STATE OF NEW JERSEY COMPUTERIZED DENTAL RADIOLOGIC TECHNOLOGY EXAMINATION BROCHURE

This brochure provides information for individuals interested in applying for the examination to become licensed dental radiologic technologists in the State of New Jersey. This examination is approved by the New Jersey Radiologic Technology Board of Examiners (Board). The Board is an agency within the Department of Environmental Protection (Department). All examinations are computer administered. There is no written examination.

Passing the examination, in itself, is not sufficient for an individual to operate dental x-ray equipment or to perform dental radiologic procedures. Only a licensed dentist, registered dental hygienist, or an individual who has been issued a valid and current dental radiologic technology license is permitted to engage in these activities. A license cannot be issued until a complete license application has been submitted to the Bureau of Radiological Health (BRH) and the BRH has determined that the applicant meets all the licensure requirements. A person who meets the qualifications for examinations listed below and who successfully passes the computerized examination will be eligible for a dental radiologic technology license. Note, a candidate for license must satisfactorily complete a 70-hour course of study in dental radiography that is accredited by the Board or an equivalent program as determined by the Board.

All inquires, including requests for licensure and examination applications, should be addressed to:

New Jersey Department of Environmental Protection
Bureau of Radiological Health
P.O. Box 415
Trenton, NJ 08625-0415
609-984-5890 www.nj.gov/dep/rpp

New Jersey's dental radiologic technology examination is administered by the Dental Assisting National Board, Inc. (DANB) under an agreement with the Department.

Inquiries regarding the examination should be addressed to:

Dental Assisting National Board, Inc.
444 N. Michigan Avenue Suite 900
Chicago, IL 60611-3985
800-367-3262 www.danb.org

The examination will test the candidate's ability to:

(Note that percentages to the left of the Roman numerals represent the approximate percentage of items on the examination in each content area.)

37% I. **Exposure and Evaluation of Radiogaphs**

a. Discuss the important developments in the history of x-ray as it applies to modern dentistry.
b. Define ionizing radiation and identify its natural and artificial sources.
c. Identify the components of an x-ray tube and machine.
d. Discuss the characteristics of the anode and cathode in terms of description, composition, and function.
e. Describe the principles of x-ray production.
f. Define x-ray beam quantity and quality and identify their controlling factors.
g. Discuss the properties of x-rays.
h. Define radiographic density, radiographic contrast, definition, and distortion and identify each of their influencing factors.
i. Define, state purpose, and locate on an x-ray unit the following: kilovoltage (kVp) control; milliampere (mA) control; exposure time control; line voltage compensator, exposure switch; tube housing; collimation; and filtration.
j. Calculate milliampere-seconds (mAs)
k. Discuss the inverse square law and how it is used to maintain density when distance is changed.
l. Identify the parts that make up x-ray film, x-ray film packets, cassettes and intensifying screens and describe the function of each part.
m. Properly inspect cassettes and intensifying screens and perform routine maintenance.
n. Identify the different types and speeds of x-ray film and their use in dental radiography.
o. Define latent image formation.
p. Properly operate various types of dental x-ray equipment.
q. Apply the proper technical factors to produce a radiograph of acceptable diagnostic quality with minimum exposure to the patient.

