ABR Exam Prep: Radiation Therapy Preparation Strategies for Part 2

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Disclaimer
➢ All advices are personal opinions.
➢ No conflict of interests with any paid service or material.

Exam Date, Location and Fees
➢ Computer based exam at Pearson VUE Test Centers

<table>
<thead>
<tr>
<th>Exam Type</th>
<th>Pearson Test Centers</th>
<th>Pearson VUE Test Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Physics Diagnostic, Nuclear, and Therapeutics Part 1 Exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Physics Diagnostic, Nuclear, and Therapeutics Part 2 Exam</td>
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</table>

Exam Fees
Notification of fees due will be included with each exam invitation. Fees are subject to change.

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>Due</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Part 1 Exam Registration Fee</td>
<td>Due with registration</td>
<td>$945</td>
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<tr>
<td>Part 2 Exam</td>
<td>You will be notified when you need to pay this.</td>
<td>$945</td>
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<tr>
<td>Part 1 (CG) Exam</td>
<td>Due with response to take exam ~ about five months before exam</td>
<td>$1755</td>
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<tr>
<td>Re-exam fee*</td>
<td>If you do not pass an exam, a re-exam fee may be assessed.</td>
<td>$4295</td>
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*Administration fee is included and non-refundable.
ABR Part 2 Study Guide

1. Reference and Relative Dosimetry
   - Absolute calibration for photon and electron beams
     TG 51
   - Dosimeter design, characteristics, application and QA, including ion chambers, solid state, optical, chemical, film and arrays
   - Survey Detector design and application

2. Treatment Machines
   - Photon / Electron Medical Accelerators, physics, design, beam characteristics, delivery hardware, QA and calibrating
     TG 142
   - Pencil beam accelerators and beam characteristics
   - Specialized machines, e.g. design and function of non-conventional or site-specific external beam delivery systems


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3. Therapy imaging and room design, patient safety, data transfer and integrity, professionalism and ethics
   - Imaging for Therapy Simulation (including physics, equipment design, application, and image reconstruction)
     CT, CBCT, EPID, MRI, PET, Ultrasound, Fluoroscopy
   - Shielding and Radiation Safety, Shielding calculation
   - Treatment Localization and Verification Imaging, Image registration
     IGRT
   - Quality Control and Error Prevention
   - Computing and IT
     DICOM

   - Professionalism and Ethics

4. Treatment planning for photons, electrons, SRS, SRT, inter- and intra-fraction variations, planning system safety
   - Photon Treatment Planning
   - Treatment Planning Electronic
   - Management of Inter- and Intra-fraction variations
   - To planning system safety and QA

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5. Brachytherapy, radiation protection, radiation biology
   - Brachytherapy, brachytherapy, delivery systems, planning, QA and shielding
     TG 43, Dose calculation
   - Radiation Protection regulations, personal monitoring and special conditions (pregnancy, implanted devices, etc.)
   - Radiation Biology

### ABR Part 2 Exam Questions

- Simple questions
- Complex questions
- New item types
  - Fill-in-the-Blank
  - Point-and-Click

### Exam Breakdowns

- **Online**: Medical Physics
- **Exam**: Part 2 Clinical - All Disciplines

<table>
<thead>
<tr>
<th>Registration</th>
<th>Number of Questions</th>
<th>Exam Time</th>
<th>Exam Date</th>
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</thead>
<tbody>
<tr>
<td>Approximate Number</td>
<td>60</td>
<td>4 hours</td>
<td>6/17/2018</td>
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<tr>
<td>Expected Number</td>
<td>50</td>
<td>3 hours</td>
<td>6/17/2018</td>
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</table>

### ABR Part 2 Pass Rate

**Part 2: Three-year Average Results**

<table>
<thead>
<tr>
<th>Exam Dates</th>
<th>Average Percentage Failing</th>
<th>Average Percentage Passing</th>
<th>Average Total Examinees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 - 2016</td>
<td>25%</td>
<td>75%</td>
<td>140</td>
</tr>
</tbody>
</table>


### ABR Part 2 Study Materials

- **Textbooks**
  - *The Physics of Radiation Therapy*, Khan
  - Khan’s lectures, *Handbook of the Physics of Radiation Therapy*
  - Summary of the physics book with questions after each chapter
  - A Primer on Theory and Operation of Linear Accelerators in Radiation Therapy, Karzmark
  - Medical Electron Accelerators, Karzmark
  - Shielding Techniques for Radiation Oncology Facilities, McGinley
  - *A Review in Radiation Oncology Physics*, Caggiano
  - Radiobiology for the Radiologist, Hall
  - *Review of Radiological Physics*, Huda
  - *The Physics of Radiotherapy X-rays and Electrons*, Metcalfe
  - *The essential Physics of Medical Imaging*, Bushberg
  - Introduction to Radiological Physics and Radiation Dosimetry, Attix

- **AAPM TG reports**
- NCRP Report No. 116, 147 and 151
- Hand calculation practice questions
  - Ask for help from your dosimetrist colleagues
ABR Part 2 Paid Study Materials

➢ RAPHEX
  o https://www.medicalphysics.org/SimpleCMS.php?content=booklist.php&category=raphex
  o Good start to know where is your weak area

➢ ABR Physics Help
  o www.abrphysicshelp.com
  o Good structure, well organized, to study all the topics

➢ WePassed!
  o www.wepassed.com/sites/home
  o Very good practice questions

ABR Part 2 Study tips

➢ Make a study plan, and start EARLY
➢ Study group
➢ Summarize notes from study materials, in different topics
  o Will continue to use these notes for part 3 study
➢ Flash cards (Quizlet.com)
➢ Summarize equations, especially for hand calculations
  o Practice, practice, practice hand calculations
➢ Rule of thumb
➢ Practice using Texas Instruments TI-30XS calculator (https://www.theabr.org/medical-physics/initial-certification/calculators)

ABR Part 2 Study tips: RAPHEX

➢ Exams before 2000 are not very useful
  o Many repeating questions from year to year
➢ Starting from the newest and work backwards
➢ Take one exam in allowed time, don’t break it into small pieces
➢ Categorize your errors into a few major subjects
  o The subjects with most errors are your weak spots
➢ After studying weak spots, repeat the questions you missed first time on
ABR Part 2: Exam Tips

➢ Sleep well the night before
➢ Prepare a final one page review note for equations/concepts that you want to read one more time before the exam
➢ Complex questions are 3 points and simple questions are 1 point
➢ Manage TIME: Don’t stuck on one question, flag it and come back
➢ Go through all the questions at least once

ABR Part 2: New Item Types

➢ Fill-in-the-Blank

The candidate must type in the correct response:
1. Rev. 10 CFR 20, the total dose to members of the public should not exceed ___ mSv.
Answer: 1 mSv
Acceptable range of 0.99 to 1.01

➢ Point-and-Click

The candidate must identify a region on an image:
1. What part of the head is shaded in red? (Click to select an area on the image)
Questions?
And Good Luck!