NADL
National Association of
Dental Laboratories

Examination Preparation Guide

Revised January 2017

Thank you for your interest in pursuing certification by the National Board for Certification in Dental Laboratory Technology (NBC). This Examination Preparation Guide was created by the National Association of Dental Laboratories (NADL), with the help of CDTs throughout the industry. It is designed to assist candidates in preparing for the written and practical examinations to achieve Recognized Graduate (RG) & Certified Dental Technician (CDT) status.

As a valued member of our laboratory industry, your affidavit of technical competency is an important achievement. The NBC has developed two testing programs specifically designed to fit your level of expertise. Recognized Graduates have graduated from an NBC recognized educational institution and have demonstrated their comprehensive knowledge in all specialty areas of dental technology. A Certified Dental Technician (CDT) candidate seeks to demonstrate not only their comprehensive knowledge in all specialty areas of dental technology but also their experience and skills in one or more chosen specialty area of dental technology. CDT's are an elite and respected group of dental technology professionals that have achieved nationally-verified technical excellence, and maintain this designation with pride.

Inside this guide you will find valuable information about the examination content and process, suggested study materials and techniques, timeline preparation tips and more! If you follow the advice provided within this guide, you will be adequately prepared to achieve your certification designation. Please note that this preparation guide is a tool which should be used as part of your comprehensive examination preparation process. The use of this tool does not guarantee that a candidate will pass the examinations.

The NBC is here to help you achieve your goal of increasing your knowledge, proving your skill and becoming certified. If you have any questions regarding the NBC examinations or the certification process, please don't hesitate to call the NBC at (800) 684-5310 or contact the NBC via email at certification@nbccert.org.

Congratulations on your commitment to obtain National Certification!

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CDT Program Overview & Requirements

The Certified Dental Technician (CDT) program offered by the National Board for Certification in Dental Laboratory Technology (NBC) provides members of the dental profession and the dental laboratory industry with a mechanism by which they can easily identify dental technicians and laboratories who have demonstrated their technical qualifications and their commitment to maintaining high standards in dental technology.

Certification is voluntary and thereby represents not only compliance with documented standards, but also a strong personal commitment to quality and professionalism. An individual who earns the CDT designation validates that they meet the industry standards of required knowledge and applied skills through the successful completion of examinations and compliance with continuing technical education requirements.

The CDT designation is a great achievement and exhibits a significant mastery of the knowledge and applied skills needed in dental technology. Earning the CDT designation is personally rewarding and places the certified individual amongst the group of professionals who are at the top of the dental technology profession. This group forms a basis for networking, professional recognition, friendships and life-long learning.

Why Professional Certification?

For those engaged in the practice of dental technology, certification offers:

- Incentive to achieve proficiency
- Criteria for maintaining continuing education
- Improved career opportunities
- Peer recognition
- Enhanced professional visibility

For the dentist-client, certification offers:

- Reinforced credibility through the use of credentialed support services
- A means to encourage proficiency and advancement
- An enhanced source of specialized expertise

For the dental patient, dental technology certification offers:

- An enhanced perception of the value of dental services
- A positive perception of and respect for the career of dental technology

Recognition/Endorsements

The CDT Program is the voluntary professional standard recognized and endorsed by the National Association of Dental Laboratories (NADL), the American Dental Association (ADA) and the American College of Prosthodontists (ACP). The program receives outstanding support and participation from the U.S. military and follows international certification program standards, which ensure that the programs are operated in a responsible, ethical and appropriate manner.

Who May Become Certified?

All dental technicians who possess the required education and/or experience, have a working knowledge of the English language and have not been found guilty of practicing dentistry illegally are eligible to become a Certified Dental Technician.

RG/CDT Qualification Requirements

The following requirements must be met for all candidates in order to qualify to take the RG/CDT examinations:

- You must have a working knowledge of the English language.
- You must be a high school graduate (or the documented equivalent).
- You must be of satisfactory ethical and legal standing as defined by the NBC's disciplinary standards.
  (The NBC's disciplinary standards can be found on the NBC's website at www.nbccert.org).
- You must meet the technical prerequisites required for testing (see below).

Recognized Graduate Eligibility:

Students enrolled in a state or ADA accredited dental laboratory program, or a formal U.S. military program in dental laboratory technology, have up to one (1) year after graduation to sit for the RG examination (equivalent to the Comprehensive examination). Once a student passes the RG examination and graduates from their educational program, he or she is acknowledged by the NBC as a Recognized Graduate.

After completing their RG examination, Recognized Graduates have up to four (4) years to take and pass their other two exams (written Specialty and the Practical exam) to become a CDT.

If an RG chooses not pursue their CDT certification, they may retain their RG status by fulfilling the annual dues and continuing education requirements.

Technical prerequisites for RGs:

- An RG, having graduated from an ADA accredited program, may sit for the CDT examinations, immediately upon graduation, without having to obtain additional education or on-the-job experience.

Or

- An RG, having graduated from a non-ADA accredited program, must obtain at least three years of on-the-job experience, in order to be eligible to sit for the CDT examinations.

Technical prerequisites for technicians that are *NOT* current RGs:

Candidates that have not completed a two year, ADA accredited dental laboratory program, must document at least five years of training and/or experience in dental technology. Time spent in on-the-job training (including formal apprenticeships and training courses) or studying in a dental technology education program may be counted towards this requirement.

Candidates that have graduated from a two-year ADA accredited dental technology education program, but did not pursue RG status within the allowable time frame, may apply for the CDT examinations after completion of two years of practical experience in addition to (and not concurrent with) their course of study. As of January 1, 2017, an additional pathway to becoming a CDT has been added, whereby documented continuing education (CE) can substitute for education and/or experience.
For a detailed breakdown, please visit the Career Path to Becoming a CDT document at
www.nbccert.org/certificants/certified-dental-technician/cdt-application.cfm

Learn more about your career path to becoming a CDT - See ***Appendix A*** at the end of this guide.

RG/CDT Exam & Specialty Areas

A candidate for CDT certification must successfully complete three examinations, taken in any order, within a four-year period: a written comprehensive examination, a written specialty examination and a hands-on, same specialty practical examination (referred to throughout this guide as the Comprehensive, Specialty, and Practical examinations). Current RGs need only sit for their Specialty written and Practical examinations if within four years of passing their RG examination. After four years, they must take all three examinations to achieve certification. Exam content was last revised in January 2017. Exam content may be found at https://nbccert.org/certificants/certified-dental-technician/cdt-rg-exam.cfm#content

The specialties to choose from are:

- complete dentures
- partial dentures
- crown and bridge
- ceramics
- orthodontics
- implants

Selecting a specialty area in which to certify should be based on three factors:

Your knowledge of the specialty area
Your experience in the specialty area
Your personal/professional goals and needs

Once you've determined which specialty area you would like to certify in, take time to prepare adequately for your examinations by utilizing the study tips included in this guide.

What is a Master CDT?

A Master CDT is an individual who has taken and passed all of the written and practical examinations in at least five of the six available specialty areas (crown & bridge, complete dentures, ceramics, implants, orthodontics and partial dentures).

The Examinations

Examination Overview

The NBC's most current RG/CDT examination schedule is available online at https://nbccert.org/education/exam-finder/ and can be viewed in two different formats. Candidates may search for examinations within a particular state, or may simply download and view a listing of all currently scheduled examination dates and places. Location is obviously important to consider when determining which examination you will attend, as is the date. This is especially true if you have already started the CDT examination process and are nearing the end of the four-year time frame in which you are required to obtain your certification.

Examination Fees (as of January 2017)

CDT Comprehensive $220
RG Examination: $210
CDT Specialty Written Examination: $220
CDT Practical Examination: $495*
* (This includes a $50 non-refundable one-time application fee)

Scholarship Opportunities

The Pillar Scholarship was founded in 2004 by the National Association of Dental Laboratories (NADL) and transitioned in 2011 to the Foundation for Dental Laboratory Technology (FDLT). The Pillar Scholarship is designed to allow qualified dental technicians the opportunity to sit for the three exam components of the CDT examination process. Additionally, the Scholarship can be awarded to current CDTs and RGs to assist with costs incurred in obtaining an additional specialty certification or completing their remaining examinations.

The Pillar Scholarship may cover the application and testing fees for a candidate to take the Comprehensive examination, the written Specialty examination and the Practical examination, one time each. It also awards the candidate a discount certificate that can be used to purchase study materials from NADL. The scholarship award is up to $1,000.00 per recipient. Scholarship recipients must take all three examinations within 12 months after being awarded the scholarship.

There are two deadlines annually for scholarship applications. For more information, please visit the Foundation for Dental Laboratory Technology's website at www.dentallabfoundation.org and click on the "Resources" menu item.

Preparing & Submitting Your Examination Application(s)

RG and CDT Examination Applications

All CDT Examinations Application
This examination application may be used by candidates who wish to register to take the written and/or practical CDT examinations and can be found inside of the CDT Examination Handbook.

RG Examination Application
This application should be used by candidates applying to take the written RG examination, only. RG candidates are eligible within one year of graduating from an accredited DLT program. After a one year period, this RG application form does not apply, as all three CDT examinations must be completed successfully, utilizing the aforementioned CDT examination application. Candidates that take and pass the RG examination do not have to sit for the Comprehensive examination, if Specialty and Practical examinations are completed within four years of passing the RG exam. The RG examination application can be found inside of the RG Examination Handbook.

RG/CDT Written Examination Retake Application
This application should be used for candidates applying to re-take any of the written CDT examinations (Comprehensive or Specialty) as well as for candidates applying to re-take the RG examination. This application is a shorter version of the original CDT written examination application, as much of the information needed by the NBC is already on file from the candidate's original application.

CDT Practical Examination Retake Application
This application should be used for candidates applying to re-take the Practical CDT examination. This application is a shorter version of the original Practical examination application, as much of the information needed by the NBC is already on file from the candidate's original application. Additionally, the one-time $50.00 application fee is waived if you must re-take the Practical examination.

Preparing Your Examination Application

Obtain the appropriate examination application by visiting the NBC's website at www.nbccert.org and click on "Become a CDT or RG", then click on "Download the CDT Application and Handbook". Examination retake applications are also available online.

- Type or print all answers clearly in ink.
- Use extra sheets of paper if more space is needed for requested information.
- Be honest, accurate and thorough in completing all sections of this application. The NBC reserves the right to reject any application if evidence exists that the applicant has made a false or misleading statement in the application or any supporting documents.
- Keep a copy of your application for your records.
- Payment is due with the examination application. The check or money order, payable to the National Board for Certification in Dental Laboratory Technology, must be in the amount of the application and examination fee for the candidate for whom the application is for. The NBC also accepts Visa, MasterCard and American Express.
- Contact the NBC for any questions pertaining to completing the examination application(s).

Submitting Your Examination Application

- Completed examination applications should be submitted along with the appropriate examination fee payment via mail to the NBC's headquarters (the address is on the bottom of each application).
- Applications may be submitted as early as the examinations are listed on the current year's examination schedule.
- All applications must be received by the NBC by the published application deadline. Late applications must be accompanied by the late fee and are subject to NBC approval.
- Applications are accepted in the order in which they are received, up to the capacity of each examination site.
- Written examination applicants can expect to receive written confirmation of their registration within two weeks of their scheduled examination.
- Practical examination applicants can expect to receive written confirmation of their registration within four weeks of their scheduled examination. Candidates should not schedule travel until they receive written confirmation of their practical examination.

Examination Confirmation

- Generally, examination dates are tentative until thirty (30) days prior to the scheduled examination. The NBC reserves the right to cancel the examination due to lack of candidate participation or any other unforeseen circumstances. Should the NBC decide to cancel a scheduled examination, the NBC will notify applicants within four weeks of the scheduled examination date. Do not make your travel arrangements until you receive confirmation.

- Once an examination has been confirmed, candidates are required to attend their selected examination as scheduled. Failure to do so may result in the forfeiture of all examination fees. Please read the CDT Examination Handbook for additional details about the NBC's rescheduling and cancellation policies.

Your Commitment to Success

An individual's commitment to obtain certification is multi-faceted. One must plan and prepare for the monetary commitment involved, as well as the commitment of time and effort that will be dedicated to studying and preparing for the examinations.

Monetary and Other Commitments

As with any certification program, the process of earning the CDT or RG designation does have a price tag attached. Examination candidates should expect to budget for a minimum of $935.00 in examination fees (under the assumption that each examination is passed on the first attempt) and anticipate investing in travel (if the examination is not being hosted locally), publications for studying, as well as costs that may be incurred for materials used to practice, joining a study club, etc.

Borrowing study texts from previous examination candidates and getting permission from employers to utilize materials for practicing can help defray some of the costs involved with certification. Many employers have education reimbursement programs in place that can help candidates with examination fees, etc. It would be worth asking your employer if such a program exists.

The Foundation for Dental Laboratory Technology (FDLT) offers candidates an opportunity to apply for funding assistance for the NBC examinations through the Pillar Scholarship. For information regarding qualifications and application criteria, please visit www.dentallabfoundation.org.

Other Commitments

Other contributing factors to a candidate's success include but are not limited to one's commitment to outline a study plan (and stick with it), read various study materials, practice run-throughs of the practical examination tasks and seek council of local CDTs who have already gone through the examination process. Remember that balancing your current work load with your study plan is essential!

Get excited about your goal to become certified and know that although the road ahead of you won't be easy, the outcome of certification will be well worth your investment of time and money!

Tools and Techniques for Examination Success

Preparing for the NBC's examinations in dental laboratory technology can be as challenging and anxiety provoking as taking the examinations themselves. Such examinations are often the first tests candidates have taken since graduation from high school or a dental technology program. Examination anxiety can become a major obstacle to effective test performance; however, candidates can utilize various strategies to assist them in dealing with such anxieties and to successfully prepare them for taking the examinations. A confident approach to the certification examinations can be one of the candidate's greatest assets.

Minimizing Anxiety and Building Confidence

Some key factors that play a role in assisting candidates in preparing for their examinations while minimizing the potential for examination anxiety include, but are not limited to:

- Realistic Planning – Give yourself plenty of time to prepare for your examinations. If you are working full-time, you need to plan for manageable study time, that doesn't interfere with your ability to function at work or at home. Create a study plan that is realistic without too much material to cover each week. For full-time employed candidates, 8-12 months is reasonable for CDT preparation.

- Self-discipline – Adhere to your study plan! When examination day rolls around you want to be able to know confidently that you've managed to successfully adhere to the study plan you've outlined for yourself, therefore minimizing the anxiety of not having studied or practiced sufficiently.

- Concentration – Monitor your attention levels while reading/studying and make a conscious effort to be alert during times when you feel yourself slipping into a daydream or easily distracted. If you find it difficult to maintain your focus it is likely time for a break. It is important to be well rested for study/practice sessions as well as for the examinations themselves.

- Attitude – The attitude you have about preparing for and taking the examinations directly affects the outcome of your commitment. You can do it and you may have to remind yourself of that at times. A "can do" attitude will go a long way in carrying you throughout the certification process. Try to consciously block out negative thoughts and focus on the positive! Use positive mental imaging to help create self-determination.

- Verification – Seek out a study-helper or 'mentor CDT' that will work with you each week to quiz you on the material you studied. Verbalizing your studied information helps you to gain confidence in your knowledge. Utilize the interactive CDT/RG Examinations Online Study System available at the NADL website to supplement your additional study techniques. Please keep in mind that this system should not be used as your only means of examination preparation.

Assessing Your Knowledge Level

Passing the NBC's RG and CDT examinations requires a combination of knowledge, experience and determination. In order to assess your personal preparedness level for the examination, review the three levels of knowledge outlined below.

- Basic knowledge
  Candidate knows and understands basic terminology and practical concepts.

- Intermediate knowledge
  Candidate has limited professional experience (task oriented on-the-job training).

- Advanced knowledge
  Candidate has studied academically and has extensive professional experience in his/her specialty area.

Reading for a Successful Outcome

During the preparation process for the RG and CDT examinations it is imperative that candidates not only study and practice, but that they also continually gauge areas of both strengths and weaknesses by noting these areas throughout their studies and practice sessions. Candidates should approach study sessions with the following questions in mind:

- What do I already know about this particular topic?

- What do I want to learn from this study session?

- What new things did I learn by reading and studying about this topic?

Candidates are advised to pair up with a "study buddy" who can pose questions to them as a pre-test to determine what the candidate has learned through reading their reference materials. For practical examinations, candidates can pair up with a CDT who can critique their practice work and provide the candidate with non-bias feedback/suggestions for improvement. The candidate's main focus should be placed on any areas where they are unclear of the answers or practical procedures involved in preparation for the examinations.

Recommended Study Materials and Reading List

The NBC's examinations were developed on the basis of practice in the field, not on a specific textbook or course of study. Therefore, many sources of information are appropriate for study and review. The references listed in this publication must not be regarded as the only useful publications. They should be considered only as representative sources of the types of information covered by the examination.

United States Air Force Manuals
The Air Force Manuals are an excellent source of preparatory material for the CDT examinations. These include Dental Laboratory Technology, Basic Sciences, Removable Prosthodontics, and Orthodontics (2005), Air Force Pamphlet 47-103, Volume One and Dental Laboratory Technology, Fixed and Special Prosthodontics (2005), Air Force Pamphlet 47-103, Volume Two. Electronic copies of these manuals are available for purchase through the National Association of Dental Laboratories (NADL) online at www.nadl.org.

CDT Practical Exam Work Visual Reference Guide
The NADL launched the release of new CDT Practical Exam Work Visual Reference Guides, which were created to provide examination candidates with a visual representation of the industry standard in his/her chosen specialty area. There is a visual guide available for each specialty area for purchase at the NADL's online store at www.nadl.org.

Examination Preparation Guide (this comprehensive guide)
You've made a wise choice to purchase this all inclusive preparation guide to assist examination candidates in planning for success. The NADL has specifically designed this guide to help you navigate your course to success. It contains a breakdown of RG and CDT examination content and processes, recommended resource materials for exam study, key words from the Glossary of Prosthodontic Terms and sample exam questions. The sample questions will help to familiarize the candidate with the format and types of questions included in each of the actual examinations. This guide also includes study techniques, the Timeline for Success Study Plan (including specific references and page #s to study) for candidates working full time.

NADL Online Interactive Study System
NADL has developed an online study system to help dental technology professional's study for the written examinations. This online study system is designed to quiz users on all aspects of dental laboratory technology including the specialties: complete dentures, implants, partial dentures, crown and bridge, ceramics, and orthodontics. This study system contains hundreds of multiple choice questions that are similar to those on the examinations. It allows you to select your area(s) of study, provides the correct answers and grades your results, so you can assess your progress and improvement. You can access this interactive Online Study System at www.nadl.org.

Glossary of Prosthodontic Terms
Since dental terminology can consist of many technical, clinical and anatomical words that have similar meanings, candidates should familiarize themselves with industry appropriate dental laboratory terminology through review of the Glossary of Prosthodontic Terms. Most of the applicable terms from this glossary are included in the back of this guide. See ***Appendix B***.

