

# Sure Success in PROSTHODONTICS

## Model Test Papers (With Explanatory Answers)

*Forewords*
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- Based on the syllabus prescribed by Dental Council of India (DCI)
- Applicable to all the State Dental Universities of India under DCI
- Also applicable to all the Dental Deemed Universities of India under DCI
- Includes commonly appearing questions from various universities of India

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# MODEL TEST PAPER–1

1

## V BDS Degree Examinations

## PROSTHODONTICS

### COMPLETE DENTURES (CD)

**Long Essay**

1. Define complete denture impression. Discuss in detail aims and objectives of impression making.

**Short Essays**

2. Significance of centric relation.
3. Rationale of balanced occlusion.
4. Leon Williams classification.

**Short Answers**

5. Neutral zone.
6. Metallic dentures base.
7. Uses of face bow.

### REMOVABLE PARTIAL DENTURES (RPD)

**Long Essay**

1. Preparation of mouth for impressions in partial dentures.

**Short Essays**

2. Precision attachments.
3. Requirements of major connectors in removable partial denture.

**Short Answers**

4. Effect of the occlusal rest on tooth.
5. Surveying tools.

### FIXED PARTIAL DENTURES (FPD + Miscellaneous)

**Long Essay**

1. Enumerate and describe the components of FPD and describe in detail about the connectors in fixed partial dentures.

**Short Essays**

2. Cements used in fixed partial dentures.
3. Role of special trays in fixed partial denture impression making.

**Short Answers**

4. Sanitary pontic.
5. Mesial one-half crown.

# Model Test Paper–1
# Answers—Prosthodontics
# Complete Dentures (CD)

## Long Essay

**1. Define complete denture impression. Discuss in detail aims and objectives of impression making.**

### IMPRESSION

- An impression is defined as a negative likeness or copy in reverse of the surface of an object, an imprint of teeth and adjacent structure for use in dentistry—*GPT*

### Complete Denture Impression

- A complete denture impression is a negative registration of the entire denture bearing, stabilizing and border seal areas present in the edentulous mouth.
- A complete denture impression is a negative registration of the denture bearing area obtained in a plastic material that becomes relatively hard while in contact with these tissues.

### Aims

1. The fitting surface (impression surface) must cover wide area of the denture foundation and close contact with the tissues.
2. The distribution of masticatory load depends on the available surface coverage. Greater the area coverage, greater will be the resistance to biting forces or stress.
3. Fitting surface of denture comes in contact with the oral soft tissues, and rests on the alveolar ridges and thus retains the denture in its intended area.

### Objectives of Impression Making (PRESS)

- According to Carl O. Boucher, there are five main objectives in impression making they are:
  1. **P**reservation of the remaining residual ridges
  2. **R**etention
  3. **E**sthetics
  4. **S**upport
  5. **S**tability

#### *Preservation of the remaining residual ridges*

1. As the natural teeth are lost there is loss of stimulation resulting in alveolar ridge atrophy or resorption.

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2. Local factors such as occlusion, interocclusal distance, centric relation in harmony with centric occlusion, impression technique and the impression material all have its own effect on the continued health of both the soft and hard tissues.
3. Pressure in the impression technique leads to pressure in the denture base results in soft tissue damage and bone resorption.
4. The preservation of the alveolar ridge can be achieved by developing techniques that minimize alveolar resorption.

***Techniques that minimize alveolar resorption***

- Wider coverage for wider distribution of load, techniques that place greater load on the stress bearing areas and reduced stress on the areas that are susceptible to resorption or pain.

## Retention

- Retention is defined as that quality inherent in the prosthesis which resists the force of gravity, adhesiveness of foods and the forces associated with the opening of the jaws—*GPT.*

***Other objectives of retention***

- If the other objectives are achieved, retention will be adequate. Atmospheric pressure, adhesion, cohesion, muscle control and patient tolerance affect retention.

*Atmospheric pressure*

- Atmospheric pressure depends on peripheral seal. To ensure this seal, denture borders should extend into, but not to the extent to damage movable tissue.

