

B.Sc. NUCLEAR MEDICINE TECHNOLOGY**SECOND YEAR****PAPER I – PHYSICS OF NUCLEAR MEDICINE INSTRUMENTATION***Q.P. Code: 802111***Time: Three Hours****Maximum: 100 Marks****Answer all questions****I. Elaborate on:****(3 x 10 = 30)**

1. Describe in detail how to design and construct a high dose radionuclide therapy ward for treating patients with radioactive iodine and similar radioactive medications.
2. The housekeeping staff, while cleaning the hot lab, drinks clear liquid from a beaker thinking that its water to quench his thirst. Subsequently he realises that it could be radioactive material. Discuss in detail how to determine various isotopes that could possibly be in the liquid he had just drunk?
3. Describe and explain the various quality control parameters involved in managing a SPECT – CT.

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

1. Protection of technologist while administering radioactive iodine.
2. Flat field collimator.
3. Measuring gamma and positron emission.
4. Modes of radioactive decay.
5. Radioisotope purity.
6. Shielding agents for alpha, beta, gamma and positron radiation.
7. The radioactive technetium generator.
8. Effective dose delivered to the body.

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

1. Inverse square law.
2. Crystals in PET Imaging.
3. Stable radionuclide.
4. Alpha decay.
5. Sterility and pyrogen testing.
6. Spatial resolution.
7. Cathode ray tube.
8. Image segmentation in nuclear medicine.
9. Operating voltage of a G.M. counter.
10. Pocket dosimeter.