Other recommended publications for study include, but are not limited to the following texts:

GENERAL REFERENCES

Hohmann, Arnold and Hielscher, Werner
Principles of Design and Fabrication in Prosthodontics
Chicago, Quintessence Publishing, 2016

Mosby's Dental Dictionary 3rd edition
St. Louis, Mosby Publishing, 2014

Nelson, DDS, MS, Stanley
Wheeler's Dental Anatomy, Physiology & Occlusion, 9th edition
St. Louis, Saunders Publishing, 2009

O'Brien, William
Dental Materials and their Selection, 4th edition
Chicago, Quintessence Publishing, 2009

United States Air Force Manuals 47-103
Volume One Basic Sciences, Removable Prosthodontics, and Orthodontics (2005), Volume Two Fixed and Special Prosthodontics (2005)

CERAMICS and CROWN & BRIDGE

Chu, Stephen J.; Devigus, Alessandro; Paravina, Rade; Mieleszko, Adam
Fundamentals of Color: Shade Matching and Communication in Esthetic Dentistry, 2nd edition
Chicago, Quintessence Publishing, 2011

Hämmerle, Christoph; Sailer, Irena; Thoma, Andrea; Hälg, Gianni; Suter, Ana; Ramel, Christian
Dental Ceramics: Essential Aspects for Clinical Practice
Chicago, Quintessence Publishing, 2008

Kelly, J. Robert
Ceramics in Dentistry: Principles and Practice
Chicago, Quintessence Publishing, 2016

Naylor, W. Patrick
Intro to Metal-Ceramic Technology 2nd edition
Chicago, Quintessence Publishing, 2009

COMPLETE DENTURES

MacEntee, Michael
The Complete Denture: A Clinical Pathway 2nd edition
Chicago, Quintessence Publishing, 1999

PARTIAL DENTURES

Carr, Alan
McCracken's Removable Partial Prosthodontics 13th edition
St. Louis, Mosby Publishing, 2015

ORTHODONTICS

McNamara Jr., Dr. James A.
Orthodontics and Dentofacial Orthopedics
Needham, MA Needham Press, 2001

Willison, CDT, Brian D. Warunek, DDS, MS, Stephen P.
Practical Guide to Orthodontic Appliances
Tonawanda, NY, Great Lakes Orthodontics

IMPLANTS

Babbush, DDS, MScD, Charles A., Hahn, DDS, Jack A., Krauser, DMD, Jack T. and Rosenlicht, DMD, Joel L.
Dental Implants: The Art and Science, 2nd Edition
Maryland Heights, MO, Saunders, 2011

Misch, DDS, MDS, Carl E.
Contemporary Implant Dentistry, 3rd edition
St. Louis, MO, Mosby, Inc., 2008

Misch, DDS, MDS, Carl E.
Dental Implant Prosthetics, 2nd edition
St. Louis, MO, Mosby, Inc., 2014

Shafie, Dr. Hamid
Clinical and Laboratory Manual of Implant Overdentures
St. Louis, MO, Blackwell Publishing Company, 2007

White, Graham E.
Osseointegrated Dental Technology
Quintessence Publishing, 1993

Goal Setting Techniques

1. Align your values with your goals. Determine the value/importance you place upon your goal to successfully acquire your certification and let those values drive you to your ultimate success!

2. Set a timeline for achievement of your goal and create a study plan that outlines calendar dates you will reserve for studying or practicing for the examinations. Avoid potential scheduling conflicts by incorporating your study schedule with your personal/business calendars.

3. Talk about your goals with others. Sharing your desire to achieve the RG or CDT designation amongst your family members, friends, peers and/or employer will enable others to encourage and support your goal and their encouragement will help you to meet your goal as others now have a certain expectation of you. Discussing your goals can also open the door for opportunities to meet and learn from CDTs who have already successfully undergone the certification process.

4. Designate an "Accountability Coach", someone who will hold you accountable for your goal to become certified. This person may be a family member, friend, employer or co-worker who you can contact regularly for support and motivation. Putting your accountability in the hands of someone who will support you, yet not take any excuses for missed deadlines (studying, practicing, etc.) will assist you in keeping your commitment. This person will be by your side to help stay on track while you work toward achieving your goal.

5. Tap into what motivates you. Is your goal to become certified driven by professional or personal motivators, or both? Think in terms of both the long and short-term benefits of achieving your goal and use those as motivators to challenge yourself in achieving your goal by a specific date.

6. Keep track of all the steps you take toward reaching your goal by analyzing and documenting your examination preparation progress. Logging study time, practice runs, noting areas of your strengths and weaknesses, etc. will provide you with a visual image of where you started, how far you've come, and how far you still have left to go in accomplishing achievement of your goal.

Form or Join a Study Group

Forming or joining a Study Group is highly recommended to candidates wishing to become certified. Networking with other examination candidates (as well as those that have already become certified) for the purpose of examination preparation can greatly assist you in readying yourself for your upcoming examination. If you need information about current study groups, the NBC's website can help! If you are interested in forming a study group that is recognized by the NBC, contact the NBC for more information at (800) 684-5310. To determine if there is a study group near you, visit the NBC's website at www.nbccert.org. Please be advised that some study groups charge a membership fee.

Connect with CDTs

Another valuable source of information for examination candidates is the NBC's "Who's Who" directory, which contains contact information for current CDTs (searchable by name, city, or state). Reaching out to CDTs who have walked along the same pathway to certification will enable you to obtain feedback about the NBC's examination process, hear their testimonials as to what certification has meant for them, and some may even be willing to provide you with tips or advice regarding examination preparation. Visit the NBC's website at www.nbccert.org and click on the "NBC – Who's Who Directory" link to view the directory.

Additional Study References

For a list of recommended publications for study, please refer to the CDT Examination Handbooks or the "Recommended Reading List" section in this guide. Written exam candidates should consider the interactive NADL CDT/RG Examinations Online Study System at least 90 days before their scheduled exam date.

Note: To get the most benefit out of this study tool, it is best to use it toward the end of your textbook study. The NADL Online Study System will quiz you, highlight the answers, and maintain your grading scale so you can measure improvement after each use. An hour a day is enough to get through all of the areas. Then you will have plenty of time to repeat the areas you need to study more. Following this recommended regimen can ensure certification success!

Practical CDT Examinations ~ Practice, Practice, Practice!!!

In addition to networking with other candidates and current CDTs, the following procedural tips can greatly assist you in successfully preparing for the Practical examinations:

When you receive your examination molds, components and instructions (mailed by the NBC four weeks prior to your scheduled practical examination), inventory your package and carefully read all instructions in the Practical Examination Handbook.

Make at least three extra sets of the molds beyond the number of molds that the handbook instructs you to pour before returning the molds to the NBC, as instructed. These extra sets can be used to practice with, prior to the examination.

Use the instructions in the examination handbook to develop an equipment and materials checklist and make sure the materials and equipment to be used are of good quality and are in good working order.

Note regarding equipment and materials:

If you determine that you will need or desire to borrow equipment from the examination host, contact them directly to inquire about their facility, and for advanced permission. Always remember that the examination hosts are volunteering their time and their facility for your use. As such, they are greatly appreciated and are to be treated with the utmost respect. But be aware that not all exam sites are the same, and not all will allow you to use their property. While, the NBC does its best to pre-screen a facility's layout for candidate use, never assume availability. Some labs have soldering equipment, some have laser welders and some are completely gas-free. When using on-site or borrowed equipment, it is at your own risk. **Neither the host site nor the NBC will be held liable for equipment related examination failures.** It is therefore recommended that you verify the facility's layout in advance of making your examination site selection. Then, at least two weeks prior to the scheduled examination, call to verify that your needs are still able to be met. Make sure you retain the name of the person you spoke with.

If you will be flying with equipment or materials, we recommend that you contact the airline prior to your trip. Describe the nature of your flight, the equipment, instruments and materials that you are required to bring. The airline may have certain packing or check-in requirements. If you would like to ship your materials and/or equipment to the examination host site, please contact the host at least two weeks prior to the examination date for permission and to make the necessary arrangements.

Practical exam candidates should begin their hands-on practice **no less than 60 days prior to their exam date**. This is a good time to order the CDT Practical Exam Visual Reference Guide for your specialty area, available through the NADL. This will give you an up-close view of what your finished work should look like, along with the exam grading criteria.

Review the standards for each examination procedure as outlined in the instruction manual to develop a work plan that enables you to perform uninterrupted practice runs with accuracy and good timing. With permission from your laboratory you may be able to perform such practice runs at your laboratory on nights or over weekends, which will help to ensure that there will be no daily distractions, so that you can focus on your work. When practicing, set up at a different station/bench than you are accustomed to, as performing practice runs in an environment other than your own will help prepare you to take your examination at an unfamiliar bench space.

It is recommended that each candidate run through at least three practice sessions. After each practice run, critique your case against the standards as outlined in the examination handbook instructions and the CDT Practical Exam Visual Reference Guide (order form in the back of this guide, ***Appendix G***. Continue to practice until you can accurately complete the examination in five (5) hours or less, as this will allow you extra time during the examination in case anything unexpected should occur. Be sure you've followed all instructions and evaluate your final practice work. Sometimes, it is helpful to wait a few days in between practice runs so that you can give each piece of work another evaluation with refreshed eyes.

The work that you are required to complete prior to arriving at the examination should be neat, clean and represent your best efforts. Make sure your candidate number is on all of your casts and that you bring (or make arrangements to borrow) the required equipment to the examination site.

Double check your materials list the day prior to traveling to the examination site to ensure you have packed all required materials and equipment.

Sometimes the most competent technicians do not successfully pass the Practical examination. This type of failure can often be traced back to one or more of the following three areas:

1. Inadequate preparation
2. Instructions were not followed
3. Poor time management

Practicing diligently, closely following instructions and managing your time wisely are three important areas of focus that will help to keep you out of this category.

Creating Your Overall Study Plan

Prior to creating your independent study plan, look at your personal and business calendar to determine how much of your available time you will dedicate to studying or practicing. Assign when those dates and times will be. Make sure to incorporate your study plan into your business and personal calendars to avoid conflicts.

In addition to study time, block out the date of the examination application deadline as well as the actual examination date. You may find it helpful to utilize the table below to map out your study plan and to keep track of how many weeks you have left until you take your examination.

Successful candidates find that devoting a predetermined amount of hours, a set number of times per week leading up to the examination ensures good study habits and adequate prep time to take and pass the examinations. Advanced planning will help you stay on track!

Timeline for Success Study Plan

In an effort to assist you in preparing for the written examinations, ***Appendix C*** provides candidates with a proven, Timeline for Success Study Plan using predominantly the Air Force Manuals. This plan breaks up studying for written examinations into manageable parts and even assigns page #s to study.

For example, 32 weeks out from the anticipated examination date a candidate would begin preparation for the written examinations by studying Chapter 3: Anatomy of Facial & Oral Structures of the Air Force Manual. The following week, the candidate would move onto Chapter 4: Dental (Tooth) Anatomy of the Air Force Manual.

The Timeline for Success Study Plan identifies the specific areas of study required for the Comprehensive examination and for each Specialty examination. This Timeline for Success Study Plan recommends eight months of preparation for full-time working candidates seeking to take their Comprehensive exam, who have not had a formal education in Dental Technology.

This time frame would be reduced depending on your knowledge base, your study time available and the exam(s) you wish to take (Specialty written exams require less study).

Using ***Appendix C*** as a guide, a candidate should use the table on the following page to plan and document their studying in an effort to maximize the use of their time and keep them on track as they prepare for their examinations.

Study Plan Tracking Table

# of Weeks Until CDT Examination	Dates Reserved for Studying / Practicing	Time Allotted for Studying/Practicing	Studying Method (clubs/reading/practice)	Notes

____
(Examination Date)

RG/CDT Examination Content

RG/CDT Comprehensive Written Examinations

Both the CDT and RG Comprehensive examinations measure for basic knowledge in dental laboratory technology history, ethics and the various specialty areas. These examinations are written multiple-choice tests. The Comprehensive examination has 160 questions, covering basic dental laboratory knowledge: oral anatomy, tooth morphology, materials science, health & safety, fundamental theory and terminology across all specialties tested by the NBC (Ceramics, Complete Dentures, Crown & Bridge, Implants, Orthodontics & Partial Dentures). Candidates have up to two and one-half (2 1/2) hours to complete the examination; they may use as much or as little of this time as they require.

A detailed breakdown of the contents of the RG/CDT Comprehensive examination can be found in ***Appendix D***. RG/CDT Comprehensive examination practice questions & answers can be found in ***Appendix E***.

The CDT Written Specialty Examinations

The Specialty examination is a requirement for all CDT candidates. This examination tests a candidates' knowledge in his or her chosen specialty area. The Specialty examination consists of eighty (80) multiple-choice questions. Each test item will consist of a question and four (4) possible answers, or an incomplete statement and four (4) possible ways to complete the statement. Of the four possible responses, the candidate must select the best answer. Candidates have up to seventy-five (75) minutes to complete the examination; they may use as much or as little of this time as they require. A breakdown of the contents of each Specialty examination, practice questions & answers are located in ***Appendix F***.

Crown and Bridge - This test general covers preliminary work such as impressions, case evaluation, material and case design, the diagnostic wax-up and custom trays. Additionally, the manufacture of the master case, design and manufacture of patterns, manufacturing methods, finish and polish of the restoration, soldering and welding and selection and application of materials and equipment. Analog and Digital questions are appropriate as identified in ***Appendix F***. All examination content is derived from published references, which can be found in the NBC CDT Application and Handbook located at www.nbccert.org and are also listed in this Study Guide.

Complete Dentures - The written test in this specialty is composed of questions in the areas of: creation of the master cast and custom trays, design and manufacture of record base place and occlusal rim, selection and arrangement of artificial teeth, processing, finishing and polishing the denture, repair and alterations and selection and application of materials and equipment. All examination content is derived from published references, which can be found in the NBC CDT Application and Handbook located at www.nbccert.org and are also listed in this Study Guide.

Ceramics **–** The Ceramics written specialty examination contains content on the following: preliminary work such as impressions, case evaluation, material and case design, the diagnostic wax-up and custom trays. Additionally, it contains questions on the manufacture of the master cast and substructure, ceramic application and contouring and selection and application of materials and equipment. Analog and Digital questions are appropriate as identified in ***Appendix F***. All examination content is derived from published references, which can be found in the NBC CDT Application and Handbook located at www.nbccert.org and are also listed in this Study Guide.

Implants – The written test includes questions on preliminary and diagnostic workup, including differentiating between implant technologies, case design options, osseointegration and biocompatibility, occlusal considerations, contraindications and the manufacture of the guide stent. Additionally, both fixed and removable appliances are included in the Implants examination. These include questions on the removable prosthesis, bar/substructure, screw-retained and removable (hybrid) restorations, cement retained restorations, abutments and the selection and application of materials and equipment. Analog and Digital questions are appropriate as identified in ***Appendix F***. All examination content is derived from published references, which can be found in the NBC CDT Application and Handbook located at www.nbccert.org and are also listed in this Study Guide.

Orthodontics - Emphasis in this examination is on the design and function of orthodontic appliances, including growth and development, orthodontic treatment and appliances, wire components and auxiliaries, acrylics, composites and plastics, soldering and welding and selection and application of materials and equipment. All examination content is derived from published references, which can be found in the NBC CDT Application and Handbook located at www.nbccert.org and are also listed in this Study Guide.

Partial Dentures - Subject matter includes the theory of survey and design; physical properties and correct handling of materials; fabrication procedures and techniques; and the design and use of restorations and appliances normally associated with the Partial Denture specialty. All examination content is derived from published references, which can be found in the NBC CDT Application and Handbook located at www.nbccert.org and are also listed in this Study Guide.

All written examinations require that candidates understand correct terminology in dental technology. Candidates must also demonstrate basic knowledge of industry regulatory controls and regulating bodies; infection control and other health and safety aspects of laboratory operation; the use and maintenance of pertinent laboratory equipment; as well as technical considerations unique to their respective specialty.

The CDT Practical Examinations

For all specialties, four weeks prior to the test date, the NBC will mail candidates full detailed instructions together with molds which are used to prepare examination casts. Included in the candidates' instruction booklets are the complete standards by which their tests will be scored. It is important to keep in mind that the design instructions provided are to be treated as if they were given to you on a doctor's prescription. Do not question the design elements or requirements. Part of your grade is your ability to follow instructions. The entire candidate handbook is considered part of the prescription as examination work specifications are contained throughout the booklet.

All specialties are required to prepare casts for use at the on-site test. In all specialties except Orthodontics, there are several additional preliminary assignments - items which must be either partly or completely fabricated by the candidate in his or her laboratory and must be brought to the test site for further use. All steps in the examination must be performed by the candidate alone, without advice or assistance.

Complete Dentures

In advance of the examination day, candidates must pour and mount casts on semi-adjustable articulators according to NBC instructions. They must then setup and process a complete set of maxillary and mandibular dentures. At the test site, they will:

Make and finish a maxillary custom tray;

- Arrange 1 x 28 anatomical teeth in full balance, using the previously mounted casts;
- Wax and Contour the 1 x 28 setup;
- Make two denture repairs (one tooth replacement and one fracture repair);
- Make a maxillary stabilized baseplate and wax an occlusal rim on it.

Candidates' grades are grouped into three sub-tests. One sub-test consists of the grades on the setup accomplished at the test site; another covers all of the preliminary procedures; and the third includes all other procedures on the examination.

Partial Dentures

The preliminary portion of the Partial Dentures examination requires candidates to pour several sets of casts, survey and design maxillary and mandibular frameworks, make refractory casts and make one chrome partial framework casting, unfinished. At the test site, candidates are instructed to:

- Survey and design, according to given specifications, one maxillary and one mandibular framework and prepare the casts for duplication;
- Weld or solder a wrought wire clasp to a framework that is brought to the test;
- Make wax patterns on two refractory casts fabricated in the preliminary portion of the examination;
- Finish and polish the casting that is brought to the test site.

In the Partial Dentures test, candidates' grades consist of four parts: (1) the preliminary work; (2) design; (3) waxing; and (4) metal work.

Crown & Bridge

In the preliminary part of this test, candidates must pour casts, fabricate individual removable dies and mount their casts on semi-adjustable articulators according to the written instructions. Candidates must fabricate a full contour three-unit metal bridge, which may be fabricated using traditional or digital methods, leaving it unfinished as specified in the written instructions.

At the test site, candidates will:

- wax a substructure.
- wax a full contour three-unit bridge.
- solder/laser weld, finish and polish the segmented 3-unit bridge.

In the Crown & Bridge test, candidates' grades are reported in three parts: (1) the preliminary assignments; (2) the waxing assignments; and (3) the metal work.

Ceramics

In the preliminary part of this test, candidates must pour casts, fabricate individual removable dies and mount their casts on semi-adjustable articulators according to the written instructions. Candidates must fabricate a metal coping and a three unit-substructure using the material of their choice. Coping and substructure may be fabricated using traditional or digital methods and should be finished as specified in the written instructions.

At the test site, candidates are instructed to complete:

- a wax pattern for a veneer.
- a PFM crown with porcelain butt margin.

- a three unit posterior bridge.

In the Ceramics test, candidates' grades are reported in in three parts: (1) the model and die work, metal finishing and waxing steps; (2) the veneer and the PFM crown; and (3) the three unit bridge.

Implants

In the preliminary part of this test, candidates must pour casts, with appropriate soft tissue material, for both fixed and removable tasks according to the written instructions. They will be required to construct a custom abutment which may be fabricated using traditional or digital methods. Candidates are also required to construct a baseplate over attachments and a verification jig to fit a multi-implant situation according to the written instructions.

At the test site, candidates are instructed to complete:

- a full contour wax up over a custom abutment.
- a matrix and a full contour wax up for a screw retained bridge.
- a stable wrap-around bar substructure to fit the provided stent.
- a 1 x 14 set up and wax up over attachments.

In the Implant test, candidates' grades are reported in three parts: (1) the preliminary assignments; (2) the screw retained and cement retained assignments; and (3) the bar design and the 1x14 set up and wax up assignments.

Orthodontics

Prior to the examination, candidates in the Orthodontic specialty need only prepare their casts using the NBC test molds. All other assignments, the fabrication of three appliances, are done at the test site:

- One Hawley-type appliance
- One removable modified mandibular unilateral sagittal appliance
- One fixed mandibular lingual arch.

In the Orthodontic test, candidates' grades are reported in four parts: Each appliance represents one sub-test score and candidates are graded on preliminary work.

Examination Grading and Minimum Passing Scores

Examination grading is not a comparative process. All grades are based on the standard that the NBC believes to represent basic competence in dental technology and in each of the specialty areas represented.

Written Examinations

For the Comprehensive and Specialty examinations, grading is conducted by using the standardized grade sheets completed by the candidates during the examinations. It is important that these grade sheets are completed properly by the candidate in order to ensure accurate grading.

Written examination passing scores are based upon the number of questions answered correctly – scores are not rounded or averaged. The chart below outlines the type of examination and number of

questions as well as the number of questions that must be answered correctly in order to pass, effective January 2017.