*Adhesion*

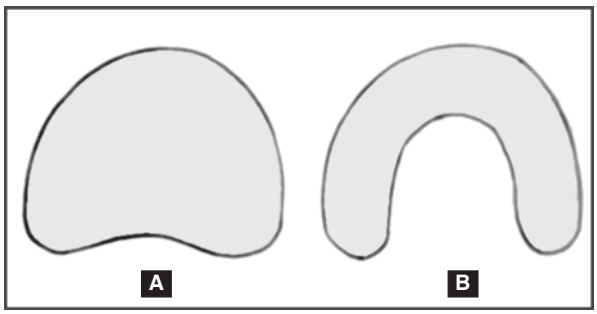
1. Adhesion is defined as the physical attraction of unlike molecules to one another—*GPT*
2. Adhesion is the attraction of saliva to the denture. Saliva is very important for adhesion. A thin film of saliva aids in wetting the tissue surface of the denture and the mucosa.

*Cohesion*

1. Cohesion is defined as the physical attraction of like molecules for each other.
2. The cohesive forces act within thin film of saliva. Cohesion is the attraction of molecules of saliva to each other.

*Muscle control and patient tolerance*

– Dentures are often retained in the mouth not because of the accuracy of conforming to the support but because of patient tolerance and the adaptability of the muscles of the lips, tongue and cheeks.




**Figs 1.1A and B:** (A) Maxillary denture-bearing area: 24 $cm^2$ (B) Mandibular denture-bearing area: 14 $cm^2$

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### Stability

1. Stability is that quality of a prosthesis to be firm, steady, or constant, to resist displacement by functional horizontal or rotational stress—*GPT.*
2. The size and form of the basal seat, quality of the final impressions, the form of the polished surfaces and the proper location and arrangement of the artificial teeth help in maintaining the stability of the dentures.
3. Close adaptation to the undistorted mucosa increases stability.

### Support

1. Support is the foundation area on which a dental prosthesis rests—*GPT.*
2. Maximum coverage provides the 'snowshoe' effect, which distributes applied forces over wide area as possible. This helps in preservation, stability and retention.
3. Confining the occlusal forces to stress bearing areas and relieving the nonstress bearing areas will aid to improve support.

### Esthetics

1. The role of esthetics in impression making refers to the development of the labial and buccal borders, so that they are not only retentive but also support the lips and cheeks properly.
2. The thickness of the denture flanges is one of the important factors in governing esthetics.
3. Border thickness should be varied with the needs of each patient depending on the extent of residual ridge loss.
4. The thickness of the denture flanges is one of the important factors in governing esthetics.
5. Thicker denture flanges are preferred in long-term edentulous patients to give required mouth fullness.
6. The impression should perfectly reproduce the width and height of the entire sulcus for the proper fabrication of the flanges.

## SHORT ESSAYS

### 2. Significance of centric relation.

### CENTRIC RELATION (CR)

### Definition

- The maxillomandibular relationship in which the condyles articulate with the thinnest avascular portion of their respective discs with the complex in the anterior-superior position against the slopes of the articulator eminence. This position is independent of tooth contact. This position is clinically discernible when the mandible is directed superior and anteriorly. It is restricted to a purely rotatory movement about the transverse horizontal axis—*GPT 5.*

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### Significance/Importance of CR

***As a fixed reference point***

1. This position is more constant and definite than VD.
2. It is independent of the presence or absence of teeth.
3. It is a learnable, recordable and reproducible position.
4. It serves as a reference relation to establish occlusion.
5. Edentulous patient close the mouth in position of CR during various activities like swallowing.
6. It the mandible has to move from are eccentric position to another it should go to CR before advancing to target eccentric relation.

***In occlusion***

1. It the centric relation coincides with centric occlusion in the natural dentition the supporting structures are healthy.
2. It artificial teeth are not arranged and occluded in centric relation dentures will not be stable.
3. The early position from which an even contact between the opposing teeth can be established in all the positions of the mandible.

