Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

FT-6002 (CBGS)

B.E. VI Semester

Examination, May 2018

Choice Based Grading System (CBGS)

Nuclear Safety and Radioactive Materials

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. What is radioactivity and what are reasons of radioactivity and radioactive decay particles and why Radioactivity occur only in some Isotopes also establish relation between Half life and Decay constant? 14

2. a) Define Radiation, draw Electromagnetic spectrum and its life examples? Why some isotopes are radioactive, Deduct formula for radioactive half-life linking to decay constant.

   b) Draw Electromagnetic wave spectrum from 10^3 to 10^21 Hertz frequencies. Also the name of band from 10^13 to 10^15 Hertz frequencies? Give real life examples of these wave lengths?

14

3. a) Draw and explain the difference between the Geiger Muller counter (GM) and scintillation counter (SC) and their uses?

   b) What are the Handling and Emergency preparedness plan in Radiation emergency in Nuclear power plant?

14

4. Draw figures/schematics of PWR and PHWR (CANDU). List engineered safety features. Describe cold Leg Large Break Loss of Coolant Accident (LOCA) for a PWR? 14

5. Write short notes on: 14
   a) Role of enriched uranium and moderators
   b) Breeder Reactor
   c) ATWS
   d) CANDU

6. Describe radioactive waste management and explain Solid, Liquid, Gas Radioactive waste management? 14

7. a) Describe reactor ventilation system uses in Reactor building?

   b) Discuss super/sub adiabatic temperature verses altitude and inversion in cold effect of wind direction?

14

8. Write the case study of Chernobyl 1984? 14

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