IMPORTANT NOTE: Minimum passing scores are subject to change by the NBC. All candidates will receive a copy of the current minimum passing scores with their examination confirmation letter prior to the examination and those scores will supersede the scores shown below.

Type of Written Examination	Number of Questions on Examination	Number of Questions That Must be Answered Correctly
Comprehensive	160	103 = 64%
Recognized Graduate (RG)	160	103 = 64%
Ceramics	80	52 = 65%
Crown & Bridge	80	52 = 65%
Implants	80	53 = 66%
Partial Dentures	80	48 = 60%
Complete Dentures	80	54 = 67%
Orthodontics	80	48 = 60%

Practical Examinations

For the Practical examinations, three (3) NBC Examiners will independently evaluate the work of each candidate. Grade sheets completed by the NBC Examiners, usually at the exam site, are returned to the NBC Headquarters for compilation and determination of all candidates' grades. Because the scores assigned from each of the NBC Examiners are determined individually and because they are compiled for the determination of the final grades, no single NBC Examiner can determine the final grade for any candidate.

There is a list of items to be graded included in the instructions that are shipped to practical examination candidates approximately 30 days prior to their examination date. In determining final grades, each item is weighted according its criticality to the success of the completed appliance or restoration. Candidates will see their score for each item when they receive their grades. Further, each examination is divided into "subtests" representing the different types of skills that are being tested. Each candidate must achieve a passing grade in each of these "subtest" areas during the same examination administration to pass the Practical examination.

Practical examination passing scores are based on the percentage needed in <u>each</u> category (or subtest) area of the specialty examination being taken, not the <u>overall</u> percentage – scores are not rounded or averaged. The chart below outlines the percentages needed in *each* category (or subtest) in order to pass according to specialty.

IMPORTANT NOTE: Minimum passing scores are subject to change by the NBC. All candidates will receive a copy of the current minimum passing scores with their examination confirmation letter prior to the examination and those scores will supersede the scores shown below.

Practical Examination Specialty	Percentage Needed to Pass
Ceramics	68%
Crown & Bridge	69%
Implants	65%
Partial Dentures	68%
Complete Dentures	64%
Orthodontics	69%

Examination Day Tips for Taking the Examinations

Prior to Arrival at the Examination Site

Eat a good breakfast **-** No breaks are provided during the examinations, so be sure to eat enough to keep you going for several hours.

Leave early for the test site **-** Your registration packet will contain your scheduled testing start time. Make sure you depart early enough to arrive by or a little before the scheduled start time.

Don't forget to bring your examination materials **–** All candidates are expected to bring the required materials/equipment as described in his/her registration packet and the examination handbook (for practical examinations). Be sure to review the list of items that you (should have) set out the day before to take with you to the test site.

Illness on examination day **-** If illness or some other emergency prevents you from taking the examination, you must contact the NBC as soon as possible. Please be prepared to provide documentation of your emergency if you want to request rescheduling without fees or penalties.

Arrival at the Examination Site

Checking in **–** Admittance into the test site requires that you present one form of photo identification that includes your signature. An acceptable form of government issued photo identification includes **a driver's license, military ID, or passport**. In addition to the required signed photo identification, all practical examination candidates should be prepared to present the **Candidate Admittance Card** provided by the NBC with their examination registration package. After checking identification, the NBC examination administrator will check the examinee roster for your name and ask for your signature.

Seating arrangements **–** Seating will be assigned by the NBC examination administrator. You are not permitted to choose your own seat. During the written examinations, if you experience a squeaky chair, are seated near a drafty, poorly lit, or otherwise uncomfortable area, you may ask to move. Practical examination candidates taking the examination at their home laboratory will likely be seated at a work space other than their own and should be prepared to sit at an unfamiliar workspace.

Personal Belongings **-** Personal belongings are not permitted in the immediate testing area (such as purses, backpacks, etc.). If you have such personal belongings with you, they will be collected and stored at the front of the classroom.

Instructions and more instructions **-** Written examination candidates can expect to spend at least a few minutes at the beginning of the examination filling in circles on the examination bubble-sheet and listening to the examination proctor review the examination procedures and rules for examinee conduct.

Practical examination candidates can expect to spend the first forty-five (45) minutes finding their assigned seat, unpacking materials and setting up. Instructions usually begin once everyone is settled in. For example, candidates arrive at 7:00 a.m. preliminary instructions will be given to candidates at 7:45 a.m., followed by more instructions at 8:00 a.m. For this example, the actual examination would commence at 8:15 a.m.

Timing devices (Specialty written examinations) **-** Silent timing devices are permitted. It is recommended that you take a watch with you to the examination, since there is no guarantee that there will be a functioning clock in the testing room.

Supervisor announcements concerning remaining time (Specialty written examinations) **-** The proctor will issue one verbal 5-minutes-remaining warning during each examination section. The purpose of this warning is to allow you to adjust your pace so that you can finish the section and fill in all of the bubbles on your answer sheet.

Travel plans (Practical examinations) **–** On examination day, the NBC Examiners usually complete their evaluations in the early evening by 7:00 p.m. Therefore, candidates should book flights home accordingly, in an effort to allow for extra time in case the examination goes past 7:00 p.m. Grading may take more time if (a) there are many candidates or (b) Examiners are joined by an Apprentice Examiner (AE), in training. Please be assured, AE's do not grade or affect candidate's work or testing outcomes.

Completing Written Examinations Answer Sheet

- Answer every question, as there is no penalty for guessing. Providing no answer is the same as providing a wrong answer, so an intelligent guess is a wise choice.
- Mark only one answer for each item. If you enter two answers, you will not receive credit for either of them.
- If you erase an answer, be sure to do so neatly and completely.
- Make no stray marks on the answer sheet. If you need "scratch paper," use the small portion of the admittance card.
- Use only a #2 pencil to fill in the answers for the examination.
- Answers recorded in the test booklet will not be scored.
- Completely blacken in an answer "bubble" for all questions.
- Carefully follow all directions provided for completing the answer sheet.

Examination Results

- Written examination results are mailed within approximately four weeks from the examination date.
- Practical examination results are mailed within approximately six weeks from the examination date.
- Examination results are ***not*** available by phone, fax or email.

When you receive notice of a passing score, you should celebrate and share the good news with your co-workers, employers, family and friends. Send thank you notes to those who supported you along your journey. If this is your third and final passed examination and you have officially earned your certification, you may update your business cards with the CDT designation and should start outlining your plan to acquire the required annual Continuing Education (CE) hours. Your new CDT materials should arrive at your address on file with the NBC within six weeks.

Congratulations on successfully reaching your goal to become a CDT!

If you receive notice that you have failed your examination, try not to be discouraged. Instead, move forward by learning from the examination experience and take time to focus on areas of weakness in preparation for re-testing. Not every candidate passes all of his/her examinations on the first go-round, yet they gone on to be quite skilled CDTs!

Appendix A

Your Career Path to Becoming A CDT

Your Career Path to Becoming a CDT

Use this flowchart to develop your personal path to becoming a Certified Dental Technician (CDT). The National Board for Certification (NBC) is here to help you each step of the way. Contact the NBC at (800) 684-5310 or visit www.nbccert.org to learn more today!

START: Decide you want to become a dental technician.

Education

Graduate from an ADA-Accredited Program for Dental Laboratory Technology or complete the Department of Defense Laboratory Technician course.

Document at least two (2) years of training and/or experience after graduation.

Pass the following exams:
- Written Comprehensive
- Written Speciality
- Practical Exam

From the date of passing the first exam, you have four (4) years to complete the remaining two exams.

Within one (1) year of graduation, pass the Recognized Graduate (RG) Exam.

RG exam can substitute for Written Comprehensive exam.

From the date you earn your RG, you have four (4) years to pass the following exams:
- Written Speciality
- Practical

Experience

(go to page 2)

Graduate from a Non-ADA-Accredited Program for Dental Laboratory Technology.

Within one (1) year of graduation, pass the Recognized Graduate (RG) Exam.

RG exam can substitute for Written Comprehensive exam.

Document at least three (3) years of training and/or experience in dental laboratory technology after graduation.

After earning your RG, you have four (4) years to complete testing.

Pass the following exams:
- Written Specialty
- Practical

BECOME A CDT!

(See "Once You're a CDT on page 2)

All technicians applying for the CDT examination must:

- Have a working knowledge of the English language.
- Be a high school graduate (or the documented equivalent).
- Be of satisfactory ethical and legal standing as defined by the NBC's disciplinary standards.
- Meet the technical prerequisites required for testing.

RG Continuing Education Requirements

In order to maintain your RG status, every year you must earn **6 hours of Continuing Education credits**.

- 1 hour Regulatory Standards
- 5 hours of either Scientific or Professional Development

Your Career Path to Becoming a CDT

continued

Experience

(from page 1)

Document at least five (5) years of training and/or experience in dental laboratory technology.

Includes formal apprenticeships and training courses.

Document continuing education (CE) and experience in accordance with NBC policy as follows:

- At least four (4) years of experience and 75 hours of CE
- At least three (3) years of experience and 150 hours of CE
- At least two (2) years of experience and 225 hours of CE

Continuing education must meet the following criteria:

- A minimum 1/3 of hours must be approved by NBC, ADA CERP or AGD PACE.
- A maximum 1/3 of hours can be claimed through a mentorship program with a CDT, DMD or DDS.
- A maximum 1/3 of hours can be claimed as self-study.

Pass the following exams:

- Written Comprehensive
- Written Speciality
- Practical Exam

From the date of passing the first exam, you have four (4) years to complete the remaining two.

BECOME A CDT!

Once You're a CDT

Maintain Your CDT Designation

In order to maintain your designation, every year you must earn **12 hours of Continuing Education** credits.

- 1 hour Regulatory Standards
- 6 hours Scientific
- 5 hours Professional Development

Become an Examiner:

Apply with the NBC for this position after earning 10 years experience and at least 2 specialities.

Become a Master CDT

Earn the Master CDT status by passing the following exams in 5 out of the 6 specialty areas:

- Written Specialty Exam
- Practical Exam

Apply with NBC for Technologist Designation

- Must have proof of graduation from an ADA-Accredited dental technology program (including military).

  In Addition, You must have one of the following:
- 5 years practical experience and an Associates degree
- 3 years practical experience and a Bachelors degree
- 7 years practical experience

NBC
National Board for Certification in **Dental Laboratory Technology**

325 John Knox Rd., #L103
Tallahassee, FL 32303
(800) 684-5310
www.nbccert.org

Appendix B

Glossary of Prosthodontic Terms

Glossary of Terms

Note: This list is not fully inclusive of all Prosthodontic terms

A

Abrasion
1: the wearing away of a substance or structure (such as the skin or the teeth) through some unusual or abnormal mechanical process 2: an abnormal wearing away of the tooth substance by causes other than mastication—comp ATTRITION, EROSION

Abrasives
A substance used for abrading, smoothing, or polishing

Abutment
1: that part of a structure that directly receives thrust or pressure; an anchorage 2: a tooth, a portion of a tooth, or that portion of a dental implant that serves to support and/or retain a prosthesis—usage see ANGULATED A., HEALING A., DENTAL IMPLANT A., INTERMEDIATE
A., ONE PIECE A., PREPARATION PIECE A., STANDARD A., TWO PIECE A.

Abutment analog
A replica of an abutment usually incorporated within a cast for the fabrication of a prosthesis. See ANALOG.

Abutment Screw
A threaded fastener used to connect an abutment to a dental implant - usually torqued to a final seating position

Accelerator
1: a substance that speeds a chemical reaction 2: in physiology, a nerve, muscle, or substance
that quickens movement or response

Access Hole
The channel in a screw-retained implant prosthesis giving access to the abutment or prosthetic screw, usually through the occlusal or lingual surface of the prosthesis

Acrylic Resin
1: pertaining to polymers of acrylic acid, methacrylic acid, or acrylonitrile; for example, acrylic fibers or acrylic resins
2: any of a group of thermoplastic resins made by polymerizing esters of acrylic or methylmethacrylate acids

All-Ceramic Restoration
See CERAMIC RESTORATION

Alloy
A mixture of two or more metals or metalloids that are mutually soluble in the molten state; distinguished as binary, ternary, quaternary, etc., depending on the number of metals within the mixture. Alloying elements are added to alter the hardness, strength, and toughness of a metallic element, thus obtaining properties not found in a pure metal. Alloys may also be classified on the basis of their behavior when solidified— usage: see BASE METAL, NOBLE METAL

Alveolar Process
The cancellous and compact bony structure that surrounds and supports the teeth

Alveolus
One of the cavities or sockets within the alveolar process of the maxillae or mandible in which
the attachment complex held the root of a tooth after the tooth's removal

Analog (syn Replica)
A replica of an implant abutment or attachment mechanism usually incorporated within a cast for a prosthetic reconstruction

Anterior
1: in front of or the front part; situated in front of 2: the forward or ventral position 3: a term used to denote the incisor or canine teeth or the forward region of the mouth

Anterior Teeth
The maxillary and mandibular incisors and canines

Anteroposterior Curve: the anatomic curve established by the occlusal alignment of the teeth, as projected onto the median plane, beginning with the cusp tip of the mandibular canine and following the buccal cusp tips of the premolar and molar teeth, continuing through the anterior border of the mandibular ramus, ending with the anterior most portion of the mandibular condyle. First described by Ferdinand Graf Spee, German anatomist, in 1890—see CURVE OF SPEE

Anti-Flux
n: materials that prevent or confines solder attachment or flow

Apex
1: the uppermost point; the vertex 2: in dentistry, the anatomic end of a tooth root

Apical
Of, relating to or pertaining to the top or apex

Arch Wires
An orthodontic wire placed intraorally for the application of force

Articulator
n: a mechanical instrument that represents the temporomandibular joints and jaws, to which maxillary and mandibular casts may be attached to simulate some or all mandibular movements—usage: articulators are divisible into four classes.
Class I articulator: a simple holding instrument capable of accepting a single static registration; vertical motion is possible—see NONADJUSTABLE A.
Class II articulator: an instrument that permits horizontal as well as vertical motion but does not orient the motion to the temporomandibular joints.
Class III articulator: an instrument that simulates condylar pathways by using averages or mechanical equivalents for all or part of the motion; these instru- ments allow for orientation of the casts relative to the joints and may be arcon or nonarcon instruments—see SEMI-ADJUSTABLE A.
Class IV articulator: an instrument that will accept three dimensional dynamic registrations; these instruments allow for orientation of the casts to the temporomandibular joints and simulation of mandibular movements—see FULLY ADJUSTABLE A., FULLY ADJUSTABLE GNATHOLOGIC A.

Attachments
1: a mechanical device for the fixation, retention, and stabilization of a prosthesis 2: a retainer consisting of a metal receptacle and a closely fitting part; the former (the female {matrix} component) is usually contained within the normal or expanded contours of the crown of the abutment tooth and the latter (the male {patrix} component), is attached to a pontic or the denture framework—see FRICTIONAL A., INTERNAL A., KEY and KEYWAY A., PARALLEL A., PRECISION A., RESILIENT A., SLOTTED A

Auto-polymerization
A material that polymerizes by chemical reaction without external heat as a result of the addition of an activator and a catalyst

Axial Contour
The shape of a body that is in its long axis

Axis
A line around which a body may rotate or about which a structure would turn if it could revolve—see CONDYLAR A., SAGITTAL A., TRANSVERSE HORIZONTAL A., VERTICAL A.

Axle
A rigid shaft or rod that directs rotary motion

B

Ball Attachment
Extracoronal type of attachment mechanism used to retain an overdenture, consisting of a spherical-shaped abutment and a metal housing

Bar
A connector between two or more dental implants or teeth used to provide retention, stability and/or support to a prosthesis

Bar Clasp
A clasp retainer whose body extends from a major connector or denture base, passing adjacent to the soft tissues and approaching the tooth from a gingivo-occlusal direction

Bar Connector
A metal component of greater length than width that serves to connect the parts of a removable partial denture—usage see LABIAL B.C., LINGUAL B.C., PALATAL B.C.

Bar Overdenture
Removable partial or complete denture, which may be implant-supported or implant-tissue supported; typically connected together with a bar incorporating attachment mechanisms for retention and/or support of the prosthesis

Base
1: The act of placing a lining material under a dental restoration
2: any substance placed under a restoration that blocks out undercuts in the preparation, acts as a thermal or chemical barrier to the pulp, and/or controls the thickness of the overlying restoration—called also base material—usage: adjectives such as insulating b., therapeutic b. may also be used
3: the portion of a denture that supports the artificial dentition and replaces the alveolar structures and gingival tissues—see DENTURE B

Bead-brush Technique: a method of applying an auto polymerizing resin mix to a surface whereby a brush tip is first dipped in liquid monomer and then polymer powder forming a small bead that is incrementally applied to form the desired shape

Bifurcation
1: division into two branches
2: the site where a single structure divides into two parts, as in two roots of a tooth

Bilateral Balanced Articulation
Also termed balanced articulation, the bilateral, simultaneous anterior and posterior occlusal contact of teeth in centric and excentric positions

Bite Plane
see OCCLUSAL PLANE

Bite Plate
see OCCLUSION RIM, RECORD RIM

Block Out
1: elimination of undesirable undercuts on a cast, 2: the process of applying wax or another similar temporary substance to undercut portions of a cast so as to leave only those undercuts essential to the planned construction of a prosthesis. A blocked out cast may also include other surface modifications needed relative to the construction of the prosthesis

Body Porcelain
A porcelain blend used for the bulk of a ceramic restoration—comp INCISAL PORCELAIN, GINGIVAL PORCELAIN

Boil-out
see WAX ELIMINATION

Bonwill's Triangle
[William Gibson Arlington Bonwill, American dentist, 1833-1899]: eponym for a 4 inch equilateral triangle bounded by lines connecting the contact points of the mandibular central incisor's incisal edge (or the mid-line of the mandibular residual ridge) to each condyle (usually its mid point) and from one condyle to the other, first described by Bonwill in 1858 while introducing his Anatomical Articulator Bonwill WGA. Scientific articulation of the human teeth as founded on geometrical, mathematical andmechanical laws. Dental Items Int 1899;21:617-56, 873-80.

Bruxism
1: the parafunctional grinding of teeth 2: an oral habit consisting of involuntary rhythmic or spasmodic nonfunctional gnashing, grinding, or clenching of teeth, in other than chewing movements of the mandible, which may lead to occlusal trauma—called also tooth grinding, occlusal neurosis

Buccal
Pertaining to or adjacent to the cheek

Burnishing
To make shiny or lustrous by rubbing; also to facilitate marginal adaptation of restorations by rubbing the margin with an instrument

Burnout
See WAX ELIMINATION

Burs
A steel or tungsten carbide rotary cutting instrument

C

Canine Protected Articulation
A form of mutually protected articulation in which the vertical and horizontal overlap of the canine teeth disengage the posterior teeth in the excursive movements of the mandible—comp ANTERIOR PROTECTED ARTICULATION

Cantilever Bridge
Slang, see CANTILEVER FIXED DENTAL PROSTHESIS

Cantilever Fixed Dental Prosthesis
A fixed dental prosthesis in which the pontic is cantilevered, i.e., is retained and supported only on one end by one or more abutments

Capsular Ligament
As it relates to the temporomandibular joint, a fibrous structure that separately encapsulates the superior and inferior synovial cavities of the temporomandibular articulation

Castable Abutment

A prefabricated component, with or without a prefabricated cylinder, used to make a custom abutment for a cement-retained or screw-retained prosthesis, by waxing its plastic burnout pattern and subsequently casting the abutment

Cast Clasp
A removable dental prosthesis clasp fabricated by the lost-wax casting process

Cast Metal
The foundation restoration made for a fixed dental prosthesis formed indirectly by lost-wax casting

Casting
1: something that has been cast in a mold; an object formed by the solidification of a fluid that has been poured or injected into a mold
2: the act of forming an object in a mold—see VACUUM C.

