Important instructions:

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

Write short notes on:

1. Enumerate the different types of X-Ray tubes. What is the difference between a conventional X-Ray tube and a mammography tube? Briefly describe mammography tube with the help of a neat labeled diagram.  

2. What are the cardinal principles of radiation protection? What methods would you use to decrease exposure in fluoroscopy?  

3. a) Personal Dosimeters  
   b) Tissue harmonic imaging  

4. a) MR contrast for liver imaging  
   b) Contrast induced nephropathy and methods to prevent it.  

5. a) Imaging of hemobilia and interventions.  
   b) Principles and applications of RF ablation  

6. a) CT perfusion in acute stroke  
   b) Principles of functional MR imaging  

7. a) Renal isotope scanning  
   b) Tomosynthesis in mammography  

8. Techniques of ultrasound elastography and its applications.  


10. Advances in CT technology to decrease the radiation dose in children. What is CT Dose Index (CTDI)?  

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