Write short notes on:

1. Role of PET in:
   a) Prostate malignancy.
   b) SPN and lung cancer management.
   5+5

2. a) Respiratory gating.
    b) SUV and its pitfalls
    c) TOF
    3+4+3

3. a) NIS (Sodium Iodide Symporter)
    b) Novel therapies in $^{131}$I refractory thyroid cancers.
    5+5

4. Alpha and beta emitters in Radionuclide therapy of Medullary Thyroid cancer.
   5+5

5. Renogram and its alterations in disease process.
   10

6. A thyroid cancer patient was admitted in Nuclear Medicine isolation room after receiving 150mCi $^{131}$I therapy. He developed massive acute myocardial infarction and died at 48 hour post administration. What is the procedure to dispose his body?
   10

7. a) Enumerate upon treatment modalities in hyperthyroid disease.
    b) Elaborate on radioiodine treatment planning and management.
    4+6

8. a) Bone palliation
    b) TENIS
    5+5

9. a) Define spill.
    b) How do you manage a radiation accident?
    c) What is INES?
    2+5+3

10. AERB norms in designing of a state of the art Nuclear Medicine Department.
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