Casting Ring
A metal tube in which a refractory mold is made for casting dental restorations

Casting Wax
A composition containing various waxes with desired properties for making wax patterns to be formed into metal castings

Cement Retained
The use of dental cement for the retention of a prosthesis to an abutment, or transmucosal portion of a one-piece dental implant

Cementum
The thin calcified tissue of ectomesenchymal origin that covers the root of a tooth

Central Bearing Tracing
The pattern obtained on the horizontal plate used with a central bearing tracing device

Centric Occlusion
The occlusion of opposing teeth when the mandible is in centric relation; may or may not coincide with the maximal intercuspal position—comp MAXIMAL INTERCUSPAL POSITION

Ceramic
1: of or relating to the manufacture of any product made essentially from a nonmetallic mineral (as clay) by firing at a high temperature
2: the product of ceramic manufacture

Ceramic Crown
A ceramic fixed dental prosthesis that restores a clinical crown without a supporting metal framework

Cervical
1: in anatomy, pertaining to the cervix or neck
2: in dentistry, pertaining to the region at or near the cementoenamel junction

Chamfer
1: a finish line design for tooth preparation in which the gingival aspect meets the external axial surface at an obtuse angle 2: a small groove or furrow 3: the surface found by cutting away the angle of intersection of two faces of a piece of material (i.e., stone, metal, wood): a beveled edge

Chamfer, Chamfered, Chamfering, Chamfers
1: to cut a furrow in 2: to make a chamfer on; to cut or reduce to a chamfer; bevel 3: generally thought

Chroma
1. the purity of a color, or its departure from white or gray 2. the intensity of a distinctive hue; saturation of a hue 3. chrome describes the strength or saturation of the hue (color)—see also SATURATION Munsell AH.Acolor notation. Baltimore:MunsellColor Co. Inc. 1975:14-7.

Cingulum
1: an anatomical band or encircling ridge
2: the lingual lobe of many anterior teeth; a convex protuberance at the lingual cervical one third of the anatomic crown

Clasp
The component of the clasp assembly that engages a portion of the tooth surface and either enters an undercut for retention or remains entirely above the height of contour to act as a reciprocating element. Generally it is used to stabilize and retain a removable dental prosthesis—see BAR C, CIRCUMFERENTIAL C., CLIP, COMBINATION C., CONTINUOUS C.

Complementary Colors
1. two colors that, when mixed together in proper proportions, result in a neutral color. Colored lights that are complementary when mixed in an additive manner form white light and follow the laws of additive color mixture. Colorants that are complementary when mixed together form black or gray and follow the laws of subtractive colorant mixture 2. colors located in directly opposite positions on the color wheel. Colorants that are complementary when mixed together form black or gray and follow the laws of subtractive color

Composite Resin
A highly cross-linked polymeric material reinforced by a dispersion of amorphous silica, glass, crystalline, or organic resin filler particles and/or short fibers bonded to the matrix by a coupling agent

Compounds
Slang; see MODELING PLASTIC IMPRESSION COMPOUND

Condylar Head
See CONDYLE

Condyle
An articular prominence of a bone, i.e., in the mandible, an ellipsoidal projection of bone that articulates with the glenoid fossa—see CONDYLAR PATH, LATERAL CONDYLAR PATH, MANDIBULAR CONDYLE, NECK OF THE CONDYLE

Connectors
1: In removable dental prosthodontics, the portion of a removable dental prosthesis that unites its components—usage: see BAR C., CONTINUOUS BAR C., MAJOR C., MINOR C.
2: In fixed dental prosthodontics, the portion of a fixed dental prosthesis that unites the retainer(s) and pontic(s)—usage: see INTERNAL C., NONRIGID C., RIGID C., SUBOCCLUSAL C.

Contour
1: An outline, especially of a curving or irregular figure: the line representing this outline; the general form or structure of something—usage: see HEIGHT OF CONTOUR, TRANSITIONAL CONTOUR
2: Following contour lines or forming furrows or ridges along them; made to fit the contour of something
3: To shape the contour of; to shape so as to fit contours; to construct in conformity to a contour

Contraction
In muscle physiology, the development of tension in a muscle in response to a stimulus—usage:
see ISOMETRIC C., ISOTONIC C., POSTURAL C.

Coping
A prefabricated or custom component that fits onto a dental implant or abutment

Coronoid Process
The thin triangular rounded eminence originating from the anterosuperior surface of the ramus of the mandible—see HYPERPLASIA OF THE C.P.

Corrosion
The action, process, or effect of corroding; a product of corroding; the loss of elemental constituents to the adjacent environment

Crazing
To produce minute cracks on the surface or glaze of; to develop a mesh of fine cracks

Crest
Refers to the most coronal part of an edentulous ridge

Crown
1: the highest part, as the topmost part of the skull, head or tooth; the summit; that portion of a tooth occlusal to the dentinoenamel junction or an artificial substitute for this
2: an artificial replacement that restores missing tooth structure by surrounding part or all of the remaining structure with a material such as cast metal, porcelain, or a combination of materials such as metal and porcelain
3: to place on the head, as to place a crown on a tooth, dental implant or tooth substitute—usage : implies fabrication of a restoration for a tooth on a natural tooth, dental implant and/or dental implant abutment

Crucible Formers/Sprue Base
The base to which a sprue former is attached while the wax pattern is being invested in refractory investment; a convex rubber, plastic, or metal base that forms a concave depression or crucible in the refractory investment

Crucibles
A vessel or container made of any refractory material (frequently porcelain) used for melting or calcining any substance that requires a high degree of heat

Curing
See POLYMERIZE

Curve of Spee
[Ferdinand Graf Spee, Prosector of Anatomy, Kiel, Germany, 1855-1937]: eponym for ANTEROPOSTERIOR CURVE Spee FG. Die Verschiebrangsbahn des Unterkiefers am Schadell. Arch Anat Physiol (Leipz) 1890;16:285-94.

Curve of Wilson
[George H. Wilson, Cleveland, Ohio, U.S. dentist, 1855-1922] 1: eponym for the MEDIOLATERAL CURVE 2: in the theory that occlusion should be spherical, the curvature of the cusps as projected on the frontal plane expressed in both arches; the curve in the lower arch being concave and the one in the upper arch being convex. The curvature in the lower arch is affected by an equal lingual inclination of the right and left molars so that the tip points of the corresponding cross-aligned cusps can be placed into the circumferences of a circle. The transverse cuspal curvature of the upper teeth is affected by the equal buccal inclinations of their long axes Wilson GH. A manual of dental prosthetics. Philadelphia Lea & Febiger, 1911:22-37.

Cusp
Cone-shaped protuberance on the crown of a tooth that forms the occlusal surface

Cusp-fossa Articulation Scheme
An occlusal arrangement where the maxillary and mandibular centric cusps articulate with the opposing fossae in maximum intercuspation

Cuspid Rise
See CANINE PROTECTED ARTICULATION

Custom Abutment
A custom component created for a specific clinical situation, which can be generated by casting a waxed Castable abutment or by CAD/CAM

Custom Impression Tray
An individualized impression tray made from a cast recovered from a preliminary impression. It is used in making a final impression

D

Davis Crown
[Wallace Clyde Davis, Lincoln, Nebraska, U.S. dentist (1866-1950)] obs : eponym for a dental restoration supported by a dowel in the root canal over which was cemented a porcelain tube tooth in direct contact with the root face of the tooth. A later modification involved a gold casting that improved the fit between the root and artificial tooth Davis WC. Essentials of operative dentistry. 1st ed. Lincoln, Neb.: Author as publisher, 1911.

Deciduous Dentition
See PRIMARY DENTITION

Definitive Cast
A replica of the tooth surfaces, residual ridge areas, and/or other parts of the dental arch and/or facial structures used to fabricate a dental restoration or prosthesis; called also final cast

Dental Arch
The composite structure of the natural teeth and alveolar bone

Dental Casting Investment
A material consisting principally of an allotrope of silica and a bonding agent. The bonding substance may be gypsum (for use in lower casting temperatures) or phosphates and silica (for use in higher casting temperatures)

Dental Implant
A biocompatible device placed within, or on, the bone of the maxilla or mandible to provide support for a prosthetic reconstruction

Dental Plaster
The beta-form of calcium sulfate hemihydrate. It is a fibrous aggregate of fine crystals with capillary pores that are irregular in shape and porous in character

Dental Stone
The alpha-form of calcium sulfate hemihydrate with physical properties superior to the beta-form (dental plaster). The alpha-form consists of cleavage fragments and crystals in the form of rods or prisms, and is therefore more dense than the beta-form

Dentin
A calcareous material similar to but harder and denser than bone that comprises the principle mass of the tooth

Denture Base
The part of a denture that rests on the foundation tissues and to which teeth are attached—usage: see TINTED D.B.

Diagnostic Wax-Up
Procedure in which teeth are created in wax according to the planned restoration/prescription that may be used to evaluate the feasibility of a proposed plan and to fabricate a radiographic template, a surgical guide or laboratory guides

Die
The positive reproduction of the form of a prepared tooth in any suitable substance

Distal
Remote; farther from the point of reference; away from the median sagittal plane of the face following the curvature of the dental arch

Dowel
A post usually made of metal that is fitted into a prepared root canal of a natural tooth. When combined with an artificial crown or core, it provides retention and resistance for the restoration— See POST

Draw
The taper or convergence of walls of a preparation for a restoration; slang—DRAFT, DRAUGHT

Ductility
The ability of a material to withstand permanent deformation under a tensile load without rupture; ability of a material to be plastically strained in tension. A material is brittle if it does not have appreciable plastic deformation in tension before rupture

E

Eccentric Checkbite
See ECCENTRIC INTEROCCLUSAL RECORD

Eccentric Interocclusal Record
A registration of any maxillomandibular position other than centric relationship

Elastic
Susceptible to being stretched, compressed, or distorted and then tending to resume the original shape

Elasticity
The quality that allows a structure or material to return to its original form on removal of an external force—see MODULUS OF E.

Elastomeric Materials
A polymer whose glass transition temperature is below its service temperature (usually room temperature). These materials are characterized by low stiffness and extremely large elastic strains

Elastomeric Impression Material
A group of flexible chemical polymers which are either chemically or physically cross-linked. Generally, they can be easily stretched and rapidly recover their original dimensions when applied stresses are released

Electroplating
The process of covering the surface of an object with a thin coating of metal by means of electrolysis

Electro-polishing
The electrolytic removal of a thin layer of metal to produce a bright surface

Embrasures
1: the space formed when adjacent surfaces flair away from one another 2: in dentistry, the space defined by surfaces of two adjacent teeth; there are four embrasure spaces associated with each proximal contact area: occlusal/incisal, mesial, distal, and gingival

Emergence Profile

The part of the axial contour of a tooth or crown that extends from the base of the sulcus past the free soft tissue margin

Enamel
In dentistry, the hard, thin, translucent layer of calcified substance that envelopes and protects the dentin of the coronal aspect of the tooth; it is the hardest substance in the body—called also adamantine layer enamel projection: an apical extension of enamel, usually toward a furcation
in the roots

Endogenous Infection
An infection developing or originating within the organism

Equilibration
1: the act or acts of placing a body in a state of equilibrium 2: the state or condition of being
in equilibrium—usage: see MANDIBULAR E., OCCLUSAL E.

Esthetic Reshaping
The physical modification of the surfaces of teeth to improve appearance

Expansion Prosthesis
A maxillofacial prosthesis used to expand the lateral segment of the maxilla in a unilateral or bilateral cleft of the soft and hard palates and alveolar processes

Extra Coronal Attachments
Any prefabricated attachment for support and retention of a removable dental prosthesis. The male and female components are positioned outside the normal contour of the abutment tooth—see INTRACORONAL ATTACHMENT, PRECISION ATTACHMENT

Extrusion
The movement of teeth beyond the natural occlusal plane that may be accompanied by a similar movement of their supporting tissues

F

Face Bow
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 cast in the same relationship to the opening axis of the articulator. Customarily the anatomic references are the mandibular condyles transverse horizontal axis and one other selected anterior point; called also hinge bow—see EARBOW, KINEMATIC F.

Facings
A veneer of any restorative material used on a natural tooth or prosthesis as a restoration to simulate a natural tooth

Final Flask Closure
The last closure of a dental flask before polymerizing, after trial packing of the mold with a restorative material

Fineness
The proportion of pure gold in a gold alloy; the parts per 1000 of gold

Finishing
To put a final coat or surface on; the refinement of form prior to polishing

Fixed Bridge
See FIXED DENTAL PROSTHESIS

Fixed Dental Prosthesis
Any dental prosthesis that is luted, screwed or mechanically attached or otherwise securely retained to natural teeth, tooth roots, and/or dental implant abutments that furnish the primary support for the dental prosthesis. This may include replacement of one to sixteen teeth in each dental arch. If a metallic or ceramic component is included within the fixed dental prosthesis, that component is termed the framework. Ed note: Dental prostheses (fixed dental prostheses, removable dental prostheses) as well as maxillofacial prostheses can be supported and retained in part or whole by dental implants. Terminology to assist in describing the means of retention, support and dental materials should be limited to concatenation of three and no more than four adjectives to provide clarity. Descriptive terminology (modifiers) expressed as adjectives to each fixed dental prosthesis may include such items as the method of retention, composition, nature of support, design characteristics, and/or form of anchorage Simon H, Yanase RT. Terminology for Implant Prostheses. Int J Oral Maxillofac Implants 2003;18:539-43.

Fixed Prosthodontics
The branch of prosthodontics concerned with the replacement and/or restoration of teeth by artificial substitutes that not readily removed from the mouth

Flasking
1: the act of investing in a flask 2: the process of investing the cast and a wax replica of the desired form in a flask preparatory to molding the restorative material into the desired product

Flux
1: in physics, the rate of flow of a liquid, particles or energy 2: in ceramics, an agent that lowers the fusion temperature of porcelain 3: in metallurgy, a substance used to increase fluidity and to prevent or reduce oxidation of a molten metal 4: any substance applied to surfaces to be joined by brazing, soldering or welding to clean and free them from oxides and promote union

Fossa
An anatomical pit, groove, or depression

Fractures
1: the process or act of breaking; state of being broken—see AVULSION F., BLOWOUT F., CEMENTUM F., CLOSED REDUCTION OF A F., COMMINUTED F., COMPLICATED F., DISLOCATED F., FISSURED F., GREENSTICK F., GUERIN'S F., IMPACTED F., INDIRECT F., INTRACAPSULAR F., MIDFACIAL F., OPEN F., PYRAMIDAL F., ROOT F., SECONDARY F., SIMPLE F., SPONTANEOUS F., SUBCONDYLAR F., SUBPERIOSTEAL F.
2: to cause a fracture in; to break, rupture, or tear

Fritting
1: to prepare substances for glass by heating; to fuse 2: to convert into a frit

Fully Adjustable Articulator
An articulator that allows replication of three dimensional movement of recorded mandibular motion—called also Class IV articulator

G

Gingiva
The fibrous investing tissue, covered by epithelium, which immediately surrounds a tooth and is contiguous with its periodontal membrane and with the mucosal tissues of the mouth—see ATTACHED G., FREE G., MARGINAL G.

Gingival Crevice
A shallow fissure between the marginal gingiva and the enamel or cementum. It is bounded by the tooth surface on one side, the crevicular epithelium on the other, and the coronal end of the junctional epithelium at its most apical point—called also gingival sulcus

Glaze

1: to cover with a glossy, smooth surface or coating 2: the attainment of a smooth and reflective surface 3: the final firing of porcelain in which the surface is vitrified and a high gloss is imparted to the material 4: a ceramic veneer on a dental porcelain restoration after it has been fired, producing a nonporous, glossy or semi-glossy surface—see NATURAL G., OVERGLAZE

Glenoid Fossa
The concavity in the temporal bone by the zygomatic arch that receives the mandibular condyle

Gothic Arch Tracing
See CENTRAL BEARING TRACING

Gypsum
The natural hydrated form of calcium sulfonate, CaSO4 2H2O gypsum dehydrate

H

Habitual Occlusion
See MAXIMAL INTERCUSPAL POSITION

High Noble Metal Alloy
As classified by the American Dental Association (1984) any dental casting alloy with at least 60% noble metal (Au, Pt, Pd, Rh, Ru, Ir, Os) by weight with at least 40% gold American Dental Association: Classification system for cast alloys. J Am Dent Assoc 1984;109:766.

Horizontal Axis Grain Structure of the Mandible
See TRANSVERSE HORIZONTAL AXIS

Housing
Attachment mechanism incorporated into a removable prosthesis. The interchangeable retentive component is inserted in the housing and replaced when needed

Hue
Often referred to as the basic color, hue is the quality of sensation according to which an observer is aware of the varying wavelengths of radiant energy. The dimension of color dictated by the wavelength of the stimulus that is used to distinguish one family of color from another—as red, green, blue, etc. The attribute of color by means of which a color is perceived to be red,
yellow, green, blue, purple, etc. White, black, and grays possess no hue Munsell AH. A color notation. Baltimore: Munsell Color Co. Inc, 1975: 14-6.

Hygroscopic Expansion
Expansion due to the absorption of moisture

I

Implant Abutment Interface
The surface where the dental implant and the prosthetic abutment connect

Impression
A negative likeness or copy in reverse of the surface of an object; an imprint of the teeth and adjacent structures for use in dentistry—see ALTERED CAST PARTIAL DENTURE I., DENTAL I., DIRECT BONE I., I. AREA, I. MATERIAL, I. TRAY, MASTER I., PARTIAL DENTURE I., PRELIMINARY I., SECTIONAL I., TUBE I.

Impression Coping
A device that registers the position of an implant or abutment in an impression

Inclined Plane
Any of the inclined cuspal surfaces of a tooth

Infra Bulge
That portion of the crown of a tooth apical to the survey line

Ingot
1: a mold in which metal is cast 2: a mass of metal cast into a shape convenient for storage and measure that can be re melted for later casting

Inlay
A fixed intracoronal restoration; a dental restoration made outside of a tooth to correspond to the form of the prepared cavity, which is then luted into the tooth

Inlay Wax
See CASTING WAX

Interocclusal Distance
The distance between the occluding surfaces of the maxillary and mandibular teeth when the mandible is in a specified position

Interproximal Contact
The area of a tooth that is in close association, connection, or touch with an adjacent tooth in the same arch

Interproximal Spaces
The space between adjacent teeth in a dental arch. It is divided into the embrasure space, occlusal to the contact point, and the septal space, gingival to the contact point

Intra Coronal Attachments
Any prefabricated attachment for support and retention of a removable dental prosthesis. The male and female components are positioned within the normal contour of the abutment tooth—see EXTRACORONAL ATTACHMENT, PRECISION ATTACHMENT

Investing
The process of covering or enveloping, wholly or in part, an object such as a denture, tooth, wax form, crown, etc. with a suitable investment material before processing, soldering, or casting

Investments
See DENTAL CASTING I., REFRACTORY I.