r. Select the proper type of film, film holders, cassettes, etc. to produce a radiograph of acceptable diagnostic quality with minimum exposure to the patient.
s. Perform patient management techniques related to dental radiography.
t. Address patient concerns about ionizing radiation associated with a dental radiographic procedure, including patient refusal of the radiographic procedure.
u. Identify the sources and modes for transmission of infectious diseases that are common in the dental office.
v. Protect the patient and operator from disease transmission through the selection of infection control techniques and barriers according to ADA/CDC and OSHA guidelines.
w. Perform proper hand washing.
x. Maintain aseptic conditions, including the use of aseptic techniques for film holders and other positioning devices.
y. Select the appropriate film (size and speed) and accessories such as film holder, cassette, lead aprons, thyroid collar, etc. depending on the patient characteristics and the radiographic procedure.
z. Describe the use and purpose of various intraoral and extraoral radiographs, such as: periapical; bitewing; occlusal; panoramic; lateral jaw; cephalometric; and transcranial/TMJ.
aa. Compare paralleling and bisecting angle techniques, including the advantages and disadvantages of each.
bb. Expose intraoral dental film using proper positioning and exposure technique for the parallel method.
cc. Expose intraoral dental film using proper positioning and exposure technique for the bisecting angle method.
dd. Expose extraoral dental film using proper positioning and exposure technique.
ee. Evaluate radiographs for diagnostics value.
ff. Identify positioning and exposure errors and implement corrective action when necessary.
gg. Identify patient variations that affect exposure factors, such as: patient age, edentulous arches, and pathology.

12% II. **Film Processing**

a. Identify the components of automatic and manual processing cycles and the specific action for each component.
b. Describe the functions of processing solutions.
c. Identify optimum conditions and procedures for processing radiographic film in both manual and automatic processors.
d. Inspect and evaluate darkroom area for proper temperature, humidity and radiation protection.
e. Identify and correct errors related to improper darkroom conditions and handling of radiographic film.
f. Prepare, maintain, and replenish film processing solutions for manual and automatic processors.
g. Process exposed intraoral and extraoral dental films, producing radiographs free of processing errors.

11% III. **Mounting and Labeling Radiographs**

a. Identify anatomical structures, dental materials, and patient information on radiographs, including differentiating between radiolucent and radiopaque areas.
b. Match specific tooth radiographs to specific tooth mount windows for an 18 films series.
c. Identify information that must legally appear on the mount label.
d. Identify the purpose for the retention of radiographs.
e. Describe the process for duplicating radiographs.

23% IV. **Radiation Protection of the Patient**

a. Discuss the interactions that ionizing radiation has with the cell.
b. Identify the factors affecting cell response to ionizing radiation.
c. Describe the somatic and genetic effect of ionizing radiation.
d. Identify the cumulative effects of ionizing radiation.
e. Characterize types of cells in groups according to their degree of sensitivity to ionizing radiation.
f. Compare the production of primary radiation with the production of scattered (secondary) radiation.
g. Apply the principles of radiation protection and health physics and

hazards in the operation and maintenance of radiographic equipment.

h. Demonstrate understanding of how filtration, lead aprons, thyroid collars, film speed, mA, kVp, exposure time, distance, collimation, proper film processing, cone (PID) length influences patient dose.
i. Practice patient safety measures to provide protection from x-ray radiation.
j. List and practice special precautions for children, female patients in their childbearing years and for pregnant patients.
k. Define non-occupational individuals.
l. Define the non-occupational annual dose limit as currently published by the National Council on Radiation Protection and Measurement (NCRP).
m. Apply the ALARA principle.
n. Identify major causes of unnecessary x-ray exposure to the patient.
o. Identify current guidelines determining the frequency of radiographic procedures.
p. Identify common x-ray machine malfunctions and reporting procedures.

11% V. **Radiation Protection of the Operator**

a. Practice operator safety measures to provide protection from x-ray radiation.
b. Define the occupational annual dose limit as currently published by the National Council on Radiation Protection and Measurement (NCRP).
c. Define the monthly embryo-fetus dose limits of a pregnant occupational worker as currently published by the NCRP.
d. Apply the ALARA principle.
e. Use proper monitoring devices and radiation protection practices to assure that the occupational and the embryo-fetus doses are within acceptable limits of radiation exposure.
f. Define the units of ionizing radiation measurement in terms of Roentgen (R); Radiation Absorbed Dose (Rad); and Roentgen Equivalent Man (Rem).
g. Convert R to mR; Rad to mRad; and Rem to mRem and vice versa.
h. Identify major causes of unnecessary x-ray exposure to the operator.
i. Define the minimum acceptable distance that an operator should stand from the x-ray tube when the exposure switch is located within the x-ray room.

