

B.Tech Sem – VIII (2007 Course) (Biomedical Engg.) :

WINTER - 2017

SUBJECT : ELECTIVE – II: NUCLEAR MEDICINE

Day : **Wednesday**

Date : **22/11/2017**

Time : **02.30 PM TO 05.30 PM**

Max. Marks : **80**

W-2017-2705

N.B.:

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.** Out of the remaining questions attempt **ANY TWO** questions from each section.
 - 2) Answers to both the sections should be written in the **SEPARATE** answer books.
 - 3) Figures to the right indicate **FULL** marks.
 - 4) Assume suitable data if necessary.
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SECTION – I

- Q.1** a) What is the need of pulse height analyzer? Explain it with neat block diagram. [06]
b) What is the function of gas filled detector? Draw the pulse height curve as a function of applied voltage in gas filled detector. [04]
c) Write ideal characteristics of radiopharmaceuticals. [04]
- Q.2** a) Draw the diagram of scintillation detector and explain it with the working principle. [06]
b) Explain the block diagram of gamma camera showing major parts of the image forming system. [07]
- Q.3** a) Explain with neat diagram multichannel analyzer system using photo multiplier tube. [07]
b) What is an important of high voltage power supplies used in detectors? [06]
- Q.4** a) Explain the radiopharmaceutical chemistry of Technetium. [07]
b) What are the general considerations for Quality assurance of radiopharmaceuticals? [06]

SECTION – II

- Q.5** a) What are three cardinal rules to minimize external radiation exposure? [05]
b) What is fusion imaging and what are its advantages? [05]
c) What are the diagnostic applications of radiopharmaceuticals? [04]
- Q.6** a) Explain with diagram Single Photon Emission Computed Tomography. [07]
b) Write a note on “Time Activity Curve” in relation with contribution towards diagnostic efficiency. [06]
- Q.7** a) How the labeled antigens are evaluated? [06]
b) What are the diagnostic applications of radiopharmaceuticals in nuclear medicine? [07]
- Q.8** a) Explain the principle of radiation protection with example. [07]
b) Describe the treatment for removing internally deposited radionuclide. [06]

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