Irreversible Hydrocolloids
A hydrocolloid consisting of a sol of alginic acid having a physical state that is changed by an irreversible chemical reaction forming insoluble calcium alginate— called also alginate, dental alginate

J

Jacket Crown
See CERAMIC CROWN, RESIN CROWN

L

Labial
1: of or pertaining to the lip 2: toward the lip

Lapping Tool
Instrument used with a handpiece on the apical end of an abutment to remove the uneven surface produced during the casting process

Lateral Movement
A movement from either right or left of the midsagittal plane (GPT-4)

Line Angle
The point of convergence of two planes in a cavity preparation

Lingual
Pertaining to the tongue; next to or toward the tongue

M

Malocclusion
1: any deviation from a physiologically acceptable contact between the opposing dental arches 2: any deviation from a normal occlusion—see ANGLE'S CLASSIFICATION OF OCCLUSION

Mamelons
One of three tubercles sometimes found on the incisal edges of incisor teeth

Mandible
The lower jawbone

Mandibular
Of or pertaining to the mandible

Marginal Ridge
A component of the tooth structure forming the occlusal proximal margin of a premolar or molar

Margins
The outer edge of a crown, inlay, onlay, or other restoration. The boundary surface of a tooth preparation and/or restoration is termed the finish line or finish curve

Maryland Bridge
See RESIN-BONDED PROSTHESIS. Livaditis, GJ, Thompson, VP: Etched castings: an improved retentive mechanism for resin-bonded retainers JPD 1982; 47-52

Master Cast
See DEFINITIVE CAST

Mastication
The process of chewing food for swallowing and digestion

Matrix
Aids in the reinforcement and development of tissues by supplying a platform on which cells may grow

Maxilla
The irregularly shaped bone that, with its contralateral maxilla, forms the upper jaw. It assists in the formation of the orbit, the nasal cavity, and the hard palate; it contains the maxillary teeth

Maximal Intercuspal Position

The complete intercuspation of the opposing teeth independent of condylar position, sometimes referred to as the best fit of the teeth regardless of the condylar position—called also maximal intercuspation—comp CENTRIC OCCLUSION

Mesial
Near or toward the centerline of the dental arch; toward the median sagittal plane of the face, following the curvature of the dental arch

Minor Connectors
The connecting link between the major connector or base of a partial removable dental prosthesis and the other units of the prosthesis, such as the clasp assembly, indirect retainers, occlusal rests, or cingulum rests

Modeling Plastic Impression Compound
A thermoplastic dental impression material composed of wax, rosin, resins, and colorants

Monomer
A chemical compound that can undergo polymerization; any molecule that can be bound to a similar molecule to form a polymer

Mutually Protected Occlusion
See MUTUALLY PROTECTED ARTICULATION

Mutually Protected Articulation
An occlusal scheme in which the posterior teeth prevent excessive contact of the anterior teeth in maximum intercuspation, and the anterior teeth disengage the posterior teeth in all mandibular excursive movements. Alternatively, an occlusal scheme in which the anterior teeth disengage the posterior teeth in all mandibular excursive movements, and the posterior teeth prevent excessive contact of the anterior teeth in maximum intercuspation

N

Noble Metal
Those metal elements that resist oxidation, tarnish, and corrosion during heating, casting, or soldering and when used intraorally; examples include gold and platinum—comp BASE METAL

Non-Engaging
Feature of a dental implant that does not incorporate an anti-rotational mechanical design

Nonhexed
A dental implant without a hexagonal connection interface

O

Oblique Ridge
The elevation in the enamel that runs obliquely across the occlusal surface of a maxillary molar

Obturators
1. A maxillofacial prosthesis used to close a congenital or acquired tissue opening, primarily of the hard palate and/or contiguous alveolar/soft tissue structures (GPT7)
2. That component of a prosthesis which fits into and closes a defect within the oral cavity or other body defect
3. A maxillofacial prosthesis used to close, cover or maintain the integrity of the oral and nasal compartments resulting from a congenital, acquired or developmental disease process, i.e., cancer, cleft palate, osteoradionecrosis of the palate. The prosthesis facilitates speech and deglutition by replacing those tissues lost due to the disease

process and can, as a result, reduce nasal regurgitation and hypernasal speech, improve articulation, deglutition and mastication. An obturator prosthesis is classified as surgical, interim or definitive and reflects the intervention time period used in the maxillofacial rehabilitation of the patient. Prosthetic restoration of a defect often includes use of a surgical obturator, interim obturator, and definitive obturator —see DEFINITIVE O., INTERIM O., SURGICAL O.—comp SPEECH AID PROSTHESIS

Occlusal Harmony
A condition in centric and eccentric jaw relation in which there are no interceptive or deflective contacts of occluding surfaces (GPT-4)

Occlusal Plane
1: the average plane established by
the incisal and occlusal surfaces of the teeth. Generally, it is not a
plane but represents the planar mean of the curvature of these surfaces
2: the surface of wax occlusion rims contoured to guide in the
arrangement of denture teeth 3: a flat metallic plate used in arranging
denture teeth—comp to CURVE OF OCCLUSION

Occlusion
1: the act or process of closure or of being closed or shut off 2: the static relationship between the incising or masticating surfaces of the maxillary or mandibular teeth or tooth analogues—see CENTRIC O., COMPONENTS OF O., ECCENTRIC O., LINE OF O., LINEAR O., MONOPLANE O., PATHOGENIC O., SPHERICAL FORM OF O. —comp ARTICULATION

Occlusion Rims
Occluding surfaces fabricated on interim or final denture bases for the purpose of making maxillomandibular relation records and arranging teeth—called also record rim

One-Piece Abutment
An abutment that connection to a dental implant without the use of an additional retaining screw

Onlay
A restoration that restores one or more cusps and adjoining occlusal surfaces or the entire occlusal surface and is retained by mechanical or adhesive means

Overdentures
Any removable dental prosthesis that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants; a dental prosthesis that covers and is partially supported by natural teeth, natural tooth roots, and/or dental implants ___ called also overlay denture, overlay prosthesis, superimposed prosthesis

P

Packing
The act of filling a mold—see DENTURE P.

Palatal Expansion
The lateral movement of the maxillae to increase palatal width

Passive Fit
Adaptation of a prosthetic reconstruction that does not induce strain between two or more supporting elements

Pathogenic Occlusion
An occlusal relationship capable of producing pathologic changes in the stomatognathic system

Permanent Dentition
The teeth that erupt after the primary dentition that do not shed under normal Conditions

Pickling
To treat, preserve, or clean in or with an agent

Pier
An intermediate abutment for a fixed dental prosthesis

Plaster
A paste-like composition (usually of water, lime, and sand) that hardens on drying and is used for coating walls, ceilings, and partitions—slang: in dentistry, a colloquial term applied to dental plaster of paris

Point Angle
In the development of a cavity preparation, that place of convergence of three planes or surfaces—comp LINE ANGLE

Polishing
1: To make smooth and glossy, usually by friction; to give luster to (GPT-1) 2: The act or process of making a denture or casting smooth and glossy (GPT-1)

Polishing Agents
Any material used to impart luster to a surface

Polymer
A chemical compound consisting of large organic molecules built by repetition of smaller monomeric units

Polymerize
To effect a chemical reaction by joining together individual molecules to form large molecules made up of many repeated units

Polysulfide
An elastomeric impression material of polysulfide polymer (mercaptan) that cross-links under the influence of oxidizing agents such as lead peroxide

Pontic
An artificial tooth on a fixed dental prosthesis that replaces a missing natural tooth, restores its function, and usually fills the space previously occupied by the clinical crown

Porcelain
A ceramic material formed of infusible elements joined by lower fusing materials. Most dental porcelains are glasses and are used in the fabrication of teeth for dentures, pontics and facings, metal ceramic restorations including fixed dental prostheses, as well as all-ceramic restorations such as crowns, laminate veneers, inlays, onlays, and other restorations

Porcelain Jacket Crown
See ALL-CERAMIC RESTORATION

Porosity
1: The presence of voids or pores within a structure 2: the state or quality of having minute pores, openings or interstices—see BACK PRESSURE P., OCCLUDED GAS P., SHRINK-SPOT P., SOLIDIFICATION P.

Post Crown
A restoration in which the crown and cast post are one unit

Posterior
1: situated behind or in back of; caudal 2: in human anatomy, dorsal

Posterior Palatal Seals
See POSTPALATAL SEAL

Postpalatal Seal
The seal area at the posterior border of a maxillary removable dental prosthesis

Prefabricated Cylinder
Connected to a dental implant or abutment and is cast, using a compatible alloy, to form a custom abutment for a fixed prosthesis

Primary Colors
Three basic colors used to make most other colors by mixture, either additive mixture of lights or subtractive mixture of colorants

Primary Dentition
The teeth that erupt first and are normally shed and replaced by permanent (succedaneous) teeth—syn DECIDUOUS DENTITION

Proprioception
The reception of stimulation of sensory nerve terminals within the tissues of the body that give information concerning movements and the position of the body; perception mediated by proprioceptors

Prosthesis
1: an artificial replacement of an absent part of the human body 2: a therapeutic device to improve or alter function 3: a device used to aid in accomplishing a desired surgical result Editorial note: The taxonomy of the word prostheses is as complex as are the varieties of items made by humans for any utilitarian purpose. While classification of botanical or zoological species can be relatively precise due to the common nature of genetic derivation (including descriptions of genetic alterations), such is not the case with respect to many things made by humans. One has only to think about the range of forms used in the course of human history classified as "items of transportation" to be convinced of the complexity and frequently transient nature of such a mode as the automobile! With respect to dentistry, the noun prosthesis generally is described first by a type adjective (dental, maxillofacial or ancillary) (Figs. 1-4) and frequently second by use of one or more additional adjectives (termed modifiers) to clarify such matters as anatomic location, form, materials, means of retention, support, time of usage, or other items. Using coordinate adjectives (two or more adjectives separated by a comma, instead of by coordinating conjunctions) to assist in further description of the prosthesis is helpful but should generally be limited to three or at most four for convenience in maintaining understanding of the noun prosthesis. Frequently,an adjective clause, descriptor. Can be used following the word prosthesis to help clarify such issues as the nature of the support [i.e. tooth number(s), dental implant number(s)] available for the prosthesis. A descriptor is something (a word, phrase or characteristic feature) that serves to identify or describe; especially a word or phrase (as an index term) used to identify an item in an information retrieval system. Use of acronyms to describe a prosthesis is to be discouraged since such descriptors do not transfer between languages and thus can be easily misunderstood. THE JOURNAL OF PROSTHETIC DENTISTRY THE ACADEMY OF PROSTHODONTICS premature contact d prosthesis 64

Prosthodontics
Prosthodontics is the dental specialty pertaining to the diagnosis, treatment planning, rehabilitation and maintenance of the oral function, comfort, appearance and health of patients with clinical conditions associated with missing or deficient teeth and/or maxillofacial tissues using biocompatible substitutes—see FIXED PROSTHODONTICS, IMPLANT PROSTHODONTICS, MAXILLOFACIAL PROSTHETICS, REMOVABLE PROSTHODONTICS

Protrusion
A position of the mandible anterior to centric relation - see LATEROPROTRUSION

Protrusive Occlusion
An occlusion of the teeth when the mandible is protruded (GPT-4)

Proximal
1: situated close to 2: next to or nearest the point of attachment or origin, a central point especially, located toward the center of a body—comp DISTAL

Proximal Contact Area
See INTERPROXIMAL CONTACT

Pulp
The richly vascularized connective tissue of mesodermal origin with much innervation contained in the central cavity of the tooth

Q

Quadrants
1: any of the four quarters into which something is divided by two real or imaginary lines that intersect each other at right angles 2: in dentistry, one of the four sections of the dental arches, divided at the midline – see also SEXTANT, OCTANT

R

Rebase
The laboratory process of replacing the entire denture base material on an existing prosthesis

Record Base (Baseplates)
An interim denture base used to support the record rim material for recording maxillomandibular records

Record Rim
The occlusal surfaces fabricated on a record base for the purpose of making maxillomandibular relationship records and/or arranging teeth—called also occlusion rim

Refractory Investment
An investment material that can withstand the high temperatures used in soldering or casting

Removable Dental Prosthesis
1: any dental prosthesis that replaces some or all teeth in a partially dentate arch (partial removable dental prostheses) or edentate arch (complete removable dental prostheses). It can be removed from the mouth and replaced at will, 2: any dental prosthesis that can be readily inserted and removed by the patient. The means of retention for such prostheses include tissue retained RDP, tooth retained RDP, implant retained RDP or tooth and implant retained RDP. Editorial Note: examples of tissue retained removable dental prostheses include complete removable dental prostheses, interim prostheses and provisional prostheses devoid of any attachment to natural teeth; tooth retained partial removable dental prostheses include interim and definitive partial removable dental prostheses retained by clasps or/and other connector devices to natural teeth or/and dental implants

Resin-Bonded Prosthesis
A fixed dental prosthesis that is luted to tooth structures, primarily enamel, which has been etched to provide mechanical retention for the resin cement. Early design incorporated perforations on the lingual plate (Rochette Bridge) through which the resin bonded material passed to achieve a mechanical lock; subsequently, use of acid etching of the metal plate (Maryland Bridge) eliminated the need for perforations. Rochette, Alain L. Attachment of a splint to enamel of lower anterior teeth. J Pros Dent 1973; 30: 418-423. Livaditis, GJ, Thompson, VP.: Etched castings: an improved retentive mechanism for resin-bonded retainers J Pros Dent 1982; 47-52

Resin Crown
A resin restoration that restores a clinical crown without a metal substructure

Resin
1: any of various solid or semisolid amorphous natural organic substances that usually are transparent or translucent and brown to yellow; usually formed in plant secretions; are
soluble in organic solvents but not water; are used chiefly in varnishes, inks, plastics, and medicine; and are found in many dental impression materials 2: a broad term used to describe natural or synthetic substances that form plastic materials after polymerization. They are named according to their chemical composition, physical structure, and means for activation of polymerization—see AUTOPOLYMERIZING R., COPOLYMER R.

Resorption
The loss of tissue substance by physiologic or pathologic processes—see ALVEOLAR
RESORPTION

Retainer
Any type of device used for the stabilization or retention of a prosthesis—see DIRECT R., FIXED
PARTIAL DENTURE R., INDIRECT R.

Retentive Clasp
1: a clasp specifically designed to provide retention by engaging an undercut 2: a flexible segment of a partial removable dental prosthesis that engages an undercut on an abutment and that is designed to retain the prosthesis

Retrusion
Movement toward the posterior

Reversible Hydrocolloids
Colloidal gels in which the gelation is brought about by cooling and can be returned to the sol condition when the temperature is sufficiently increased

Richmond Crown
Richmond crown [C.M. Richmond, U.S. dentist (1835-1902)] obs 1: a dowel-retained crown made for an endodontically treated tooth using a porcelain facing 2: an artificial crown consisting of a metal base that fits the prepared abutment of the natural tooth and carries a post or pivot for insertion into the endodontically treated root canal: a porcelain facing reinforces the metal backing—called also porcelain-faced dowel crown Richmond CM. New method of attaching gold crowns to natural roots of teeth. Am J Dent Sci 1878-79;12:425.

Ridge-lap
The surface of an artificial tooth that has been shaped to accommodate the residual ridge. The tissue surface of a ridge lap design is concave and envelops both the buccal and lingual surfaces
of the residual ridge

Rigid Connector
A cast, soldered, or fused union between the retainer(s) and pontic(s)

Root
The portion of the tooth apical to the cementoenamel junction that is normally covered by cementum and is attached to the periodontal ligament and hence to the supporting bone

S

Saddle
See DENTURE BASE

Sagittals
Situated in the plane of the cranial sagittal suture or parallel to that plane—usage: see SAGITTAL PLANE

Sagittal Plane
Sny vertical plane or section parallel to the median plane of the body that divides a body into right and left portions

Semi-adjustable Articulator
An articulator that allows adjustment to replicate average mandibular movements—called also Class III articulator

Separating Medium
1: a coating applied to a surface and serving to prevent a second surface from adhering to the first 2: a material, usually applied on an impression, to facilitate removal of the cast

Shade
A term used to describe a particular hue, or variation of a primary hue, such as a greenish shade of yellow 2: a term used to describe a mixture with black (or gray) as opposed to a tint that is a mixture with white—see TOOTH COLOR SELECTION

Shim Stock
A thin (8-12 micrometer) strip of polyester film used to identify the presence or absence of occlusal or proximal contacts

Soft Tissue Cast
A cast with the implant laboratory analog surrounded by a mucosa simulating material

Solder
1: A fusible metal alloy used to unite the edges or surfaces of two pieces of metal; something that unites or cements
2: To unite, bring into, or restore to a firm union; the act of uniting two pieces of metal by the proper alloy of metals

Spatulation
The manipulation of material with a spatula to produce a homogenous mass

Spring Plate
According to James Harrison Prothero, DDS, Emeritus Professor of Prosthetic Dentistry and Metallurgy at Northwestern University Dental School, Chicago, IL, "a spring plate was a denture molded over the cast of a mouth with teeth bearing the relation to each other as stated (ed. note: providing lingual undercuts), which would spring as it passes over the points of nearest approach of the teeth involved and resume its normal width without undue lateral pressure when firmly seated on the oral tissues"— called also spring lock bridge

Sprue
1: the channel or hole through which plastic or metal is poured or cast into a gate or reservoir and then into a mold
2: the cast metal or plastic that connects a casting to the residual sprue button

Sterilization
The process of completely eliminating microbial viability

Stock Tray
A metal prefabricated impression tray typically available in various sizes and used principally for preliminary impressions—comp CUSTOM TRAY

Stone
See DENTAL STONE

Strain
Change in length per unit length when stress is applied; the change in length/original length

Stress
Force per unit area; a force exerted on one body that presses on, pulls on, pushes against, or tends to invest or compress another body; the deformation caused in a body by such a force; an internal force that resists an externally applied load or force. It is normally defined in terms of mechanical stress, which is the force divided by the perpendicular cross sectional area over
which the force is applied—see COMPRESSIVE S., SHEARING S., TENSILE S.

Subluxation
An incomplete or partial dislocation that is self-reducing— see CONDYLAR SUBLUXATION

Surfactant
A surface active substance (as a detergent) applied to a substrate to facilitate its wetting by another material

Sulcus
See GINGIVAL CREVICE

Supra Bulge
That portion of a tooth or crown that converges toward the occlusal surface, i.e., above the height of contour

Surgical Guide
A guide created from the diagnostic wax-up used to assist in preparation for and placement of dental implants

Synovial Fluid
A viscid fluid contained in joint cavities and secreted by the synovial membrane

Synovial Membrane
The articular membrane composed of specialized endothelial cells capable of producing synovial fluid filling the joint cavity surrounded by the membrane

T

Thermal Expansion
Expansion of a material caused by heat

TMJ (temporomandibular joint)
1: the articulation between the temporal bone and the mandible. It is a bilateral
diarthrodial, bilateral ginglymoid joint 2: the articulation of the condylar process of the mandible and the intraarticular disk with the mandibular fossa of the squamous portion of the temporal
bone; a diarthrodial, sliding hinge (ginglymus) joint. Movement in the upper joint compartment is mostly translational, whereas that in the lower joint compartment is mostly rotational. The joint
connects the mandibular condyle to the articular fossa of the temporal bone with the temporomandibular disk interposed

Translucency
Having the appearance between complete opacity and complete transparency; partially
opaque

Transverse Horizontal Axis
An imaginary line around which the mandible may rotate within the sagittal plane

Tubercles
A small bony prominence or excrescence; a nodule

Two-Piece Abutment
An abutment that connects to a dental implant with the use of an abutment screw

U

Undercut
1: the portion of the surface of an object that is below the height of contour in relationship to the path of placement 2: the contour of a cross-sectional portion of a residual ridge or dental arch that prevents the insertion of a dental prosthesis 3: any irregularity in the wall of a prepared tooth that prevents the withdrawal or seating of a wax pattern or casting 4: To create areas that provide mechanical retention for materials placement

V

Value
The quality by which a light color is distinguished from a dark color, the dimension of a color that denotes relative blackness or whiteness (grayness, brightness). Value is the only dimension of color that may exist alone—see MUNSELL VALUE
Munsell, AH. A color notation. Baltimore: Munsell Color Co., 1975:14-7.

Veneer
1: a thin sheet of material usually used as a finish 2: a protective or ornamental facing 3: a superficial or attractive display in multiple layers, frequently termed a laminate veneer

Vent
1: to place an auxiliary sprue 2: to place a perforation

Verification Jig
An index of multiple implants fabricated on the master cast and tried in the mouth to check the accuracy of the master cast

W

Warp
Torsional change of shape or outline; to turn or twist out of shape

Wax
One of several esters of fatty acids with higher alcohols, usually monohydric alcohols. Dental waxes are combinations of various types of waxes compounded to provide desired physical properties—see BASEPLATE W., BOXING W., CASTING W., DENTAL IMPRESSION W., MODELING W

Wax Elimination
The removal of wax from a mold, usually by heat

Wax Pattern
A wax form that is the positive likeness of an object to be fabricated

Waxing
The contouring of a wax pattern or the wax base of a trial denture into the desired form (GPT-1)

Weld
To unite or fuse two pieces by hammering, compression, or by rendering soft by heat with the addition of a fusible material

Wrought
1: worked into shape; formed 2: worked into shape by tools; hammered

Appendix C

Timeline for Success Study Plan

TIME-LINE FOR SUCCESS STUDY PLAN

Full-time Employed Candidate - Lacking Comprehensive DLT Education or Full Experience

8 Month Study Plan

This Study Plan outlines manageable segments of material to be reviewed on a weekly basis.* With the exception of orthodontics, the 2005 Air Force Manuals (Volume 1, 2) are comprehensive and privide an excellent resource for CDT study and success. Earlier editions are acceptable, but are not as comprehensive/current in content. **NOTE: The page numbers indicated here are for the 2005 editions.**

NOTE: For Implant candidates, while Chapter 6 of the AF Manual is required, critial study material, it is also limited in scope. Please refer to the CDT/RG Examination Preparation Guide Manual, page 13, for additional recommended study materials. For Orthodontic candidates, the "Practical Guide to Orthodontic Appliances" textbook is available through Great Lakes Orthodontics Company, and is highly recommended as an excellent resource for orthodontic laboratory industry standards.