2% VI. **Storage of Unexposed Film and Processing Chemicals**

a. Inspect and evaluate film storage areas for proper temperature, humidity, radiation protection and inventory control.
b. Identify and correct errors related to improperly storing of radiographic film.
c. Properly store chemical agents used in radiography procedures according to OSHA Hazard Communication Standard.
d. Properly dispose of all chemical agents and other materials used in dental radiography procedures.

4% VII. **Processor Quality Assurance**

a. Discuss the components of a good processor quality assurance program.
b. Describe how a good processor quality assurance program will reduce processing errors and a patient's exposure to x-ray radiation.
c. Implement quality assurance procedures, including daily recording of solution temperatures, dates of solution changes, test film runs, recording of maintenance, etc.

GENERAL RULES FOR THE EXAMINATION

1. Mail only the application to the BRH. Please keep the brochure for your future use.

2. **What to Bring**: The candidate will be required to show two current (cannot be expired) forms of identification with name imprinted, one with a photo and both with a signature. The name of the candidate's identification must match the name on the Test Admission Notice exactly, or the candidate will not be admitted to the examination. The applications will be considered null and void, and the examination fee will be forfeited. Please review your Test Admission Notice once it is received and notify the BRH and DANB if a change needs to be made. Candidates will be electronically fingerprinted and photographed for identification purposes only. No reference materials or notes are to be brought to the examination. No visitors or unauthorized individuals will be permitted into the testing center during testing sessions.

3. **Name/Address Changes**: So that the BRH and DANB can provide timely notification of

examination results, please notify the BRH and DANB of any name or address change.

4. **Appeals**: A candidate who believes their scores from the dental radiologic technology examination were not properly recorded or who feels that test center conditions adversely affected his or her performance on the examination may forward their complaint in writing to the BRH and DANB.

5. **Policy for Testing of Disabled Candidates**: Examinations are designed to provide an equal opportunity for all candidates to demonstrate their knowledge and ability. The examination will be administered to best ensure that it accurately reflects a candidate's aptitude, achievement level or other skills intended to be measured, rather than reflecting a candidate's impaired sensory, manual, or speaking skills, except where those skills are factors the examination purports to measure.

   BRH and DANB will make every reasonable effort to offer the examinations in a manner that is accessible to persons with disabilities. If auxiliary aids or alternative arrangements are required, BRH and DANB will attempt to make the necessary provisions, unless providing such would fundamentally alter the measurement of skills and knowledge the examination is intended to test, would result in an undue burden, or would provide an unfair advantage to the disabled candidate.

   To allow sufficient time to make the necessary arrangements for modification or auxiliary aid, the candidate must complete the Special Accommodations Form. This Form can be obtained by calling the BRH. <u>This Form must be submitted along with the application for examination.</u> Note that this form must be signed by a physician, psychologist or qualified diagnostician.

   BRH and DANB reserve the right to authorize the use of auxiliary aids or modification in such a way as to maintain the integrity and security of the examination. Special accommodations will not be approved for candidates who request accommodations because English is a second language.

<u>PROCEDURES AND POLICIES SPECIFIC TO THE EXAMINATION</u>

1. **Application Scheduling**: There are no specific examination dates or application deadlines.

   Within 10 to 14 days after you have submitted your application and if your application is accepted, the BRH will inform you in writing that it has accepted your application.

   Within 45 days after you have submitted your application, you will receive a Test Admission Notice from DANB stating that you may schedule an appointment by calling a toll free telephone number for the national computerized testing vendor. This toll free line will be available 8 a.m. to 8 p.m. EST Monday through Friday. Directions to test locations can be obtained by calling this toll free number. Appendix A contains a list of test centers

   Candidates will have 60 days from the date listed in DANB's letter to schedule themselves at a national computerized center and take the examination. This 60 day period **cannot** be extended. If the examination is not taken, within this 60 day period, the application is null and void, and the examination fee is forfeited. The candidate must reapply for examination with a new application and fee.

