instruction shall be in English and the course of studies and regulations for the Diploma Examinations and the syllabus to be followed in each subject has been drawn up and appended.

**I. MINIMUM REQUIREMENTS FOR INSTITUTIONS IMPARTING TRAINING FOR DENTAL MECHANICS**

1. The minimum hours devoted to the under mentioned subjects shall be as follows:-

**FIRST YEAR**

Subject	Lectures	Practicals Laboratory/ Demonstrations	Total
Applied Physics & Mechanics	30	20	50
Applied Chemistry	30	20	50
Applied Oral Anatomy	20	90	110
Dental Materials and Metallurgy	20	40	60
Dental Mechanics (Primary)	15	15	30
Dental Mechanics (Primary)	30	600	630
<b>Total</b>	<b>145</b>	<b>785</b>	<b>930</b>

**SECOND YEAR**

Dental Materials and Metallurgy	20	40	60
Dental Mechanics (Final)	30	785	815
Basic knowledge of computers and Medical Records Management	10	10	20
<b>Total</b>	<b>60</b>	<b>835</b>	<b>895</b>

2. The classes in different subjects of the curriculum should be taught exclusively for this course.

3. There should be at least one instructor for every 10 students working in Technical Laboratories at any given time.

4. For the teaching of dental subjects, no person except those holding recognized dental qualification shall be employed as instructors. For Practicals Lab. / Demonstrations, persons holding recognised Dental Mechanics Diploma shall also be eligible as Tutor.

5. The institution imparting training in this course must possess the following minimum requirements, besides other criterion for recognized Dental College :-

- (i) Atleast two class rooms i.e. one each for 1<sup>st</sup> & 2<sup>nd</sup> year students, atleast one of which must be equipped with a LCD and OHP projector.
- (ii) Specific/subject wise Technical Laboratory facilities should be provided for each student so that practical/demonstrations on Applied Physics and Mechanics, Chemistry, Oral Anatomy, Dental Materials & Applied Metallurgy and Dental Mechanics can be held.
- (iii) A Professional Library with text books should be available to the students for reference on the subjects of the course.
- (iv) Well equipped laboratories for Prosthetic and Orthodontic work. Ceramic furnace, pressable furnace, centrifugal/Resistance casting machine, burn out furnace, sand blaster, etching and pickling equipment, blowtorch for oxygen and LPG, Electro polishing unit, acryliser, high speed Dental lathe, lab micro motor etc.
- (v) Teaching Staff: In addition to the requirement of BDS & MDS Staff, exclusive teaching staff will be as under :
 

(a) Reader - MDS (Prosthodontics)	.....	One
(b) Lecturer - MDS (Prosthodontics)	.....	One
(c) Tutor Dental Mechanic	.....	One
(d) Other Staff for teaching Physics, Chemistry etc.	.....	as required

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6. The Candidates shall do the following Pre-clinical work:-
- a. Preparation of plaster blocks, edentulous models, shellac and auto-polymerizing base plates, occlusal rims, Class-I ideal teeth set-up, wax-up and curing.
  - b. Model and die preparation
  - c. Preparation of inlay/ crown on prepared models
  - d. RPD model duplication and wax pattern preparation followed by casting.
  - e. Orthodontic wire exercises (straightening/circle/triangle/square)
  - f. Fabrication of Orthodontic clasps and appliances.
  - g. Single unit crown on Implant Analogue.
7. The minimum amount of practical work that has to be completed by each student during his/her two years course:-
- a. COMPLETE DENTURES
 

Acrylic	.....20
Metallic	.....05

 (At least 2 Dentures against natural teeth in the opposing jaw)
  - b. PARTIAL DENTURES
 

Acrylic	.....15
Metallic	.....05
  - c. REPAIRING/RELINING OF DENTURES .....20
  - d. INLAYS:
 

Indirect Composite	.....05
Metallic	.....10
Ceramic	.....05
  - e. CROWNS:
 

Acrylic	.....05
PFM	.....05
Metallic	.....05
Pressable ceramic	.....05
Zirconia/CAD-CAM	.....01(Atleast demonstration)
  - f. BRIDGE WORK (VARIOUS TYPES)
 

Provisional	.....10
3 unit Metal	.....15
3 unit PFM	.....15
3 unit Resin Bonded	.....03
  - g. SPLINTS
 

Acrylic Cap Splint	.....03
Night guard (Vacuum formed)	.....03
Bleaching trays	.....02
  - h. OBTURATORS and other
 

Maxillofacial appliances	.....10
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  - i. ORTHODONTIC STUDY CASTS .....06
  - j. ORTHODONTIC APPLIANCES .....12
  - k. IMPLANT PROSTHESES FABRICATION .....05  
(if facilities available)
  - l. LAMINATES AND VENEERS .....05

**NOTE:** *Appropriate Department to teach the Dental Mechanic Course.*

In view of the difficulties experienced by dental departments and dental teachers of dental college, the teaching of Dental Mechanics Course be entrusted to the Department of Prosthodontics or to the faculty where above mentioned staff are available

## II. EXAMINATIONS

1. An examination for the grant of Diploma of Dental Mechanics shall be conducted by a Board of three Examiners imparting training for qualification of Dental Mechanic Course approved by the Dental Council of India. One of the Examiners must be external (from outside the institution).