Other recommended study content (reference NADL): 1. Current Regulations and OSHA requirements.

2. History of Dental Laboratories, Ethics, Certification & Industry Institutions & Organizations.

3. Standard Equipment used in a Dental Laboratory.

*See the **Recommended Timeline Steps to Success** for plan implementation on page 5 of this Appendix.

8 MONTH STUDY PLAN

32 Weeks	Date:	Comprehensive Specialty Exams	Study Subjects:	Page Reference: AF Manual '05	# of Pages:
1		Comprehensive All Specialties	Chapter 3: Anatomy of Facial & Oral Structures Sec 3A-3C Know the cranial and facial bones, and the anatomical features and landmarks of the maxilla and mandible.	94-104, AFPAM 47-103, Vol 1	11
		same as above	Sec 3D-3G Know the muscles of mastication, facial expressions, soft tissue anatomy and TMJ anatomy.	104-122, AFPAM 47-103, Vol 1	19
2		same as above	Chapter 4: Dental (Tooth) Anatomy Know tooth identification, shape & features, morphology.	123-153, AFPAM 47-103, Vol 1	31
3		same as above	Chapter 2: Dental Materials Sec 2B-2D Know gypsum materials, dental waxes, impression materials.	39-56, AFPAM 47-103, Vol 1	18
		same as above	Sec 2H Know separating mediums.	84-86, AFPAM 47-103, Vol 1	3
		same as above	Sec 2I-2P Know fluxes, alcohol, acids, wetting agents, wax solvents, abrasives, gasses, misc. materials.	86-93, AFPAM 47-103, Vol 1	8
4		Comprehensive CD, PD, OR, IM	Chapter 2: Dental Materials Sec 2E Know acrylics: curing temps & ranges, properties, composition, uses troubleshooting.	56-61, AFPAM 47-103, Vol 1	6
		Comprehensive PD, OR, CB, CE, IM	Sec 2F Know metals: melting temps & ranges, properties, composition, uses, symbols, class systems, types of property 'tests', solders, heat treatment, grains, carats, fineness.	61-80, AFPAM 47-103, Vol 1	20
		Compprehensive CE	Sec 2G Know porcelains: types, composition, properties, temps, agents, pigments, oxides, glazes.	80-84, AFPAM 47-103, Vol 1	5
			4 WEEK REVIEW		

5		Comprehensive All Specialties	Chapter 8: Weights & Measures 245-250, AFPAM 47-103, Vol 2 Know metal weights/conversions, temperature conversions, volume, length, gauge.	6
		same as above	Chapter 1: Dental Lab Specialty & Laboratory Environmental Concerns Sec 1A-1B 28-30, AFPAM 47-103, Vol 1 Understand basic overview of dental lab technology.	3
		same as above	Sec 1C-1D 30-37, AFPAM 47-103, Vol 1 Know Safety: safe practices, infection control, exposure, classifications, universal precautions, PPE, material disinfection, chemicals (iodophor & glutaraldehyde).	8
6		same as above	Chapter 6: Articulators Sec 6A-6B 173-196, AFPAM 47-103, Vol 1 Know types of articulators, name of parts, function, use, advantages, disadvantges. Know types of mounting methods and bite records.	24
7		same as above	Chapter 5: Occlusal Patterns and Movements Sec 5A-5B, Sec 5C: 5.13-5.16, 5.18-5.22, Sec 5D 154-172, AFPAM 47-103, Vol 1 Know occlusion, relations, Angles Classifications, cusp relations, mandibular movements, working & balancing, planes & curves.	19
		Comprehensive CB, CE, IM	Chapter 1: Fixed Restorations Sec 1A-1D 14-24, AFPAM 47-103, Vol 2 Know types, classifications, occlusion, design parameters.	11
8		Comprehensive CB, CE, IM	Chapter 1: Fixed Restorations Sec 1F: 1.16, 1.18-1.20, 1.23, 1.25-1.26 28-39, AFPAM 47-103, Vol 2 Know dies & casts, removable die systems, transfer copings, solid casts.	12
		Comprehensive CB, CE, IM	Sec 1G: 1.32, 1.33 45-48, AFPAM 47-103, Vol 2 Know microscope use, working model & dies, die trim, prep designs, techniques.	4
		Comprehensive CB, CE, IM	Sec 1I-1J 54-71, AFPAM 47-103, Vol 2 Know waxing, techniques, occlusion, guidance, contours, embrasures, emergence profiles, balancing, cusp placement, excursions, secondary anatomy.	17
			4 WEEK REVIEW	
9		Comprehensive CB, CE, IM	Chapter 1: Fixed Metal Restorations Sec 1K-1N 71-116, AFPAM 47-103, Vol 2 Know spruing, investing, casting, soldering and finishing. Know bridge, connector, pontic, attachment & post/core design, soldering.	46
10		Comprehensive CB, CE, IM	Chapter 1: Fixed Metal Restorations Sec 1H 48-54, AFPAM 47-103, Vol 2 Know anterior esthetics, long axis, natural design contours.	7
		Comprehensive CB, CE, IM	Chapter 2: Fixed Metal-Ceramic Restorations Sec 2A-2C 116-136, AFPAM 47-103, Vol 2 Know substructure design, bonding , expansion coefficients, veneers, colors, shade, porc joints, margins, cutbacks, spruing, casting, finishing.	21
11		Comprehensive CB, CE, IM	Chapter 2: Fixed Metal-Ceramic Restorations Sec 2D-2G 136-160, AFPAM 47-103, Vol 2 Know metal prep, porcelain application, condensing, firing, shrinkage, oven temps, oven times, effects, margins, contouring, staining, glazing.	25
		Comprehensive CB, CE, IM	Sec 2H-2I 160-168, AFPAM 47-103, Vol 2 Know ceramic-metal soldering techniques & resin-metal soldering techniques.	9

12		Comprehensive CB, CE, IM	Chapter 3: Base Metals 169-173, AFPAM 47-103, Vol 2 Know base metals properties, composition, use, techniques.	5
		CE	Chapter 4: Fixed All-Ceramic Restorations Sec 4A-4D 173-187, AFPAM 47-103, Vol 2 Know basic overview of all ceramic products: composition, techniques & use.	15
		CE	Chapter 5: Fixed All-Resin Restorations Sec 5A-5C 188-195, AFPAM 47-103, Vol 2 Know basic overview of common resin products: composition, techniques & use.	8
			4 WEEK REVIEW	
13		CB, CE, IM	Chapter 6: Dental Implants 196-216, AFPAM 47-103, Vol 2 Know basic overview of implant design, parts, & technique.	21
		FOR IMPLANT CANDIDATES	Chapter 6 of the AF Manual is critial study material, but is also limited in scope. Please refer to the CDT/RG Examination Preparation Guide Manual, page 13, for additional recommended study materials.	
14		Compprehensive CD, CP, OR, IM	Chapter 7: Complete Dentures Sec 7A-7E 197-218 AFPAM 47-103, Vol 1 Know soft tissue landmarks, denture occlusal schemes, diagnostic casts, custom trays, master casts.	22
15		Comprehensive CD, IM	Chapter 7: Complete Dentures Sec 7F-7I 218-235 AFPAM 47-103, Vol 1 Know record bases with occlusion rims: purpose, fabrication methods, measurements. Know articulation process, Hannau settings.	17
		Comprehensive CD	Sec 7J-7K 235-243 AFPAM 47-103, Vol 1 Know tooth selection: types, materials, size, mold, shade, occlusal cusp angles.	9
16		Comprehensive CD	Chapter 7: Complete Dentures Sec 7L-7Q 243-277 AFPAM 47-103, Vol 1 Know tooth arrangement: ridge and landmark relationship guides, arrangement sequences, planes, curves, alignment, esthetics, occlusal schemes, excursive balancing, VOD, working & balancing & protrusive.	35
			4 WEEK REVIEW	
17		Comprehensive CD	Chapter 7: Complete Dentures Sec 7R 277-288 AFPAM 47-103, Vol 1 Know trial waxing: contours, parameters, gingival trim, post-palatal seal, paterns.	12
		Comprehensive CD	Sec 7S-7U 288-316 AFPAM 47-103, Vol 1 Know compression packing & pour techniques: flasking, wax elimination, resins, characterizing, soft liners, curing parameters, prosthesis I.D. process.	31
18		Comprehensive CD	Chapter 7: Complete Dentures Sec 7V-7AC 316-337 AFPAM 47-103, Vol 1 Know deflasking, selective grinding, remount techniques, finishing, polishing, troubleshooting resins	22
		Comprehensive CD	Sec 7AD-7U 337-360 AFPAM 47-103, Vol 1 Know immediate dentures, cast metal bases, overdentures, repairs, relines, rebases.	24
19		Comprehensive CD, PD	Chapter 8: Removable Partial Denture (RPD) Sec 8A-8B 361-390 AFPAM 47-103, Vol 1 Know classifications, use applications, components, function, mechanics, design, construction steps.	30

20		Comprehensive PD	Chapter 8: Removable Partial Denture (RPD) Sec 8C 390-441 AFPAM 47-103, Vol 1 Know diagnostic casts, custom trays, survey & design: indications / contraindications for design elements, survey principles, application & selection of components.	52
			4 WEEK REVIEW **See below: 90 days before exam**	
21		Comprehensive CD, PD	Chapter 8: Removable Partial Denture (RPD) Sec 8D-8E 441-468 AFPAM 47-103, Vol 1 Know master cast fabrication, record bases & occlusion rims, mounting, design transfer to master, blockout, ledging & relief, refractory cast steps, design transfer to refractory cast, waxing frame pattern.	28
22		Comprehensive PD	Chapter 8: Removable Partial Denture (RPD) Sec 8F-8G 468-484 AFPAM 47-103, Vol 1 Know principles and techniques of spruing, investing, casting and metal finishing.	17
		Comprehensive CD, PD	Sec 8H-8M 484-506 AFPAM 47-103, Vol 1 Know occlusion rims, mounting, principles and techniques of tooth arrangement and adaptation to framework, wax-up, processing & finishing. Understand techniques for altered cast, relines, swing-lock, wire clasps, repairs & modifications.	19
23		Comprehensive OR	Chapter 9: Orthodontics Sec 9A-8G 507-531 AFPAM 47-103, Vol 1 Know wires, bands, pliers, principles & techniques of wire bending, types of bends, applications & use, appliance components, fixed & removable appliance principles, design and techniques. Know orthodontic study cast construction and parameters.	25
24		OR	**Practical Guide to Orthodontic Appliances: Great Lakes Orthodontics Company** Chapters 1-2: Dental Development & Analysis, 1-3 Examination and Analysis Pages 21-25, 31-34, 35-36, 41-44 PracGuide OrthoAppl - GLOC Know eruption patterns, tooth sizes, Angle's classifications, dental & skeletal anomolies, tooth movement, retronathic, prognathic, habits, diagnostic records, basic cephalometrics.	16
		OR	Chapter 1-5: Inter-Arch and Inter-Arch Discrepancies Pages 77-89 PracGuide OrthoAppl - GLOC Know the concepts of extractions, tooth reduction and expansion. Understand active appliances for arch development; names, designs, actions and uses.	13
			4 WEEK REVIEW **See below: 60 days before exam**	
25		OR	Chapter 1-5: Inter-Arch and Inter-Arch Discrepancies Pages 89-112 PracGuide OrthoAppl - GLOC Know the concepts of CL II & CL III discrepancies and treatment. Understand active appliances used for CL II and CL III treatment; names, designs, actions and uses.	24
26		OR	Chapter 2-1 Study and Work Models Pages 141-142, 148-171 PracGuide OrthoAppl - GLOC Understand the steps involved in study model fabrication, Ricketts, Tweed & ABO trims, facebow mounting.	26

27		OR	Chapter 2-3 Basic Retainers Pages 195-226 PracGuide OrthoAppl - GLOC Understand pliers and the principles of wirebending, types, uses, contour and measurement parameters of clasps, rests, and labial bows.	32
28		OR	Chapter 2-3 Basic Retainers Pages 226-245 PracGuide OrthoAppl - GLOC Understand solder methods, acrylic methods, equipment, materials, metal & acrylic finishing.	20
		OR	Additional Review: CH 2-4: understand basic identification and use of auxillary and component parts CH 2-5: band prep and placement and fit parameters & fixed appliance design CH 2-12: understand splint types CH 2-13, 2-14: understand mouthguards, invisibles, pressure and vaccuum molding	
		OR	Also, need to have basic knowledge of welding methods, including laser welding.	
29-32			**4 WEEK REVIEW** **See below: 30 days before exam**	

90 days before exam	1. Send in Application for exam and exam fees. 2. Order the **CDT Online Study Guide 90 days before** your scheduled **exam date.** * hundreds of multiple choice questions - allows you to practice test taking * questions organized by specialty and subject * best to use it toward the end of your textbook study * quiz yourself, monitor the answers, and maintain your grading scale, measure improvements * **1 hour a day** is enough to get through all of the areas * Identify the areas you are weakest in to focus additional preparation
60 days before exam	1. Practical Exam Candidates should begin their hands-on practice no less than 60 days before their exam date. The CDT Practical Exam Handbook describes the pre-test requirements, the on-site requirements and the grading criteria.
30 days before exam	1. Practical Exam Candidates -receives test instructions & molds for scheduled exam 30 days prior to the exam date. Candidates should make extra duplicates of the molds to practice on. 2. Practical Exam Candidates should time themselves to ensure they are able to complete the exam within the alloted time. Candidates should seek guidance and peer review of workmanship from other CDT's.

EXAM CODES:

COMPREHENSIVE EXAM:
Comprehensive

SPECIALTY EXAMS:
CD - Complete Dentures
PD - Partial Dentures
CB - Crown & Bridge
CE - Ceramics
IM - Implants
OR - Orthodontics

Appendix D

RG/CDT Comprehensive Examination Content Outline

Comprehensive Exam Content Outline

DENTAL LABORATORY INDUSTRY REGULATIONS AND SCOPE OF PRACTICE

Understanding Good Manufacturing Practices (GMPs), FDA CFR 21 Part 820

Practice under Federal guidelines, OSHA, HIPAA, Customs and Border Protection (CBP) (e.g., labelling and disclosure)

Interpret prescription and access case viability

Practice within the scope of state dental practice act

ANATOMY

Identify occlusal requirements (e.g. bilateral posterior contacts, guidance, lingualized)

Differentiate types of occlusion (canine guidance, group function, malocclusion)

Identify tooth morphology

Identify growth and development of dentition

Identify basic anatomic landmarks (e.g. soft tissue and hard tissue)

Identify muscles of mastication and facial expression

Identify facial and cranial skeletal anatomy

Identify tooth coding systems (e.g. Universal, International, and Palmer)

Terms:
Dental Arch, Maxilla, Mandible, Midline*, Mid-Sagittal Plane*, Quadrants, Mastication, Occlusion, Primary Dentition, Permanent Dentition, Eruption*, Exfoliation*, Resorption, Succedaneous Teeth*, Incisors*, Canines*, Molars*, Premolars*, Method of Numbering*, Deciduous Teeth*, Permanent Teeth*, Alveolar Process, Alveolus, Crown (Anatomical and Clinical)*, Root (Anatomical and Clinical)*, Enamel, Dentin, Cementum, Pulp, Pulp Cavity*, Pulp Canal*, Pulp Chamber*, Pulp Horns*, Cervical Line*, Dentino-enamel junction (DEJ)*, Periodontal Ligament*, Gingiva, Anterior Teeth, Posterior Teeth*, Tooth Surfaces*, Mesial, Distal, Labial, Lingual, Incisal Edge*, Buccal, Root, Apex, Bifurcation, Trifurcation*, Proximal, Line Angle, Anterior Line Angles*, Posterior Line Angles*, Point Angle, Anterior Point Angles*, Posterior Point Angles*, Proximal Contact Area, Cusp, Tubercles, Cingulum, Marginal Ridge, Triangular Ridge*, Transverse Ridge*, Oblique Ridge, Cusp Ridge*, Incline Planes*, Mamelons, Crown Depressions*, Fossa, Sulcus, Developmental Groove (primary)*, Developmental Groove (secondary)*, Pit*, Developmental Lobes*, Apical Foramen*, Lateral Canals*, Supplementary Canal*, Anastomosis*, TMJ (temporomandibular joint), Temporal Bone*, Glenoid Fossa, Interarticular Fibrocartilage*, Subluxation, Capsular Ligament, Superior Synovial Space*, Inferior Synovial Space*, Synovial Membrane, Synovial Fluid, Masseter*, Temporal*, Internal Pterygoid*, External Pterygoid*, Buccinator*, Orbicularis Oris*, Mylohyoid*, Genihyoid*, Depression (open)*, Elevation (closure)*, Protrusion, Retrusion, Lateral Movement, Centric Occlusion, Habitual Occlusion, Malocclusion, Occlusion Class 1*, Occlusion Class 2*, Occlusion Class 3*, Proprioceptor Receptor*, Mastication, Interocclusal Contact*, Occlusal Harmony, Occlusal Program*, Drifting*, Extrusion, Equilibration, Orthodontics*, Extraction*, Axis, Axle, Horizontal Axis*, Right Vertical Axis*, Left Vertical Axis*, Right Sagittal Axis*, Left Sagittal Axis*, Centric Occlusion, Bilateral Balanced Occlusion*, Unilateral Balanced Occlusion (PMS)*, Cuspid Rise/Disclusion, Mutually Protected Occlusion, Periodontium*

THEORY

Define dental terms using appropriate terminology

Identify function and types of dental devices (e.g., appliances, prostheses, restorations)

MAXILLARY AND MANDIBULAR ARTICULATION

Identify uses, types and components of articulators (e.g. non-, semi-, fully-adjustable)

Identify mounting procedures (e.g. face bows, etc.)

