

Roll No .....

**FT-605**

**B.E. VI Semester**

Examination, June 2016

**Nuclear Safety and Radioactive Materials**

*Time : Three Hours*

*Maximum Marks : 70*

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.  
 ii) All parts of each question are to be attempted at one place.  
 iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.  
 iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Write down objectives of radiation protection.  
 b) Write short note on  $\beta$  (Beta) radiation.  
 c) Define  
     i) Rad           ii) Gray       iii) Roentgen  
 d) Describe various instruments used for measurement of radiation.

OR

Describe the techniques of area and air monitoring of radiation.

2. a) Briefly describe the characteristics of radioactive waste.  
 b) Write short note on fragmentation.  
 c) Write short note on compacting.  
 d) Describe various types of methods and units used for radioactive waste disposal.

OR

How the treatment and disposal of radioactive gaseous waste is carried out?

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3. a) What is importance of half value layer?  
 b) Write short note on radiochemical properties.  
 c) What precautions should be taken for handling of radioisotope waste?  
 d) Describe the prevention/control measures of radiation emergencies.

OR

Describe in detail the requirements and standards of class 'A' laboratory? Also draw a neat diagram of laboratory.

4. a) Write short note on danger zone.  
 b) How protection from internal radiation (by inhalation and ingestion) can be made?  
 c) How the protection from external radiation (by absorption) can be made? <http://www.rgpvonline.com>  
 d) Describe the importance of fire detection and alarming system. Also describe types of some automatic detectors.

OR

Describe the method of using water or foam and precautions to be taken in extinguishing the fire dealing with radioactive materials.

5. a) Describe briefly the components of nuclear power station.  
 b) Write short note on hard water.  
 c) What are the failure modes of nuclear power plant?  
 d) What are the safety objectives defined in nuclear power plant? Explain in details.

OR

Discuss the safety conditions required during an accident in nuclear power plant.

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