Note: Qualification/eligibility to appointment as Examiners for Dental Mechanic Examinations.

1. Out of 3 members of Examining Board, the external and one internal examiner should be a reader in Prosthodontics (MDS) and third examiner can be a tutor (Dental Mechanics) involved in practical teaching of the course.

2. He/She should be an active teacher of the Prosthodontic specialty at the level of Reader in the department of Prosthodontics in a recognised dental institution.
3. The examination shall be held on such dates as may be fixed. The examination shall consist of two parts; (1) Primary and (2) Final Examination.

**THE PRIMARY EXAMINATION (FIRST YEAR)**

2. The examination shall be opened to any students who
  - (a) has been enrolled during one academic year preceding the examination in an institution approved/recognised by the Dental Council of India for this purpose.
  - (b) The candidate must have passed 10+2 or two years intermediate or equivalent course thereof with Science subjects (i.e.) Physics, Chemistry and Biology from a recognized Indian University or Pre-University/Intermediate Board.
  - (c) has his/her name submitted to the Board of examiners by the Head of the institution in which he/she is enrolled;
  - (d) Produce the following Certificates signed by the Head of the institution.
    - (i) of good character;
    - (ii) of having attended not less than seventy five percent of the full course of lectures delivered and practicals demonstrations/clinicals conducted in each of the subject of examination.
3. Every candidate shall forward his/her application to the Examining Body by a date fixed by that Body, accompanied by the prescribed fee. A candidate who fails to pass or present himself/herself for examination shall not be entitled to claim a refund of the fee
4. Every candidate shall be examined in the following subjects comprising of three papers as follows:-  
Marks for each of the papers shall be as under:-

		Written	Oral	Practicals	Total
Paper I :	Applied Physics, Chemistry and Mechanics	75	25	.....	100
Paper II :	Dental Mechanics	75	25	100	200
Paper III	Applied Oral Anatomy	75	25	100	200

Each written paper shall be of three hours.

5. Every candidate shall be required to take up all subjects of the examination. A candidate failing in any paper or papers of this examination before being permitted to reappear at the subsequent examination, shall produce evidence of having pursued such a course of training as the Head of the institution may determine.  
A candidate, who passes in any one or more papers of the examination shall be exempted from appearing in that paper which he/she has passed and shall be allowed to re-appear in the rest in which he/she has failed in any subsequent examination within a period of two years. Thereafter the candidate will have to appear in all the papers of this examination.
6. The minimum number of marks required to pass the examination shall be fifty percent in each paper both in the (i) written with oral and (ii) practical parts of the examination. Candidates who obtain minimum of seventy five percent marks in any paper under examination and passes in all three subjects in first attempt shall be declared to have passed with distinction in a particular subject/s. Candidates who do not pass in all the papers in the first attempt and later obtains the distinction marks shall be declared as passed but without distinction.
7. As soon as possible after the examination, the Board of Examiners shall publish a list of the candidates who have passed. Each successful candidate shall be granted a PRIMARY DIPLOMA.

**THE FINAL EXAMINATION (SECOND YEAR)**

8. This examination shall be open to any student who-
  - a) has been enrolled for Primary academic year (first year) preceding the final examination in an Institution approved by the Dental Council of India for the purpose.
  - b) has previously passed the Primary Examination for the Diploma of Dental Mechanics.
  - c) has his/her name submitted to the Board of Examiners by the Head of the Institution in which he/she is enrolled.

- d) produces the following certificates signed by the Head of the Institution:-
- i) of good character,
  - ii) of having attended not less than seventy five percent of the full course of lectures delivered and practical/demonstration/ clinical conducted in each of the subjects of the examination.
  - iii) of having passed the Primary Examination in all papers.
  - iv) there shall not be a gap of more than two academic years between Primary and Final Diploma Exams.
9. Every candidate shall forward his/her application to the Examining Body by a date fixed by that Body, accompanied by the prescribed fee. A candidate who fails to pass or present himself/herself for examination shall not be entitled to claim a refund of the fee.
10. Every candidate shall be examined in the following subjects comprising of three papers as follows:-

		Written	Oral	Practical	Total
Paper I.	Dental Mechanics (Final)	75	25	100	200
Paper II.	Dental Materials & Metallurgy	75	25	.....	100
Paper III	Basic knowledge of Computer & Medical Records Management	75	25	---	100

Topics covered under Dental Mechanics Primary Examination should not be repeated in the final examination.