***On articulator***

1. Errors in mounting casts on articulator can be detected when CR is used as the horizontal reference position.
2. Helps in remounting procedures to correct occlusal discrepancies by selective grinding.
3. An accurate CR orients the lower cost to the opening axis of articulator and the mandible.
4. Accurately recorded CR aids in proper adjustments of condylar guidance for control of eccentric movements.
5. It is helpful in adjusting condylar guidance in articulator to produce BO.

## 3. Rationale of balanced occlusion.

### BALANCED OCCLUSION

### Definition

- The balanced occlusion is defined as the simultaneous contacting of the maxillary and mandibular. Teeth in the right and left and in the posterior and anterior occlusal areas in centric and eccentric positions developed to lessen or limit tipping or rotating the denture bases in relation to the supporting structures—*GPT.*

### Rationale of Balanced Occlusion

- Ideal balanced occlusion can be achieved in cases with wide and large ridges and in complete dentures with teeth arranged close to the ridge.

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***Complete denture occlusion***

1. Complete dentures that have teeth arranged away from the ridge and those that rest on narrow and short ridges will have poor balanced occlusion.
2. The complete denture should be designed in such a way that the forces of occlusion are centered anteroposteriorly in the denture.
3. Teeth that have a narrow buccolingual width and those that rest on wide ridges provide ideal balanced occlusion.
4. Ideal balanced occlusion can be achieved by arranging the teeth slightly on the lingual side of the crest of the ridge.
5. Arranging the teeth buccally will lead to poor balanced occlusion. If the teeth are set outside the ridge the denture may elevate on one side during tooth contact.

***Working side and balancing side***

1. To achieve balanced occlusion, all the teeth of the working side should glide evenly against the opposing teeth.
2. There should be contact in balancing side, but they should not interfere with the smooth sliding movements of the working side.
3. There should be simultaneous contact during protrusion.

## 4. Leon Williams classification.

### LEON WILLIAMS CONCEPT

**Synonym**—Typal form theory

- Leon Williams classification aids in the selection of anterior teeth for complete denture prosthesis. He claimed that the shape of the upper central incisors bears a definite relationship to the shape of the face.

### Classification

- The classification is based on, the two imaginary lines on either side of the face passing about 2.5 cm infront of the tragus of the ear and through the angle of the jaw.

| S. No. | Orientation of lines | Tooth/facial form |
|---|---|---|
| 1. | If the lines are parallel | Square |
| 2. | If the lines are converging towards the chin | Tapering |
| 3. | If the lines are diverging at the chin | Ovoid |

### Correlations

1. The face form has got definite correlation with arch form. The edentulous arches bear close correlation to the facial contour provided there is minimum loss of alveolar bone.

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2. The facial form helps to select the anterior teeth and their arrangements in the arch so as to match with their natural appearance.
3. A square broad face patients will have a square arch. A tapered face will have a tapered arch while ovoid face will have an ovoid arch.

### Selection of Shape of Teeth

- From the observations of many patients it was found that there was some relationship between the shape of the edentulous upper arch and the upper teeth.
  1. The round arch is associated with ovoid teeth.
  2. The squarish arch is associated with almost parallel-sided incisors.
  3. A V-shaped arch is associated incisors which are narrower at the neck that at the incisal edge.

## Short Answers

### 5. Neutral zone.

### NEUTRAL ZONE

### Definition

- Neutral zone is the potential space between the lips and checks on one side and the tongue on the other side, it is the area or position where the forces between the tongue and cheeks/lips are equal—*GPT.*

### Boundaries

| | |
|---|---|
| **Above** | **Maxilla and soft palate** |
| Below | Mandible and floor of the mouth |
| Medially | Tongue |
| Laterally | Lips and cheek |

***Neutralization of forces***

1. Natural or artificial teeth in this arise are subjected to equal and opposite forces from the surrounding musculature.
2. It is the area in the mouth when the forces of a tongue are neutralized by the forces of the checks and lips.
3. These forces develop due to muscular contraction during various functions of chewing, speaking and swallowing.