   A candidate has 75 minutes to take the examination. Additional time is allotted **before** the examination for an introductory lesson on the computerized examination. It is strongly recommended that you complete this lesson before taking the examination.

2. **Test Monitoring**: All test sessions are monitored by a Test Center Administrator with full motion video monitoring and taping to ensure security compliance. Any irregularities are documented and reported to the BRH and DANB. If cheating is detected during the examination, the results of those involved will null and void. Additionally, sanctions such as ineligibility at future attempts on the examination and licensure could be imposed. No materials will be allowed into or out of the testing room.

3. **Scoring and Reporting**: The minimum passing score is 75%. Pending no computer problem at the examination center, a candidate will receive a preliminary pass or fail report after completing the examination. Official results will be mailed to each candidate in approximately 4 weeks after taking the examination.

4. **Rescheduling Policy**: A candidate may reschedule the appointment up to 12 noon, two business days **before** the scheduled testing time by calling the national computerized testing vendor's toll-free number. (Example: If scheduled for Thursday, the candidate must call by noon on Tuesday to reschedule). If a candidate calls the vendor to reschedule fewer than two business days before the scheduled exam appointment, the application fee is forfeited, and the application is null and void.

5. **Re-Examination Policy**: If you failed the examination, you cannot reapply for examination until you have received your official results and detailed analysis. A copy of the results must be attached to your application.

6. **Licensure Policy**: To become licensed, an applicant must submit a complete license application. The BRH will accept the "Pass" status notification provided at the national computerized testing vendor provided that it contains the original stamped seal of the national computerized testing center. A copy of this documentation will not be accepted.

STUDY HINTS

An on-line downloadable tutorial is available at DANB's Web Site www.danb.org Once you are in DANB's home page, click on "Examinations" and then on "DANB's Computerized Examination Tutorial". This tutorial will acquaint you with taking the computerized examination. It is recommended that you review this tutorial prior to taking the examination. Please follow the instructions for reviewing this tutorial. If you experience any problems, please call DANB at 1-800-367-3262. Please note that 50 files will appear. The file that contains the tutorial is called "Demo Test exe". Please look for the following icon:

There are two basics types of multiple choice questions on the dental radiologic technology examination: One Best Answer and Negative Format. Here are some suggestions on how to best answer each type.

One Best Answer

In these questions, the question stem is followed by several responses, including one that is the only absolutely correct answer, or the best or most correct of the choices offered.
Hints:

1. Attempt to select the correct answer directly. If this is not possible, attempt to determine the answer by eliminating the distractors.
2. Select the best answer of those provided, even though you may believe that there is another answer just as good or better, that is not included.
3. Read the question carefully. Do not add to or delete information provided. Do not read into items information that is not there, or construct situations that do not exist in the questions as stated.

Negative Format

These questions are used when several correct answers exist for a given question, but the exception (i.e., what is NOT true) is important to know. The stem of the question is followed by several correct responses, and one response that is *not* correct, or is the exception to the rule. The examinee should select this exception.

Hints:

1. Pay attention to words in the stem that are underlined, capitalized, or italicized.
2. Remember that you are looking for the *exception*, not the correct answer. Sometimes it is difficult to keep this "reverse logic" in mind in a testing situation.

A SAMPLING REFERENCE MATERIALS

Below is a sample of some publications used by item writers and test construction committees. These lists do not include all textbooks that could be helpful in preparing for the examinations, nor are they intended

to be endorsements of the publications listed. It is not necessary to use any of these books in order to pass the exam, and conversely, reading all of these books will not guarantee that you will pass the exam. You may use any or all of these materials as a starting point in your study efforts.

