Q.P. Code :16351

[Time: Three Hours]                                            [Marks:80]

Please check whether you have got the right question paper.

N.B:    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.

**Q.1** Answer the following:-
    a)  With respect to PMT explain "Dark current".                           05
    b)  Explain pair production process.                                      05
    c)  What is the need for different units of radioactivity?                05
    d)  Explain need of pulse shaping in nuclear counting system.            05

**Q.2**  a)  Explain proportional counting in detail.                         10
         b)  Explain the need of quenching in G.M counter. Also discuss the method of quenching.   10

**Q.3**  a)  Explain industrial usage of radioactivity.                       10
         b)  Explain the principle and architecture of MCA (Multichannel analyzer).   10

**Q.4**  a)  Explain Thyroid uptake studies with block diagram.              10
         b)  Explain different types of discriminators and their functions.   10

**Q.5**  a)  What are the different region of gas filled detectors?          10
         b)  Explain applications of nuclear instrumentation for thickness measurement.   10

**Q.6** Write short note on **(any two)**:-                                   20
    a)  Food irridiation
    b)  Si-Li or Ge-Li detector
    c)  'RAD and REM'
    d)  SNR improvement

---------------------------------

2FEE6430A725D77A0463A14A53913FCA