BE/InSt/Sem VIII/CBGS/Nov'16 Instrumentation /09-12-2016

Q.P. Code : 722701

(3 Hours) **[Total Marks :80**

N.B. : (1) Q 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. Answer the following :- **20**
   (a) What are the different **units of radioactivity** ? Explain.
   (b) Explain **Isotopes and Isobars** with example.
   (c) Mention the **types** of Scintillator.
   (d) Explain **Count rate meter**.

2. (a) What are the properties of alpha, beta and gamma radiations? Explain in detail. **10**
   (b) Explain **Compton effect** ? Discuss the **energy and momentum equations** involved in it. **10**

3. (a) Explain **G.M counter**. Also explain the V-I characteristics of same. **10**
   (b) What are Solid state detectors? Explain **Ge- Li or Si - Li** detector with neat diagram. **10**

4. (a) Explain various factors that affect the resolution of gamma- energy spectrum. **10**
   (b) Explain **MCA** (multi channel analyzer) with neat block diagram. **10**

5. (a) Explain "**Radiation Uptake studies**" with help of block diagram. **10**
   (b) Explain working of **Gamma camera** with neat block diagram. **10**

6. Write short note on **any TWO** : **20**
   (a) Properties of good Scintillator.
   (b) Properties of semiconductor in solid state detector.
   (c) Pipe leak detection and locating.
   (d) Food irradiation.