Text Specific to Dental Radiography

1. *An Introduction to Basic Concepts in Dental Radiography*, marketed by The American Dental Assistants Association, Chicago, Current Edition
2. Frommer, H.H. *Radiology for Dental Auxiliaries*, C.V. Mosby, St. Louis, Current Edition
3. Miles D. Van Dis, M., Jensen, C., Ferretti, A. *Radiographic Imaging for Dental Auxiliaries*, W.B. Saunders, Philadelphia, Current Edition
4. 4. Haring, J.I. and Jansen, L, *Dental Radiography Principles and Techniques,* W.B. Saunders, Philadelphia, Current Edition
5. Langland,O., Langlais,R. and Preece,J., Principles of Dental Imaging, Lippincott, Philadelphia, Current Edition
6. Johnson,O. McNally,M. and Essay,C., Essentials of Dental Radiography for Dental Assistants and Hygienists Prentice Hall, Current Edition

The following pamphlets are offered by Eastman Kodak Company, Rochester, NY

7. *Exposure and Processing for Dental Radiography*, Pamphlet #N-413,
8. *Radiation Safety in Dental Radiography*, Pamphlet #N-414,
9. *Successful Intraoral Radiographs*, Pamphlet #N-418,
10. *Successful Panoramic Radiography*, Pamphlet #N-406,
11. *Quality Assurance in Dental Radiography*, Pamphlet #N-416,

Refer to chapters on dental radiography in any of the following:

12. Dofka, C.M. *Competency Skills for the Dental Assistant,* Delmar, Albany, Current Edition
13. Sonis, S.T. *Dental Secrets*, Hanley and Belfus, Philadelphia, Current Edition
14. Phinney, D. and Halstead, J., *Delmar's Dental Assisting: A Comprehensive Approach,* Delmar Publishing, Albany, Current Edition
15. Robinson,D. and Bird, D., *Ehrlich and Torres Essentials of Dental Assisting*, W.B. Saunders, Philadelphia, Current Edition

Reference Material Publication Telephone List

American Dental Assistants Assoc. 312-541-1550
www.dentalassistant.org
C.V. Mosby 800-325-4177
www.us.elsevierhealth.com
Delmar Publishing 800-477-3692
www.delmarlearning.com
Eastman Kodak Company 800-933-8031
www.kodak.com
Lippincott 215-521-8300 www.lww.com
Prentice Hall 800-282-0693 www.prehall.com
W.B. Saunders 800-325-4177
www.us.elsevierhealth.com

APPENDIX A
LOCAL COMPUTERIZED EXAMINATION TESTING CENTER LOCATIONS

Locations are accurate as of June 2007. Deletions and additions may occur.

NOTE: The following is a list of local test centers. A complete list of test centers is available at www.danb.org Click on "Examinations" and then on "Exam Dates/Locations"

New Jersey

Pearson Professional Center- Atlantic City	Guarantee Trust Building	1125 Atlantic Avenue	Suite 107	08401
Pearson Professional Center- Lyndhurst		1099 Wall Street West	Suite 106	07071
Pearson Professional Center- Princeton	Princeton Forrestal Village	125 Village Blvd	Suite 303	08540
Pearson Professional Center- Somerset	Pride Building	1543 Route 27		08873

Northern Delaware

Pearson Professional Center- Newark		111 Continental Drive	Suite 109	19713

Eastern Pennsylvania

Pearson Professional Center- Allentown	Commerce Corporate Ctr II	5100 Tighman St	Suite 30	18104
Pearson Professional Center- Horsham	Pennsylvania Business Campus	110 Gibraltar Road	Suite 227	19044
Pearson Professional Center- Wayne	Valley Forge Office Center	676 E. Swedesfrod Rd	Suite 302	19087

Southeastern New York

Pearson Professional Center- Brooklyn		45 Main Street	Suite 706	11201
Pearson Professional Center- Manhattan		500 Fifth Avenue	Suite 3120	10110
Pearson Professional Center- Rego Park (Queens)		97-34 64th Rd. (97-77 Queens Blvd)		11374
Pearson Professional Center- Staten Island	Gardens Office I	1110 South Avenue	Suite 400	10314