### Importance

1. Teeth should be located within neutral zone.

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2. Placement of the teeth outside this zone either buccally/lingually can cause the cheek or tongue to dislodge the denture.

### Natural Zone Concept

- Natural zone concepts was proposed by Fish (1933)

***Objectives***

1. Maximum comfort
2. Maximum efficiency
3. Aesthetic appearance

### Factors Influencing Neutral Zone

***Checks***

1. *Masseter* - It affects the distodental border.
2. *Buccinator* - It helps to place food over the occlusal surfaces of teeth in co-ordinations with tongue.

***Lips***

1. *Canius* - Pulls lower lip, helps is sucking and swallowing.
2. *Modiolus* - If denture is not narrowed in premolar area it may unseat the lower denture.
3. *O.oris* - Exerts force against teeth and alveolar process which is counteracted by tongue.

***Other factors***

1. *Tongue* - Muscles of tongue.
2. *Denture surface* - Impression surface, occlusal surface and polished surface.
3. *Denture shape* - Triangular shape in cross-section in molar area, which stabilizes the denture.

## 6. Metallic dentures base.

### METALLIC DENTURES BASE

**Synonym—**Cast metal bases

- Metal denture bases can be fabricated using the metal alloys.

### Requirements

1. It should be dense.
2. It should be thin but rigid.

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3. It should be biologically acceptable alloy.
4. It should be have a very accurate fit.

**Advantages**

1. Increased accuracy.
2. Lack of buck with core stronger.
3. Less deformation in function.
4. Less issue damage under the base.
5. Less porosity and therefore easy to clean and easy to maintain.
6. Improved thermal conductivity gives good sensory interpretations.

**Disadvantages**

1. More expensive
2. Time consuming
3. Require difficult to fabricate
4. Require refractory cast material
5. Cannot be rebased
6. Poor esthetic qualities

**Materials used**

| Gold alloys | Type III and IV |
|---|---|
| Chrome alloys | Ticonium Vitallium |
| Aluminium alloy | Pure Aluminium Anodized Aluminium |

## 7. Uses of face bow.

**FACE BOW**

**Definition**

- Face bow is a caliper like instrument used to record the spatial relationship of the maxillary arch to some anatomic reference point or points and then transfer this relationship to an articulator, it orients the dental casts in the same relationship to the opening axis of the articulator—*GPT.*

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## Uses/Indications of Face Bow

***For jaw relations***

1. It records the relationship of jaws to TMJ.
2. It relates the maxilla to mandible in centric relation.
3. When occlusal vertical dimension is to be changed during teeth setting.

***For occlusion relations***

1. When cusp form teeth are used.
2. When definite cusp tip to cusp incline relation in needed.
3. When balanced occlusion in the eccentric positions is desired.
4. When interocclusal check records are used to verify jaw positions.
5. In full mouth rehabilitation when accurate occlusal relations are to be made.
6. For making occlusal corrections after denture processing.

***For diagnosis and treatment plan***

1. In gnathologic studies and treatment planning.
2. For diagnostic amounting and treatment planning.

***Other purposes***

1. For constructing accurate crowns and bridges.
2. Supports the casts while mounting an articulator.

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# REMOVABLE PARTIAL DENTURES (RPD)

## LONG ESSAY

### 1. Preparation of mouth for impressions in partial dentures.

**PREPARATION OF MOUTH FOR IMPRESSIONS**

**Mouth Preparation**

1. Mouth preparation is a part of treatment planing phase carried out to enhance the success of RPD.
2. Mouth preparation includes the all procedures done to modify the existing oral condition of patient to facilitate proper placement and functioning of prosthesis.

