QP CODE : 27502

( 3 Hours ) Marks : 80

NB : (1) Question **No.1** is **Compulsory.**
(2) Answer **any three** out of remaining **five** questions.
(3) Use **legible** handwriting.
(4) Draw **neat diagram** with proper **labeling.**

1. (a) Explain pair production process. 5
(b) Define (1) Half life period (2) Dark current in PMT. 5
(c) State characteristic property of radio active radiation. 5
(d) What do you understand by Lithium ion drifted solid state detectors ? explain. 5

2. (a) Explain the region of multiplicative operation in gas filled detectors. 10
(b) Explain V-I characteristics of GM counter. 10

3. (a) Explain solid state detector in detail. 10
(b) Explain nuclear instrumention for toxic fluid tank level measurement. 10

4. (a) Explain nuclear instrumentation system with block diagram. 10
(b) What are photomultiplier tubes ? How they are used in scintillator detector. 10

5. (a) Explain working of 'Gamma Cammera' wih neat block diagram. 10
(b) Explain radiation uptake studies with block diagram. 10

6. Write a short note **(any two)** 20
(a) Food irridiation
(b) SNR improvement
(c) MCA (multichannel analyser)
(d) Isotopes and Isobars

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