Each written paper shall be of three hours.

11. Each candidate shall be required to take up all papers of the examination. A candidate failing in any paper or papers of the examination before being permitted to re-appear at the subsequent examination, shall produce evidence of having pursued such a course of training as the Head of the institution may determine. A candidate, who passes in any one or more papers under examination shall be exempted from appearing in which he/she has passed and shall be allowed to re-appear in the rest in which he/she has failed in any subsequent examination within a period of two years. Thereafter the candidate will have to appear in all the papers of this examination.
12. The minimum number of marks required to pass the examination shall be fifty percent in each paper both in the (i) written with oral and (ii) practical parts of the examination. Candidates who obtain minimum of seventy five percent of the marks in any paper under examination shall be declared to have passed with distinction in that particular subject provided he/she passes all subjects of examination in first attempt. Candidate who do not pass in all the papers of the FINAL EXAMINATION at one and the same time shall not be declared to have passed with distinction.
13. The college authority will apply two months in advance along with practical examination date sheet to the DCI for recognition of the Diploma Course.
14. As soon as possible after the examination, the Board of Examiners shall publish a list of those candidates who have passed. Each successful candidate shall be granted a Diploma subject to the approval by DCI..

### III. SYLLABUS FOR THE DENTAL MECHANICS COURSE PRIMARY (1<sup>ST</sup> YEAR)

#### I APPLIED PHYSICS:

Specific gravity, density, properties of matter, including cohesion, capillarity, surface tension viscosity, elasticity, diffusion and osmosis.

Heat: Temperature and its measurements Thermometers and Pyrometers. General account of expansion by heat of solids, liquids and gases, Thermostats, Pressure gas and hydraulic. Bôyle's and Charles Laws. Unit of heat, thermal capacity and specific Heat, Change of State; Latent heat; Melting Point. Properties of vapours, conduction, convection and radiation.

Principles of electro-technology applied to dental work room, small motors, constructional features and characteristics, electric furnaces, heaters, thermostats, pyrometers, spot welders, electroplating, electro-forming, and anodizing, Wiring regulations relating to low voltage supplies.

**Exercises/Demonstrations:**

- Balance – weighing correct to a milligram.
- Determination of specific gravity by the principle of Archimedes (Solids and liquids).
- Determination of surface tension of a liquid by capillary rise.
- Determination of Linear expansion of solids (level method).
- Determination of the specific heats of solids and liquids by the method of mixtures.
- Small motors-constructional features and characteristics (Demonstration only)
- Determination of the electro-chemical – equivalent of copper.

**2. Applied Mechanics:**

Forces, Parallelogram and triangle of forces. Moments, Couples, Centre of gravity, Principles of lever and cantilever work, Energy, Power, Friction, Inclined plane, Screw Stress, Strain, Shearing Strain, Torsion, Bending movements, Strength and stiffness of materials.

**Exercises/Demonstrations:**

- Verification of the parallelogram and triangle laws of forces.
- Inclined plane Determination of mechanical advantage.
- Determination of Young's Modulus by bending of beams.

**3. Applied Chemistry:**

Distinction between physical and chemical change; elements, mixtures, and compounds; composition of the atmosphere; Oxygen oxides, burning and rusting; water solvent properties and crystallization; action of water on metals; composition of water hydrogen; Laws of chemical combination; meaning of chemical symbols valency; simple chemical equations; acids, bases and salts.

Electrolysis, The ionic theory of solution. The electropotential series, electroplating, General characteristics of the metals including an elementary study of the common metals and their alloys with special reference to those used in the dental work room.

Alcohol, ethers, aldehydes and ketones, fatty acids and their more important derivatives, amines. Simple treatment of carbohydrates, fats and proteins, Benzenes and its homologues. General characteristics of aromatic substances. Synthetic resins and plastics used in Dentistry.

**Exercises/Demonstrations:**

- Tests for Acids and alkalis radicals.
- Acid-base titration- Neutralisation of acids with alkalis. Titration of N/10 NaOH with N/10 H<sub>2</sub>SO<sub>4</sub> Phenolphthalin or Methyl red as indicator 2<sup>+</sup>.
- Total Nitrogen determination in organic nitrogenous materials, digestion and distillation.
- Total Nitrogen determination in In-organic (ammoniacal) solutions (or salts) by direct distillation with Mg.
- Determination of Phosphorus in in-organic materials by precipitation.
- Determination of Potassium in aqueous solution by perchlorate method.
- Electrolytic deposition (electrolysis and electroplating of metals).  
(c) Deposition of Copper by electrolysis of copper Sulphate solution.  
(d) Calculation of E.C.E.

