**[LP 0819]** AUGUST 2019 **Sub. Code: 2121**

**B.Sc. NUCLEAR MEDICINE TECHNOLOGY**
**THIRD YEAR**
**PAPER I – RECENT ADVANCE IN NUCLEAR MEDICINE TECHNIQUES**

***Q.P. Code: 802121***

**Time: Three Hours** **Maximum: 100 Marks**

**Answer all questions**

**I. Elaborate on:** **(3 x 10 = 30)**

1. A 3 year old child has complaints of recurrent respiratory infections because of aspiration. Her pediatrician has requested for Radionuclide study of G.E. Reflux evaluation. Describe the general principles involved in imaging this patient.
2. What are the general principles involved in localization of a radiopharmaceutical in the target organ?
3. A tertiary care government hospital is planning to start high dose radionuclide therapy facility in its premises. What are the various factors to be considered in its design and commissioning as well as waste disposal methods from this facility?

**II. Write notes on:** **(8 x 5 = 40)**

1. Imaging method for Osteomyelitis.
2. Medical Internal Radiation Dose (MIRD) Calculations.
3. Shielding for Alpha, Beta, X-Rays and Gamma Radiations.
4. Daily and weekly quality control parameters for SPECT-CT.
5. Biological effects of low dose radiation.
6. Right ventricular function imaging and quantification.
7. Describe about various radiopharmaceuticals in Cerebral Perfusion Imaging SPECT.
8. Carrier – free Radiopharmaceuticals.

**III. Short answers on:** **(10 x 3 = 30)**

1. PET – MRI: Types of Acquisition.
2. PET based RT planning.
3. Weekly quality check parameters for SPECT-CT.
4. Advantages of Diagnostic CT along with SPECT images.
5. Use of Adenosine in Nuclear Medicine.
6. Intraoperative Gamma Probe.
7. IRMA assays.
8. ALARA Principle.
9. $^{68}$Ga Gallium generator.
10. Prostate cancer imaging.

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