Identify bite registrations and/or jaw relation records

Terms:
Curve of Spee, Curve of Wilson, Sphere of Monson*, Bonwill's Triangle, Axial Position*, Proximal Contact Area, Faciolingual*, Embrasures, Incisal*, Cervical*, Labial, Lingual, Contour, Function*, Spillway*, Interproximal Spaces, Ramus*, Coronoid Process, Sigmoid Notch*, Condylar Head, Buccal Plate, Bite Plate, Bite Plane, Active Plates, Sagittals, Schwartz*, Three-Way Expanders*

IDENTIFY THE TYPES, PROCESSES, PHYSICAL PROPERTIES AND HANDLING CHARACTERISTICS OF DENTAL LAB MATERIALS

Gypsum products

Waxes

Metals and alloys

Plastics, resins and composites

Separating materials

Fluxes and antifluxes

Alcohols (e.g., denatured and isopropyl)

Acids and neutralizers

Wetting agents

Wax Solvents

Abrasives and polishing agents

Laboratory gases

Investments (e.g. casting, pressing, soldering, refractory)

Impression materials

Ceramics (e.g., core and layering materials)

Weights and measure

Terms:
Permanent*, Temporary*, Intermediary*, States of Matter*, Wetting*, Stress, Strain, Elasticity, Dental Plaster, Dental Stone, Improved Stone*, Setting Time*, Accelerator, Retarder*, Expansion*, Strength*, Impression Plaster*, Compounds, Reversible Hydrocolloids, Irreversible Hydrocolloids, Elastomeric Materials, Resin, Polymer, Monomer, Co-polymerization*, Cross-linking*, Plasticisers*, Curing, Crazing, Bleaching, Warp, Soft Resins, Resin Teeth*, Tarnish,

Corrosion, Natural Waxes*, Synthetic Waxes, Thermal Expansion, Flow*, Plasticity*, Ductility, Composition*, Expansion*, Contraction, Refractory Material*, Burnout, Carat*, Fineness, Grain Structure*, Soft*, Medium Hard*, Hard*, Extra Hard*, Ceramic, Spruing*, Angulation*, Ring Liner, Surfactant, Spatulation, Setting*, Casting, Induction*, Torch*, Crucibles, Recovery*, Cleaning*, Porcelain, Metallic Pigments*, Solder, Solder Bond*, Flux, Alloy, Bur Cutting*, Abrasion, Polishing, Rake Angle*, Bur Life*, Carbon*, Chromium*

WORKING WITH IMPRESSIONS AND MODELS (E.G., TRADITIONAL OR DIGITAL

Evaluate and validate impressions

Understand model fabrication

Recognize contraindications for impression techniques and materials

Identify techniques for handling types of impressions

Identify custom tray parameters

SAFE WORKING PRACTICES

Identify equipment maintenance and safety requirements and PPE (verification and validation)

Perform infection control procedures

Use and maintenance of Safety Data Sheet (SDS)

Identify hazardous waste disposal requirements (EPA)

Identification, handling and storage of hazardous materials (OSHA, Pictogram labelling)

Identify emergency preparedness (e.g., eye wash, fire blanket, first aid, fire extinguishers, exit plan)

Terms:
Micro-organism*, Vegetative Forms*, Spore Forms*, Virus Forms*, Pathogenic*, Sterilization, Disinfection*, Sanitize*, Endogenous Infection, Cross-contamination*, Septic*, Carrier*, Mode of Transmission*, Route of Transmission*, Disease*, Infection*

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Appendix E

RG/CDT Comprehensive Examination
Practice Questions & Answers

Comprehensive Examination - Practice Questions

1. In a Class I occlusion, most teeth have contact with two teeth in the opposing arch. There are two exceptions to this statement and they are:
   A. Lower first premolars and upper laterals
   B. Upper first premolars and lower third molars
   C. Upper third molars and lower centrals
   D. Lower third molars and upper laterals

2. In a Class I occlusion, where does the buccal cusp of the mandibular first molar occlude?
   A. The distal marginal ridge of the maxillary first molar
   B. The central fossa of the maxillary first molar
   C. The mesial marginal ridge of the maxillary first molar
   D. The mesial marginal ridge of the maxillary second molar

3. Mutually protected occlusion has posterior contacts in:
   A. Working occlusion
   B. Non-working occlusion
   C. Centric occlusion
   D. Protrusive occlusion

4. What are two major factors when curing heat cured acrylic?
   A. Porosity and time
   B. Time and temperature
   C. Color and temperature
   D. Mixture and time

5. Polymerization of the denture means:
   A. Curing the denture base
   B. Ultrasonically cleaning the denture base
   C. Waxing the denture base
   D. Mixing monomer and polymer for the denture base

6. From physiologic rest position, the lower jaw can be projected forward. This movement is known as:
   A. Bennett movement
   B. Retrusion
   C. Nonfunctioning movement
   D. Protrusion

7. A space is created between the maxillary and mandibular teeth when the muscles attached to mandible are relatively relaxed. This space is appropriately referred to as:
   A. Prognathic space
   B. Physiologic occlusion
   C. Malocclusion
   D. Free-way space

8. Overjet may be what type of occlusal discrepancy?
   A. Vertical
   B. Horizontal

C. Parallel
D. Lateral

9. The backs of study models are trimmed _____ to the mid-palatal raphae at what angle.
   A. 90°
   B. 65°
   C. 60°
   D. 25°

10. Why is water used on the carbon tip electrode during the soldering procedure?
   A. To clean the tip
   B. To lube the tip
   C. To facilitate electrical contact
   D. To resist flow

11. Which component of Removable Partial Denture provides retention?
   A. Connectors
   B. Clasps
   C. Support and bracing elements
   D. Natural replacements for artificial teeth and tissue

12. Which is a key factor in a successful RPD pattern construction?
   A. Use pliable preformed parts that readily conform to the surfaces of the refractory cast
   B. Follow the design inaccurately
   C. Avoid using preformed patterns
   D. Patterns should be left rough for retention

13. Which is a minor connector?
   A. I-bar
   B. RPI
   C. Connection between retentive arm clasp
   D. Connection between major connector and clasp

14. Where a properly constructed lingual bar is not possible due to its encroachment on the 4 mm distance from the gingival tissues, a/an _____ is an excellent alternative. This type of bar is an:
   A. Lingual Plate
   B. Labial Bar
   C. Kennedy Bar
   D. Anterior Plate

15. Type of gingival pontic design:
   A. Spheroidal (sanitary)
   B. Ridge-lap (modified)
   C. Conical
   D. All of the above

16. The equal blending of two of these colors, red, yellow, blue is:
   A. Metamers
   B. Primary colors
   C. Complementary colors
   D. Secondary Hues

17. In the Munsell Color Order System, Hue refers to:
    A. The different colors of the color wheel
    B. The lightness/darkness of a color and to no other quality
    C. The dimension that describes the strength or purity of color
    D. The blend of primary colors

18. Which type of attachment is used with a clip?
    A. Stud attachment
    B. Bar attachment
    C. Intracoronal attachment
    D. Extracoronal attachment

19. When wax is overheated in a wax pot what happens to it? It:
    A. Will not keep its shape
    B. Becomes brittle
    C. Becomes sticky
    D. Takes longer to heat up the next time

20. Which zone contains unburned gas and air and is dark blue in color?
    A. Mixing
    B. Reducing
    C. Combustion
    D. Oxidation

21. Which of the following dental professionals is legally authorized to permanently alter or reshape a patients tooth?
    A. Dentist
    B. Laboratory technician
    C. Assistant
    D. Hygienist

22. The hardest tissue on a tooth is:
    A. Cementum
    B. Dentin
    C. Enamel
    D. Pulp

23. A triangular ridge descends from the cusp tip to:
    A. Any part of the tooth surface
    B. The CEJ
    C. The developmental groove
    D. The marginal ridges

24. What is the term describing the natural loss of the primary teeth?
    A. Eruption
    B. Resorption
    C. Exfoliation
    D. Degeneration

25. ____ is one of the most frequently used terms, it is also one of the most inaccurate.
    A. Base metal
    B. Semiprecious

C. Noble
D. Precious

26. When the canines and anterior teeth cause the posterior teeth to disocclude in eccentric excursions, this is called:
A. Bilaterally balanced
B. Anterior protection
C. Posteriorly protected
D. Unilaterally protected

27. Overjet is defined as:
A. Over bite
B. Horizontal overlap
C. Overhang
D. Closed bite

28. When the mandible is in physiological rest position, the:
A. Maxillary and mandibular teeth have maximum occlusal contact
B. Attached muscles are in a state of contraction
C. Occlusal surfaces of maxillary and mandibular teeth have no contact
D. Maxillary and mandibular teeth are in equal contact on both sides of the dental arch

29. An inlay that replaces two to three surfaces of an anterior tooth is:
A. Class I
B. Class II
C. Class III
D. Class IV

30. Which bone is a cranial bone?
A. Zygomatic
B. Mandible
C. Lacrimal
D. Frontal

31. Permanent premolars replace:
A. Primary premolars
B. Primary molars
C. Primary cuspids
D. Permanent molars

32. Which one of the following is a facial bone?
A. Frontal
B. Occipital
C. Temporal
D. Maxilla

33. How many mandibular teeth in a Class I occlusion contact a maxillary central incisor in centric occlusion?
A. One
B. Two
C. Three
D. Four

34. The Universal numbering system starts with tooth #1 as the:
    A. Mandibular left 3rd molar
    B. Mandibular right 3rd molar
    C. Maxillary left 3rd molar
    D. Maxillary right 3rd molar

35. The hardest tissue on a tooth is:
    A. Cementum
    B. Dentin
    C. Enamel
    D. Pulp

36. The roots of anterior teeth:
    A. Are Trifurcated
    B. Are Bifurcated
    C. Are Conical
    D. Vary from tooth to tooth

37. Mamelons are small bumps found:
    A. On the incisal edge of un-worn teeth
    B. On the facial surface of anterior teeth
    C. On the cingulum
    D. On molars

38. The action of the suprahyoid group of muscles is to:
    A. Depress the mandible; open the lower jaw
    B. Close the mandible
    C. Pull the mandible forward
    D. Pull the mandible right or left (lateral)

Comprehensive Examination Practice Questions - Answers

1. C
2. B
3. C
4. B
5. A
6. D
7. D
8. B
9. A
10. C
11. B
12. A
13. D
14. C
15. D
16. D
17. A
18. B
19. B
20. C
21. A
22. C
23. C
24. C
25. B
26. B
27. B
28. C
29. D
30. D
31. B
32. D
33. B
34. D
35. C
36. C
37. A
38. A

Appendix F

CDT Written Specialty Examination Content Outlines

Practice Questions & Answers

Crown and Bridge Specialty Exam Content Outline

PERFORM PRELIMINARY & DIAGNOSTIC WORK UP

Manufacture diagnostic cast from preliminary impression or digital file for case design

Evaluate case for various types of restorations

Recognize contraindications for materials/case design

Perform diagnostic wax up (e.g., traditional, digital)

Manufacture custom tray

Terms:
Operative Dentistry*, Fixed Prosthodontics, Prosthodontics, Prosthesis, Inlay, Onlay, Pinlay*, Crown, ¾ Crown*, 7/8 Crown*, Veneer, Resin-faced Crown*, Porcelain-faced Crown*, Post Crown, Richmond Crown*, Davis Crown, Jacket Crown, Acrylic Resin Jacket*, Porcelain Jacket Crown, Fixed Bridge, Abutment, Retainer, Pontic, Connectors, Rigid*, Semi rigid*, Silver Alloy Amalgam*, Composite Resin, Porcelain, Gold*, Cast Metal, Inlay Classes*, Elastic, Polysulfide, Silicone, Stock Tray, Rim Lock*, Perforated*, Water-cooled*, Cantilever Bridge, Double Abutment Bridge*, Pier Bridge*, Pier, High Water Bridge (hygienic)*, Broken-stress Bridge*, Maryland Bridge, Spheroidal, Ridge-lap, Conical*, Saddle

MANUFACTURE MASTER CAST (TRADITIONAL OR DIGITAL)

Manufacture the master cast

Identify and evaluate preparation designs

Prepare the dies

Articulate casts

Terms:
Impression, Cast, Die, Wax Pattern, Pickling, Margins, Slice or Feathered Margin*, Shoulder Margin*, Beveled Shoulder Margin*, Chamfer Margin*, Draft*, Draw, Undercut, Gypsum, Plaster, Dental Stone, Improved Dental Stone*, Water-Powder Ratio (W/P)*, Spatulation Time*, Setting Times*, Silver Alloy Amalgam*, Electroplate*, Dowel, Undercuts, Block Out, Cement Spacer*, Lubricant*, Semi-Adjustable Articulator, Fully Adjustable Articulator, Interocclusal Registration*, Aluwax*, Wax, Gothic Arch*, Eccentric Checkbite

DESIGN AND MANUFACTURE PATTERNS (TRADITIONAL OR DIGITAL)

Determine method for creating pattern

Identify design parameters for fixed restorations

Manufacture pattern for full contour restoration

Manufacture pattern for post & core

Manufacture pattern for ceramic substructures

Manufacture pattern for bridges

Manufacture pattern for pressed restorations

Manufacture pattern for inlays/onlay

Terms:
Occlusion, Functional Core*, Anatomic Core*, Centric Occlusion Core*, Anatomic Contour*, Axial Contour, Occlusal Contour*, Interproximal Embrasures (four)*, Esthetic Contour, Inlay Wax, Positive Waxing*, Negative Waxing*

MANUFACTURE RESTORATION

Select manufacturing method (e.g., traditional, digital)

Sprue and invest pattern

Burnout invested mold

Cast/Press/Divest the restoration

Digital Manufacturing Techniques

Terms:
Sprue, Crucible Formers/Sprue Base, Casting Ring, Ring Liner*, Vent, Open Vent*, Blind Vent*, Expansion*, Setting*, Hygroscopic Expansion, Thermal Expansion, Porosity, Pits*, Fins*, Bubbles/Nodules*

FINISH AND POLISH THE RESTORATION

Inspect the restoration for defects

Remove the sprues

Seat restoration to die(s)

Finish the restoration

Refine contacts, occlusion and excursions

Prepare surface for porcelain

Polish the restoration

Evaluate the restoration for final acceptance

Terms:
Swagging*, Burnishing, Machining*, Surfacing*, Carbon Ribbons*, Shim Stock, Abrasives

PERFORM SOLDERING & WELDING

Apply soldering/welding techniques

Solder/weld bridge components together

Solder/weld connectors

Solder/weld attachments

Perform repairs

Terms:
Solder, Free Hand*, Investments, Joint Space*, Trimming*, Boil-out, Flux, Anti-Flux, Preheating, Bunsen Burner*, Torch*, Weld, Attachments, Over Dentures, Intra Coronal Attachments, Extra Coronal Attachments, Stud Attachments*, Bar Attachments*, Auxiliary Attachments*, Cusp, Stamp Cusps (centric, supporting, holding)*, Shearing Cusps (guiding, deflecting)*, Cusp to Embrasure*, Cusp to Fossa (tooth to tooth)*

SELECTION AND APPLICATION OF MATERIALS AND EQUIPMENT FOR CROWN & BRIDGE

Identify properties and application of pattern materials

Identify properties and applications of abrasives and polishing agents

Identify safety protocol for the use of flux materials

Identify safety protocol for use and storage of acids

Identify safety protocol for use and storage of laboratory gases

Identify and select restorative materials

Identify components of CAD/CAM systems

Identify properties and application of refractory and investment materials

Identify application of sealers, die hardeners, spacers, and separating mediums

Identify the use of instruments and equipment

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Crown & Bridge Specialty Examination - Practice Questions

1. Composite resins are cured by what means?
   A. Air
   B. Hot water
   C. Light
   D. Dry heat

2. What is added to soldering alloys to lower the fusion temperature?
   A. Copper
   B. Flux
   C. Tin
   D. Palladium

3. The purpose of centrically balanced occlusion is to:
   A. Avoid impinging on the cheeks and tongue
   B. Prevent the wear of cusp tips by having the cusps be stops, not guides of closure
   C. Cut and hold food
   D. Have contacts made simultaneously and with equal force

4. Which type of restoration would need the most tooth reduction?
   A. Inlay
   B. Full crown
   C. Veneer
   D. Onlay

5. Which would you use first after the investment had been cleaned off the metal casting?
   A. Tripoli
   B. Rubber wheel
   C. Bur
   D. Separating disk

6. When wax in a wax pot is overheated what happens to it? It:
   A. Will not keep its shape
   B. Becomes brittle
   C. Becomes sticky
   D. Takes longer to heat up the next time

7. The Curve of Spee:
   A. A simple hinge is the same as the compensating curve in physiologic rest position
   B. Is the convex curvature of the maxillary arch
   C. Is the anterior-posterior curvature of the occlusal surfaces of mandibular teeth
   D. Is the same for all individuals

8. A simple hinge type articulator is an example of:
   A. Non-adjustable articulator
   B. Fully adjustable articulator
   C. Semi-adjustable articulator
   D. Fixed-adjustable articulator

9. The articulator which is cheap, easy to use and requires minimal mounting time is the:
   A. Non-adjustable
   B. Semi adjustable
   C. Fully adjustable
   D. Fixed-adjustable

Crown & Bridge Specialty Examination Practice Questions - Answers

1. C
2. C
3. D
4. B
5. D
6. B
7. C
8. A
9. A

Complete Dentures Specialty Exam Content Outline

CREATE MASTER CASTS FROM STOCK AND/OR CUSTOM TRAY IMPRESSIONS

Recognize contraindications for materials/case design

Construct master cast

Identify anatomical landmarks

Identify the requirements for a posterior palatal seal

Terms:
Custom Impression Tray, Bead-Brush Technique, Bead*

DESIGN AND MANUFACTURE RECORD BASE PLATE & OCCLUSAL RIM

Identify the requirements for the manufacture of the base plate

Identify the requirements for the manufacture of the occlusal rim

Terms:
Record Base (Baseplates), Occlusion Rims

SELECT AND ARRANGE ARTIFICIAL TEETH

Index and articulate casts

Select anterior and posterior denture teeth

Set-up anterior and posterior denture teeth

Create anatomical wax contours of the denture base

Terms:
Occlusion, Centric Occlusion, Face Bow, Gothic Arch Tracing, Interocclusal Distance, Lateral Movement, Orienting*, Protrusive Occlusion, Maxilla, Mandible, Anterior, Posterior, Posterior Palatal Seals, Tissue Relief*, Flasking

PROCESS THE DENTURE

Denture investment techniques

Mold preparation techniques

Processing techniques

Terms:
Separators*, Flushing*, Flask Opening*, Curing Cycles*, Curing, Injection Systems*, Microwave System*

FINISH & POLISH COMPLETE DENTURE

Divest the denture

Remount the denture

Equilibrate

Construct a remount cast and index

Finish the denture

Polish the denture

Terms:
Deflasking*, Remounting*, Re-equilibration*, Divesting*, Sectioning*, Air-chisel*, Lathes/Handpieces*, Dental Stone, Burs

PROCEDURES FOR REPAIRS AND ALTERATIONS FOR COMPLETE DENTURES

Rebase denture

Reline denture

Repair denture

Duplicate denture

Manufacture immediate denture

Terms:
Acrylic Resin, Cracks*, Fractures, Auto-polymerization, Heat Polymerized*, Rebase, Soft Liners

SELECTION AND APPLICATION OF MATERIALS AND EQUIPMENT FOR REMOVABLE PROSTHETICS

Understand properties and application of flexible materials

Understand properties and application of waxes

Understand properties and application of resins

Understand safety protocols for the use and storage of hazardous materials

Identify the use of instruments and equipment (e.g., traditional, digital)

Terms:
Gypsum, Waxes, Resins, Abrasives, Monomer, Polymer, Porcelain, Acrylic Resin, Composite Resin, Shade, Shape*, Carding*

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Complete Dentures Specialty Examination - Practice Questions

1. Which of the following denture teeth have a single opposing tooth?
   A. Maxillary lateral incisors
   B. Mandibular central incisors
   C. Mandibular primary canines
   D. Mandibular third molars

2. The____ is where the two centrals line up and is marked by the dentist.
   A. Cuspid line
   B. Smile line
   C. Midline
   D. Central fossa

3. The maxillary second premolars are set in a:
   A. Vertical position and the buccal and lingual cusps touch the occlusal plane
   B. Slanted position and are off the occlusal plane
   C. Slanted position and are not touching the occlusal plane
   D. Vertical position and lingual cusp touch the occlusal plane only

4. Models are articulated:
   A. After being indexed and luted
   B. Before being indexed or luted
   C. While models are still soft and bites are not needed
   D. Before trimming and removing bubbles on teeth

5. In Class I centric occlusion, the mesiolingual cusp of the maxillary first molar:
   A. Occludes in the central fossa of the mandibular first molar
   B. Is located in the embrasure between the mandibular second premolar and the mandibular first molar
   C. Occludes with the cusp tip of the mandibular first molar
   D. Occludes with the facial development groove of the mandibular first molar

6. The rear most, upper most midmost position of the mandible in the articular fossa is:
   A. Condyle balanced occlusion
   B. Centric occlusion
   C. Centric relation
   D. Vertical occlusion