**4. APPLIED ORAL ANATOMY:**

- Elementary anatomy and structure of denture/bearing area.
- Human dentition and occlusion.
- Functions of teeth and morphology of Crowns of teeth.
- Muscles of mastication and facial expression.
- Mastication deglutition and phonation.
- Movements of tempera-mandibular joint.
- Exercise/Demonstrations  
Tooth Carving in wax and plaster. (Crown and root, scale and enlarged models)

**5. DENTAL MECHANICS (PRIMARY):**

- Infection control measures for impressions and models
- Impression Preservation and Boxing-in.
- Cast: Preparation, Trimming, including Orthodontic casts.
- Cast duplication – various methods.
- Construction of special trays - spacers

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- Bite blocks- base plates and wax rims.
- Articulators: Classification, daily uses, and care of articulators.
- Adjustments, Mounting of casts.
- Articulation, Occlusal plane, protrusive balance, working bite, balancing bite, curve of space, compensating curve, lateral curve.
- Principles of selection of teeth.
- Setting of teeth and wax finishing.
- Flasking, Dewaxing, Packing, curing and Deflasking.
- Finishing and polishing of dentures.
- Additions, repairs, relining and revasing of dentures.
- Immediate denture construction.
- Making of acrylic teeth.
- Kennedy's classification of partial dentures.
- Principles of partial denture, design, clasp surveyor, surveying, path of insertion and removal. Establishment of clasp seat. Clasp's parts, classification, function and reprocation.
- Principles of wire bending, Preparation of wrought clasps, occlusal rests and lingual bars.

1. **Dental Mechanics (Final):**

Casting machines: Centrifugal and pressure casting machines, Furnaces, Principles of casting..

Casting techniques of partial denture (Skeletal) Clasps, bars, occlusion rest.

Setting of teeth and completion of dentures on metal skeletons.

Mechanical principles of Orthodontic appliances, anchorage, force, tissue changes and retention.

Stainless steel wire-preparation of clasps, springs and Arch wires for Orthodontic appliances.

Use of various types of expansion screws.

**Designing** - Implant supported Prosthesis (if facilities available for Dental Implants

Ceramic, laminates and Veneers.

**Fabricating**—Maxillofacial prosthesis such as eye, nose ear, cheek, obturator and splint

-Indirect Resin Restoration preparation techniques.

-Porcelain firing techniques

Preparation of removable Orthodontic appliances, Activators, Retention appliances and Oral screen.

Construction of fixed Orthodontic appliances, bands, tubes and arches.

Soldering and spot welding-Soldering of clasps, tags, Strengtheners and lingual bars.

Inlays and Crowns-classification and construction facing & backings.

Casting Procedures.

Principles of bridge work-types of abutments - abutments and pontics- construction of bridges using porcelain and acrylic pontics.

2. **DENTAL MATERIALS AND METALLURGY**

**Dental Materials:**

Composition, Properties, Uses, Advantages & Disadvantages of the following materials:-

Plaster of Paris; Dental Stone, Die Stone

Investment Materials,

All Impression Materials,

Tray Materials,

Denture Base Materials, both for cold curing and heat curing, Tooth Materials Waxes,

Base Plates,

Zinc Oxide,

Dental Luting Cements

Dental Ceramics and indirect resin restoration materials.

**Dental Metallurgy:**

- Metallurgical Terms,

- General

- Study of:

- (a) Metals used in Dentistry particularly Gold, Silver, Copper, Zinc, Tin, Lead and Aluminium.
  - (b) Alloys used in Dentistry particularly, Casting Gold Wrought Gold Silver Alloys, Stainless Steel, Chrome Cobalt Alloys.
  - Heat treatment-annealing and tempering.
  - Solders, Fluxes, Anti Fluxes.
  - Tarnish and Corrosion.
  - Electric Deposition.
  - Dental implant materials
3. **BASIC KNOWLEDGE OF COMPUTERS**
- General office routine economics, record-keeping services, Professional referrals and computing skill;
  - Record keeping of materials indented and Audit of use.
  - Receipt and dispatch of work from clinicians
- IV. **PRACTICAL EXAMINATIONS**
- The practical examination shall include, but not necessarily limited to the following
- I Primary examination
- i Model preparation, beading, boxing of models
  - ii Class I ideal denture setup and waxup
  - iii RPD - surveying of models and wax pattern preparation
  - iv Spotting of dental materials
  - v Manipulation of lab dental materials
- II Final examination
- i Three units FPD
    - Model poring
    - Die-preparation
    - Ditching
    - Spacer application
    - Wax pattern
    - Casting of all metal bridge
  - ii Ceramic application on single unit crown (Casted before)

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