Contents

Contributors *vii*
Foreword by A Anbarasu *ix*
Foreword by Umesh Krishnamurthy *xi*
Preface *xiii*

1. Pioneers in Radiology 1
2. Principles of Imaging and Computer-based Applications in Radiology 21
3. Basic Physics 37
4. X-ray Production and Generators 63
5. Beam Modifiers 91
6. Interaction of Radiation with Matter 108
7. Film Screen Radiography 125
8. Digital Printing 142
9. Digital Radiography 148
10. Fluoroscopy and Digital Subtraction Angiography 165
11. Orthopantomography, Tomography and Cone Beam CT 185
12. Mammography 193
13. Computed Tomogram 220
14. Ultrasonogram 256
15. Doppler Imaging 293
16. Principles of Magenetic Resonance Imaging 303
17. Magnetic Resonance Imaging Pulse Sequence 327
18. Magnetic Resonance Imaging Engineering 374
19. Radioactivity and Radiopharmaceuticals 401

20. Nuclear Scintigraphy–Gamma Imaging 422
21. Positron Emission Tomography 433
22. Dual Energy X-ray Absorptiometry 448
23. Occupational Hazards and Adverse Effects in Radiology 457
24. Radiation Protection and Monitoring in Radiology 525
25. Radioactive Materials—Transport, Storage and Waste Disposal 569
26. Quality Assurance 577
27. Artifacts in Imaging 611
28. Image Formation, Processing and Postprocessing 665
29. Detectors in Imaging 692
30. Image Optimization and Image Quality 730
31. Principle of Fast Imaging 756
32. Ergonomics in Radiology 773
33. Technical Specifications for Radiology Equipment 781

Index *827*