**Phases of Mouth Preparation**

- Mouth preparation is of 2 types: Pre-prosthetic Mouth preparation and Prosthetic Mouth preparation

***Pre-prosthetic mouth preparation***

- The order of procedures in Mouth preparation includes:
  1. Oral surgical procedure
  2. Periodontal procedures
  3. Endodontic procedures
  4. Orthodontic corrections
  5. Treatment of abused tissues

***Prosthetic procedures***

- Prosthetic procedures are done to facilitate the prosthetic treatment.
  1. Preparation of guide planes and rest seats.
  2. Prosthetic rehabilitation.

**Surgical Procedures**

- Treatment under surgical phase includes:
  1. Extractions
  2. Removal of exostoses and tori
  3. Excision of hyperplastic tissue
  4. Removal of abnormal muscle attachments and freni

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5. Removal of polyps, papilloma and traumatic hemangiomas.
6. Correction of bony spicules, spines and knife edge ridges.
7. Correction of dentofacial deformity.
8. Placement of osseo-integrated devices.
9. Surgical removal of cysts and tumors.

***Extractions***

1. Any tooth detrimental to the design of RPD should be extracted.
2. Impacted tooth, malposed teeth which are grossly extruded/drifted should be extracted.
3. Residual root tips should be extracted with minimal bone loss.

***Exostoses/tori***

- Exostoses/tori, which are hindrance to the design of RPD, should be surgically removed with air turbine hand piece at lower speed (20000-50000 rpm). Use adequate water irrigation to prevent thermal damage to bone.

***Abnormal muscle attachments and freni***

- Abnormal muscle attachments or freni may affect the retention of RPD.

*Abnormal freni*

1. Maxillary labial freni
2. Mandibular lingual freni

*Abnormal muscle attachments*

1. Mentalis
2. Buccinator
3. Mylohyoid
4. Genioglossus

- Near to the alveolar crest should be corrected, if not can compromise retention of Removable partial denture.

***Dentofacial deformity***

- Surgical correction of a jaw deformity can be made in horizontal, sagittal or frontal planes.

***Osseo-integrated devices***

- Endosseous implants or fixtures constructed from titanium are placed under controlled oral surgical procedures if required for partial denture.

## Periodontal Procedures

- The Periodontal procedures follow the surgical procedures:

***Objectives***

1. Removal of all etiological factors contributing to PD diseases.
2. Elimination of all pockets and stabilizing the periodontium.

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***Salient Features***

- This book contains 20 Model Test Papers which can cover whole syllabus of the subject.
- All the questions are answered as per the type of question (Long Essays/Short Essays/ Brief Answers).
- All the questions are answered as per the marks allotted to them to reduce the work load on the student.
- Answers are selected from the books commonly referred by the students to avoid confusion during revision for university examination.
- Answers are presented with suitable boxes, tables, flow charts and diagrams to facilitate easy understanding and revision of the subject.
- All the answers are provided in a point-wise manner for more clear and eye catching to remember easily.
- Each answer is explained in Heading, Sub-heading, and Sub-sub Headings to break the continuous matter.



**Vardharaj Venkat Ramaiah** is an established name in the market of 'Ready-reckoner books' in dentistry. He has risen in the field of authoring and various aspects of dentistry through his hard and sincere work as a dynamic individual. He is the author of many publications and has more than thirty books in the field of dentistry to his credit. The titles already in circulation have reinforced the belief that exam-oriented books provide the students with the needed support for facing university exams. As a topper during undergraduation, he obtained his BDS from Sri Siddhartha Dental College and Hospital, Tumkur, Karnataka and currently he is doing MDS in Public Health Dentistry in Yenepoya Dental College and University, Mangalore, Karnataka. He is a dedicated, workaholic, intelligent and committed student to his studies. He received the 'State Best Student Award' (Andhra Pradesh) for excellence in his studies from the former Education Minister Yernani Sita Devi. He is multifaceted personality and has held many dental camps and distinguished services to the poor and needy and has been accredited with many awards and appreciations by social institutions, Helpage homes, Orphan schools and Blind institutions of Andhra Pradesh.



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ISBN 978-93-5025-340-3
9 789350 253403