7. A boley gauge measures:
   A. Stress
   B. Thickness of materials
   C. Occlusion
   D. Proportion of polymer-monomer

8. Recommended height of a maxillary occlusal rim in the anterior is:
   A. 18 mm
   B. 22 mm

C. 24 mm
D. 40 mm

9. The handle on a lower edentulous custom impression tray should:
   A. Come straight out from the vestibule
   B. Raise up and clear the lip
   C. Come straight off the incisal edges
   D. Be on either side of the bicuspid area

10. A shim or a spacer is necessary because:
   A. The tray will hurt the patient without it
   B. It makes the tray more comfortable
   C. It makes the tray more bulky
   D. It makes an even space for the impression materials inside of the tray

Complete Dentures Specialty Examination Practice Questions - Answers

1. B
2. C
3. A
4. A
5. A
6. C
7. B
8. B
9. B
10. D

Ceramics Specialty Exam Content Outline

PERFORM PRELIMINARY & DIAGNOSTIC WORK UP

Manufacture diagnostic cast from preliminary impression or digital file for case design

Evaluate case for various types of restorations

Recognize contraindications for materials/case design

Perform diagnostic wax up (e.g., traditional, digital)

Manufacture custom tray

Terms:
Porcelain, Margin, Waxing, Substructure*, Occlusion

MANUFACTURE MASTER CAST (TRADITIONAL OR DIGITAL)

Manufacture the master cast

Identify and evaluate preparation designs

Prepare the dies

Articulate casts

Terms:
Casting, Die, Articulator, Sprue, Investing, Burn-Out, Fritting

MANUFACTURE SUBSTRUCTURE FOR CERAMICS

Design substructure for ceramics (e.g., traditional, digital)

Identify various manufacturing methods (e.g., traditional, digital)

Select compatible materials for manufacturing methods

Identify techniques for manufacturing methods

Evaluate restoration/substructure

Identify techniques for soldering/welding, pre and post ceramic

Terms:
Oxidizing (Degassing)*, Opaquing*, Body Porcelain, Absolute Dimensions*, Apparent Dimensions*, Pontic Design*

CERAMIC APPLICATION & CONTOURING

Select ceramic materials according to prescription

Prepare surface for ceramic application

Apply opaque/liner

Layer ceramic material (e.g., traditional, digital)

Contour tooth morphology

Verify occlusion, contacts and excursions

Evaluate shade and characterization

Stain and glaze techniques

Finish and polish techniques

Evaluate the restoration for final acceptance

Terms:
External Stains*, Internal Stains (Modifiers)*, Hue, Value, Simple Grey*, Shade, Glaze, Chroma, Primary Colors, Secondary Colors, Complementary Colors, Translucency, High Noble Metal Alloy, Noble Metal, Base, Bubbling

SELECTION AND APPLICATION OF MATERIALS AND EQUIPMENT FOR CERAMICS

Identify properties and application of pattern materials

Identify properties and applications of abrasives and polishing agents

Identify the use of instruments and equipment

Identify use and storage of acids

Identify components of CAD/CAM systems

Identify properties and application of refractory and investment materials

Identify properties and application of ceramic materials

Identify application of sealers, die hardeners, spacers, and separating mediums

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Ceramics Specialty Examination - Practice Questions

1. Type of gingival pontic design:
   A. Spheroidal (sanitary)
   B. Ridge-lap (modified)
   C. Conical
   D. All of the above

2. The equal blending of two of these colors, red, yellow, blue is:
   A. Metamers
   B. Primary colors
   C. Complementary colors
   D. Secondary Hues

3. Kaolin in porcelain composition:
   A. Gives porcelain translucency
   B. Functions as a flux
   C. Mainly responsible for shade
   D. Responsible for opaqueness

4. _____ is one of the most frequently used terms, it is also one of the most inaccurate.
   A. Base metal
   B. Semiprecious
   C. Noble
   D. Precious

5. When the canines and anterior teeth cause the posterior teeth to disocclude in eccentric excursions, this is called:
   A. Bilaterally balanced
   B. Anterior protection
   C. Posteriorly protected
   D. Unilaterally protected

6. Overjet is defined as:
   A. Over bite
   B. Horizontal overlap
   C. Overhang
   D. Closed bite

7. From physiologic rest position, the lower jaw can be projected forward. This movement is known as:
   A. Projection
   B. Protrusion
   C. Retrusion
   D. Nonfunctioning movement

8. The two purely vertical movements of the mandible, elevation and depression, have the same movement in each joint and are also known as:
   A. Lateral excursions
   B. Hinge movements

C. Protrusion and retrusion
D. Functioning and non-functioning

9. In ideal centric occlusion, the mesiolingual cusp of the maxillary first molar:
   A. Occludes in the central fossa of the mandibular first molar.
   B. Is located in the embrasure between the mandibular second premolar and the mandibular first molar
   C. Contacts the mesial marginal ridge of the mandibular second premolar
   D. Occludes with the facial developmental groove of the mandibular first molar

Ceramics Specialty Examination Practice Questions - Answers

1. D
2. D
3. D
4. B
5. B
6. B
7. B
8. B
9. A

Implants Specialty Exam Content Outline

PERFORM PRELIMINARY AND DIAGNOSTIC WORK UP

Differentiate between implant technologies

Categorize and identify case design options

Understand osseointegration and biocompatibility

Understand correlation between bone density and load bearing capability

Understand occlusal considerations for fixed or hybrid restorative options

Understand occlusal considerations for removable restorative options

Recognize contraindications for materials/case design

Plan and construct case diagnostics

Recommend final case design

Manufacture guide stent (radiographic/surgical)

Terms:
Fixture, analog, abutment, restorative components, impression copings, guide pins, abutment replicas, laboratory analog, gold cylinder, gold screws, biocompatible, titanium.

MANUFACTURE THE MASTER CAST

Identify custom tray options and assess impression for acceptance

Identify, select, and assemble implant parts

Manufacture soft-tissue cast

Articulate casts

Design and construct verification jig

Terms:
Soft tissue moulage, emergence profile, porosity, angulation, anatomical definition, elongation, screw retained, fixture retained, articulation

MANUFACTURE REMOVABLE PROSTHESIS

Construct baseplate and occlusal rim

Identify and understand implant attachments

Manufacture implant retained denture

Terms:

Bar and clip (Hader Bar), magnets, ball attachment, impression coping, proper dimensions, registration, Vertical Dimension of Occlusion, centric relation, maximum intercuspation, condylar inclination, facebow relation

MANUFACTURE BAR/SUBSTRUCTURE

Identify and understand implant retained options

Identify and understand implant bar attachments

Identify and understand load bearing parameters

Identify and understand angle correction at fixture levels

Design and manufacture bar/substructure (e.g., traditional, digital)

Verify and fit bar/substructure

Correct discrepancies (e.g., weld, solder, remake)

Terms:
Centric relation, bilateral balanced, monoplane, maximum intercuspation, vertical dimension of occlusion, wax memory, material manipulation, interocclusal clearance

MANUFACTURE SCREW-RETAINED FIXED OR REMOVABLE (HYBRID) RESTORATION

Identify and select components

Understand path of insertion and emergence profile

Design restoration (e.g., traditional, digital)

Manufacture restoration (e.g., traditional, digital)

Terms:
Biocompatibility, retention, reciprocation, classifications, fulcrum, semi-precision attachments, tripodism, foundation, parameters

MANUFACTURE ABUTMENT AND CEMENT-RETAINED RESTORATION

Identify and select components

Understand path of insertion and emergence profile

Design restoration (e.g., traditional, digital)

Manufacture restoration (e.g., traditional, digital)

Terms:
Screw retained, fixture retained, cement retained, anti-rotational, emergence profile, marginal integrity, interocclusal reduction, interproximal reduction, zirconia, porcelain fused to metal, matrix, wide body abutment, internal hex, external hex, phosphate investment, gypsum bonded investment, sintering, coalescents, vitrification

SELECTION AND APPLICATION OF MATERIALS AND EQUIPMENT

Select and operate manufacturing equipment

Identify the use of instruments

Understand federal regulatory requirements governing implant abutment design and manufacturing

Identify components of CAD/CAM systems

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Implants Specialty Examination - Practice Questions

1. What subgingival contour should a custom abutment be?
   A. Straight
   B. Convex
   C. Concave
   D. 90degree angle

2. What should be the shape of a hybrid bar when it contacts the gingival tissue
   A. Matte finish and convex
   B. Highly polish and concave
   C. Matte finish and concave
   D. Highly polish and convex

3. What shape should a wraparound bar be?
   A. Square
   B. Round
   C. Ovoid
   D. Taper

4. Why should the subgingival shape of a custom abutment be concave?
   A. Cleans ability
   B. Emergence profile
   C. Tissue health
   D. All of the above

5. Why should a wraparound bar be square?
   A. Prevent rotation of the acrylic
   B. Strength of the bar
   C. The load of the opposing teeth
   D. Cleans ability

6. What is the minimum required space for an implant supported bar?
   A. 5mm
   B. 5inches
   C. 15mm
   D. 10mm

7. Which type of materials can a hybrid bar be made from?
   A. Ti, Cr, Co, Au
   B. Ti, Zr, acrylic
   C. Acrylic, Al, Zr
   D. None of the above

8. When processing a hybrid bar which method is recommended?
   A. Conventional
   B. Injection
   C. Pour technique
   D. A and B

9. What ways are there to make custom abutments?
   A. Cad Cam
   B. Cast
   C. A and B
   D. None of the above

10. What is the correct order to mask out the grayness of a hybrid bar
   A. Sandblast, metal prime, opaque and cure
   B. Metal prime, sandblast, opaque and process
   C. Metal prime, light cure, opaque and sandblast
   D. None of the above

11. When it comes to a hybrid which tooth setup is recommended?
   A. Full balancing
   B. Lingualized
   C. Anatomical
   D. None of the above

12. What is the most accurate way to pick up a locator attachment?
   A. Chair side
   B. Laboratory pickup
   C. Impression pickup
   D. A and B

13. Why are locators not cast to a superstructure?
   A. Too much work
   B. Wear out too fast
   C. Hard to replace when the housings wear out
   D. B and C

14. For Hybrid Dentures what procedures should be done to ensure a better bond between the teeth and acrylic?
   A. Paint with monomer
   B. Diatorics
   C. Roughen up the underside of the denture tooth
   D. All of the above

15. Why should lab analogs not be used when processing?
   A. Damage the substructure

B. Difficult to divest
C. Damage the analog and screw
D. All of the above

Implants Specialty Examination - Practice Answers

1. C
2. D
3. A
4. D
5. A
6. C
7. A
8. D
9. C
10. A
11. A
12. A
13. D
14. D
15. D

Orthodontics Specialty Exam Content Outline

GROWTH AND DEVELOPMENT

Identify deciduous and permanent dentition

Identify the order of tooth eruption

Identify classes of occlusion (class I, II and III)

Identify the types of malocclusion

Identify the types of tooth movement

Terms:
Deciduous Dentition, Permanent Dentition, Eruption*, Occlusion, Malocclusion

ORTHODONTIC TREATMENT & APPLIANCES

Differentiate between dental and skeletal treatments

Categorize types of appliances (passive, active, functional)

Recognize contraindications for materials/case design

Recommend orthodontic appliance design

Reset teeth in the cast for proper alignment

Identify therapy appliances and related federal regulatory requirements (e.g., orthodontic, splints, guards, deprogrammers, sleep apnea)

Identify and manufacture study casts

WIRE COMPONENTS AND AUXILIARIES

Identify principles of bending wire

Identify and manufacture types of clasps

Identify functions and uses of clasps

Identify and manufacture springs

Identify and place screws

Identify and use coil spring (open & closed)

Identify and manufacture labial bows

Identify and use components (bands, crowns, etc.)

Embed components in acrylics

Understand application of wire bending tools

ACRYLICS, COMPOSITES, PLASTICS

Utilize vacuum/pressure formed materials

Apply acrylic using the sprinkle technique

Apply acrylic using the dough pack technique (cold cured)

Identify and utilize light cured materials

Identify and utilize heat cured materials

Finish and polish appliances

Perform acrylic repair

SOLDERING AND WELDING

Identify components of the soldering process (e.g., flux, solder, anti-flux)

Solder an appliance

Weld an appliance

Finishing and polishing of weld/solder work

Perform metal repair

SELECTION AND APPLICATION OF MATERIALS AND EQUIPMENT FOR ORTHODONTICS

Identify and utilize finishing instruments and equipment

Identify and utilize vacuum/pressure forming equipment

Identify properties and application of gypsum products

Understand application of separating mediums

Identify properties and application of waxes

Understand applications of abrasives and polishing agents

Understand safety protocol for use and storage of hazardous materials

Identify the use of instruments and equipment unique to Orthodontics

Terms:
Orthodontic Plaster*, Polishing Compound*, Trimming Cast*, Base Dimensions*, Angles*, Lingual Arches*, Removable Acrylic Resin Appliances*, Torsiversion*, Bruxism, Palatal Expansion, Labial Archwire*

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Orthodontics Specialty Examination - Practice Questions

1. A working model to be used to make a spring retainer must be:
   A. Reset
   B. Rebased
   C. Remounted
   D. Hydrated

2. The force exerted by an expansion screw acts:
   A. On all teeth touched by the acrylic plate
   B. On the clasp retention
   C. On the anchor plate
   D. In one direction only

3. An appliance which widens the Maxillary Arch:
   A. Herbst
   B. Activator
   C. Frankel
   D. Rapid palatal expander (RPE)

4. An appliance that has an Anterior-posterior activation is a:
   A. Herbst
   B. Activator
   C. Frankel
   D. Sagittal

5. The definition of a balanced occlusal bite plane is to:
   A. Avoid impinging on the cheeks and tongue
   B. Prevent the wear of cusp tips by having the cusps be stops, not guides of closure
   C. Cut and hold food
   D. Have contacts made simultaneously and with equal force

6. When trimming the backs of study models, trim:
   A. The upper first
   B. The lower first
   C. Both upper and lower first
   D. Parallel to occlusal plane

7. The backs of study models are trimmed to the mid-palatal raphae at what angle?
   A. 90°
   B. 65°
   C. 60°
   D. 25°

8. Electrolyte fluid in the generator tank is:
   A. Flammable
   B. Easily contaminated
   C. Caustic
   D. Non-Toxic

9. Resistance welding with electricity uses _____ and _____ to join two pieces of metal together.
   A. Pressure, solder
   B. Flux, solder
   C. Heat, solder
   D. Heat, pressure

Orthodontics Specialty Examination Practice Questions - Answers

1. A
2. A
3. D
4. D
5. D
6. A
7. A
8. C
9. D

Partial Dentures Specialty Exam Content Outline

CREATE MASTER CASTS FROM STOCK AND/OR CUSTOM TRAY IMPRESSIONS

Construct master casts

Identify anatomical landmarks

Index casts

Articulate casts

Terms:
Articulator, Cast, Master Cast, Headgear*, Palatal Expansion Appliances*, Obturators

SURVEY, DESIGN AND PREPARATION FOR FRAMEWORK (TRADITIONAL OR DIGITAL)

Recognize contraindications for materials/case design

Identify major connectors (types and functions)

Identify minor connectors (types and functions)

Identify direct retainers (types and functions)

Identify indirect retainers

Determine location of rests

Determine types denture base retention

Identify types of attachments

Identify stress relievers and application

Identify techniques of surveying

Understand clasp selection

Understand application of blockout and relief

Perform bead line applications

Perform relief for acrylic retention

Understand classification of partially edentulous arches

Terms:
Clasp, Wrought Wire*, Supra Bulge, Infra Bulge, Major Connectors*, Minor Connectors, Maxillary Hawley Retainer*, Springs*, Screws*, Retention Clasps*, "C" Clasps*, Adams Clasp*, Arrow Clasp*, Ball Clasp*, Nance Arch*

MANUFACTURE REFRACTORY CAST

Duplicate master cast

Transfer design

Terms:
Blockout, Wax, Undercuts, Tissue Relief*

MANUFACTURE PARTIAL DENTURES FRAMEWORKS

Understand application of patterns (e.g., traditional, digital)

Understand requirements for spruing (e.g., traditional, digital)

Invest the pattern

Eliminate the pattern

Identify casting techniques

Divest casting

Finish and polish framework

Terms:
Sprue, Ingot, Investing, Casting Ring, Burnout, Torch*, Casting Crucible*

SELECT AND ARRANGE ARTIFICIAL TEETH AND PROCESS

Select appropriate teeth

Set-up and arrange appropriate teeth

Create anatomical wax contours of the denture base

Identify processing equipment, materials & techniques

Deflask RPD

FINISH AND POLISH PARTIAL DENTURE BASE

Identify equipment and materials

Identify the techniques and procedures

Divest the partial denture

Identify and correct processing errors

Finish the partial denture

Polish the partial denture

Terms:
Sandblasting*, Mounted Points*, Electro-polishing, Compounds, Major Connectors*, Clasp, Tissue Surface*, Finishing, Alignment*, Antero-posterior Arch Relation*, Bucco-lingual Malocclusion*, Arch Wires

PROCEDURES FOR REPAIRS AND ALTERATIONS FOR PARTIAL DENTURES

Identify techniques for soldering

Identify techniques for welding

Finish and polish after alterations

Perform repairs and additions

Understand process for altered (split) cast technique

Reline a partial denture

Rebase a partial denture

Understand process for immediate partial denture

Terms:
Solders-Noble Metals*, Solders-Base Metals*, Major Connector*, Minor Connector, Cast Clasp, Retention Mesh*

SELECTION AND APPLICATION OF MATERIALS AND EQUIPMENT

Identify properties and application of gypsum products

Identify properties and application of refractory and investment materials

Identify application of separating mediums

Identify properties and application of waxes

Identify properties and application of resins

Identify properties and application of alloys

Understand application of abrasives and polishing agents

Understand application of solder and flux materials

Understand safety protocol for the use and storage of hazardous materials

Understand application of flexible RPD materials

Understand application of CAD/CAM processes

Identify use of instruments and equipment (e.g., traditional, digital)

Terms:
Anterior, Posterior, Investing, Packing/Processing, Finishing, Flasking, Separator*, Trial Closures*, Final Flask Closure, Curing, Cooling*, Deflasking*, Parallelism*, Attachments, Facings, Flatback Facing*, Noble Wire*, Base Wire*

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Partial Dentures Specialty Examination - Practice Questions

1. Which component of a Removable Partial Denture provides retention?
   A. Connectors
   B. Clasps
   C. Support and bracing elements
   D. Natural replacements for artificial teeth and tissue

2. Which is the purpose of a surveyor?
   A. Identifies height of contour
   B. Identify rest area
   C. Establish major connector design
   D. Creates a beadline

3. Which is a major connector?
   A. Open or closed horseshoe
   B. Crip clasp
   C. Indirect Retainer
   D. Retention mesh

4. Which is a minor connector?
   A. I-bar
   B. RPI
   C. Connection between retentive arm clasp
   D. Connection between major connector and clasp

5. Where a properly constructed lingual bar is not possible due to its encroachment on the 4 mm distance from the gingival tissues, a/an _____ is an excellent alternative. This type of bar is a/an:
   A. Lingual Plate
   B. Labial Bar
   C. Kennedy Bar
   D. Anterior Plate

6. A Clasp should provide?
   A. Retention and Reciprocation
   B. Bracing
   C. Encirclement and Guidance
   D. Engaging and Guidance

7. Which is a key factor in a successful RPD pattern construction?
   A. Use pliable preformed parts that readily conform to surfaces of the refractory cast
   B. Follow the design inaccurately
   C. Avoid using preformed patterns
   D. Patterns should be left rough for retention

8. A general guideline for placing a rest is?
   A. Rests are almost always placed on teeth adjacent to edentulous spaces because that is where support requirements are greatest
   B. Rest are almost always placed on every other tooth
   C. Rests are used to provide direct retention in extension cases
   D. A clasp assembly never has a rest associated with it

9. Before processing a denture base
   A. Place a coat of separator on the wax surface
   B. Place a coat of separator on the casts
   C. Wax seal the denture base to the cast
   D. Add extra wax around the cervicals of all teeth

Partial Dentures Specialty Examination Practice Questions - Answers

1. B
2. A
3. A
4. D
5. C
6. A
7. A
8. A
9. C

Appendix G

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