

## SAUDI BOARD RESIDENCY TRAINING PROGRAM

### RADIOLOGY TECHNOLOGY

#### Promotion Examination

##### Written Examination Format:

- A written examination shall consist of one paper with not less than 100 MCQs with a single best answer (one correct answer out of four options).
- The examination shall contain type K2 questions (interpretation, analysis, reasoning and decision making) and type K1 questions (recall and comprehension).
- The examination shall include basic concepts and clinical topics relevant to the specialty.
- Clinical presentation questions include history, clinical finding and patient approach. Diagnosis and investigation questions; include the possible diagnosis and diagnostic methods. Management questions; including treatment and clinical management, either therapeutic or non-therapeutic, and complications of management. Materials and Instruments questions; including material properties, usage, and selection of instruments and equipment used. Health maintenance questions; include health promotion, disease prevention, risk factors assessment, and prognosis.

##### Passing Score for Promotion Exam:

The trainee's performance is assessed in each of the evaluation formulas according to the following scoring system:

Score	Less than 50%	50% – 59.4%	60% - 69.4%	More than 70%
Description	Clear Fail	Borderline Fail	Borderline Pass	Clear Pass

1. To upgrade the trainee from a training level to the next level, She/he must obtain at least a **Borderline Pass** in each evaluation form.
2. The program director may recommend to the local supervision committee to request the promotion of the trainee who did not meet the previous promotion requirement according to the following:
  - A. In case that the trainee gets a **borderline Fail** result in **one** of the evaluation forms, the remaining evaluation forms must be passed with **Clear Pass** in at least **one** of them.
  - B. In case that the trainee gets a **borderline Fail** result in **two** of the evaluation forms to a maximum, provided they do not fall under the same theme (Knowledge, Attitude, Skills). The remaining evaluation forms must be passed with **Clear Pass** in at least **two** of them.
  - C. The promotion must be approved in this case by the scientific council for the specialization.



### Blueprint Outlines

No.	<b>R1</b>	Section	Proportion%
1		General X-ray	40%
2		Fluoroscopy	15%
3		Angiogram	15%
4		Radiation Protection	10%
5		Patient Care	10%
6		Quality	10%
<b>Total</b>			<b>100%</b>

No.	<b>R2</b>	Section	Proportion%
1		General X-ray (Physics & Instrumentation)	10%
2		Computed Tomography Imaging (Physics & Instrumentation)	20%
3		Magnetic Resonance Imaging (Physics & Instrumentation)	20%
4		Ultrasound Imaging (Physics & Instrumentation)	20%
5		Molecular and Nuclear Imaging (Physics & Instrumentation)	20%
6		Radiology Informatics	10%
<b>Total</b>			<b>100%</b>

#### **Note:**

- Blueprint distributions of the examination may differ up to +/-3% in each category.
- Percentages and content are subject to change at any time. See the SCFHS website for the most up-to-date information.



No.	<b>R3 (Sectional Imaging)</b> Section	Proportion%
1	Axial-Body	20%
2	Axial-MSK	20%
3	Axial-Neuro	20%
4	Axial-Cardiac	10%
5	Axial-Thorax	20%
6	Post processing	10%
<b>Total</b>		<b>100%</b>

No.	<b>R3 (Ultrasound)</b> Section	Proportion%
1	US-Abdomen	20%
2	US-Neuro	20%
3	US-Small Part	10%
4	US-Vascular	20%
5	US-ECHO	20%
6	US-Neonatal	10%
<b>Total</b>		<b>100%</b>

No.	<b>R3 (Nuclear Medicine)</b> Section	Proportion%
1	NM-Bone	20%
2	NM-Renal	20%
3	NM-Endocrine	10%
4	NM-Hepatobiliary	10%
5	NM-Infection	5%
6	NM-Oncology	15%
7	NM-Neuro	10%
8	NM-GI	10%
<b>Total</b>		<b>100%</b>

**Note:**

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### **Suggested References:**

General books (clinical & physics focused books):

- Getting Started in Clinical Radiology: From Image to Diagnosis, Paperback, 2005, by George W. Eastman. Thieme.
- Radiologic Science for Technologists: Physics, Biology, and Protection, Hardcover, 11th edition, by Stewart C. Bushong. Mosby.
- The Practice of Radiology Education: Challenges and Trends. Hardcover, 2009, by Teresa van Deven. Springer-Verlag Berlin Heidelberg.
- The Essential Physics of Medical Imaging, Hardcover, 3rd Edition, by Jerrold T. Bushberg. Lippincott Williams & Wilkins.
- Patient Care in Radiography: With an Introduction to Medical Imaging, Paperback, 9th Edition, by Ruth A. Ehrlich. Mosby.

