

# National Board of Examinations

**Question Paper Name :** DNB Nuclear Medicine Paper1  
**Subject Name :** DNB Nuclear Medicine Paper1  
**Duration :** 182  
**Total Marks :** 100  
**Display Marks:** No

**Maximum Instruction Time :** 0  
**Is Section Default? :** No

**Question Number : 1 Question Id : 32718744107 Consider As Subjective : Yes**

**Please write your answers in the answer booklet within the allotted pages as follows:-**

Question Number	Answer to be attempted within	Question Number	Answer to be attempted within
Q. 1	Page 1-5	Q. 6	Page 26-30
Q. 2	Page 6-10	Q. 7	Page 31-35
Q. 3	Page 11-15	Q. 8	Page 36-40
Q. 4	Page 16-20	Q. 9	Page 41-45
Q. 5	Page 21-25	Q. 10	Page 46-50

1. Briefly describe the working principle of ionisation chamber with a diagram. Enumerate applications of ionisation chamber in clinical practice. [4+6]

**Question Number : 2 Question Id : 32718744108 Consider As Subjective : Yes**

Define and differentiate the characteristics between LSO, BGO, and LYSO crystals used in PET scanners. [10]

**Question Number : 3 Question Id : 32718744109 Consider As Subjective : Yes**

Describe briefly the concept and working principles of attenuation correction in hybrid imaging systems (SPECT/CT and PET/CT). [5+5]

**Question Number : 4 Question Id : 32718744110 Consider As Subjective : Yes**

Enumerate the various collimator types used in gamma cameras with diagram & working principles and their applications in clinical nuclear medicine. [6+4]

**Question Number : 5 Question Id : 32718744111 Consider As Subjective : Yes**

- a) Pulse height analyzer. [5]
- b) Dead time and its correction. [5]

**Question Number : 6 Question Id : 32718744112 Consider As Subjective : Yes**

Explain the working principle, design and advantages of solid-state detectors over conventional systems and their clinical applications. [10]

**Question Number : 7 Question Id : 32718744113 Consider As Subjective : Yes**

Define HVL and TVL along with their relations. Discuss clinical applications of HVL and TVL. [5+5]

**Question Number : 8 Question Id : 32718744114 Consider As Subjective : Yes**

- a) Pair production and its clinical applications in nuclear medicine. [5]
- b) Cerenkov radiation and its clinical applications in nuclear medicine. [5]

**Question Number : 9 Question Id : 32718744115 Consider As Subjective : Yes**

Enumerate and discuss the quality control parameters in PET/CT. [10]

**Question Number : 10 Question Id : 32718744116 Consider As Subjective : Yes**

Write short notes on the following and how they are used in nuclear medicine data interpretation:

- a) ROC analysis. [5]
- b) ANOVA. [5]