X-ray focused books:

- Bontrager's Handbook of Radiographic Positioning and Techniques. Spiral-bound, 8th edition, by Kenneth L. Bontrager. Mosby.
- Clark's Positioning in Radiography. Hardcover, 13th edition, by Stewart Whitley. CRC Press.
- Radiographic Pathology for Technologists. Paperback, 6th edition, by Nina Kowalczyk. Mosby.

CT/MRI focused books:

- Computed Tomography for Technologists: A Comprehensive Text, 2018, by Lois E. Romans. Lippincott Williams & Wilkins.
- Computed Tomography: Physical Principles, Clinical Applications, and Quality Control. Paperback, 3rd Edition, by Euclid Seeram. Saunders.
- Computed Tomography, Paperback, 1st edition, by Stewart C. Bushong. McGraw-Hill Education.
- Computed Tomography for Technologists: Exam Review. Paperback, 1st edition, by Lois E. Romans. Lippincott Williams & Wilkins.
- CT & MRI Pathology: A Pocket Atlas. Paperback, 1st edition, by Michael L. Grey and Jagan M. Ailinani. McGraw-Hill Education.

MRI focused books:

- Handbook of MRI Technique. Paperback, 4th edition, by Catherine Westbrook. WileyBlackwell.
- MRI from picture to proton 2nd edition by Donald W. McRobbie
- MRI in Practice, Paperback, 5th edition, by Catherine Westbrook. Wiley-Blackwell.
- Handbook of MRI Scanning. Spiral-bound, 1st edition, by Geraldine Burghart Mosby.



- MRI Parameters and Positioning, Paperback, 2nd edition, by Torsten B. Möller. TPS.
- CT & MRI Pathology: A Pocket Atlas. Paperback, 1st edition. by Michael L. Grey. McGrawHill.

Ultrasound focused books:

- Ultrasound Scanning: Principles and Protocols. 4th edition, by Betty Bates Tempkin. Saunders.
- Workbook for Textbook of Diagnostic Sonography paperback, 8th edition, by Sandra L. Hagen–Ansert. Mosby.
- Sonography: Introduction to Normal Structure and Function. Paperback, 4th edition, by Betty Tempkin and Reva Arnez Curry. Saudners.

Nuclear Medicine focused books:

- Nuclear Medicine and PET/CT: Technology and Techniques. Hardcover, 7th edition, by Paul E. Christian. Mosby.
- Nuclear Medicine Physics: The Basic. Paperback, 7th edition, by Ramesh Chandra. Lippincott Williams & Wilkins.
- Fundamentals of Nuclear Pharmacy. Hardcover, 7th edition, by Gopal B. Saha. Springer.
- PET/MRI: Methodology and Clinical Applications. Paperback, 1st edition, by Ignasi Carrio, and Pablo R. Ros. Springer.

**Crash Courses:**

- Outline of each course including suggested reading references given by the provider.

**Note:**

This list is intended for use as a study aid only. SCFHS does not intend the list to imply endorsement of these specific references, nor are the exam questions necessarily taken solely from these sources.



## **Example Questions**

### **EXAMPLE OF K1 QUESTIONS**

#### **Question 1**

Which of the following is the commonest artefact associated with simple back projection?

- A. Ring
- B. Star edge
- C. Partial volume
- D. Beam hardening

### **EXAMPLE OF K2 QUESTIONS**

#### **Question 1**

A woman patient is referred with right upper quadrant pain and tenderness. She has a history of oral contraceptive use. A solid, hypoechoic mass is identified in the right lobe of the liver (see report).

#### **Color Doppler**

Hypervascularity of the mass.

Which of the following is the most likely diagnosis?

- A. Hepatic cyst
- B. Hepatic lipoma
- C. Hepatic abscess
- D. Hepatic adenoma