

Model question paper

**SEVENTH SEMESTER B.TECH DEGREE EXAM (MODEL) NOVEMBER 2016**

**BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING**

**13.705.2 BIOPROCESS PLANT SAFETY AND HAZARD ASSESSMENT (Elective II)**

**Time: 3 hours**

**Max. Marks: 100**

**PART A**

Answer **all** questions. Each question carries **2** marks

- 1) Explain the effect of non ionizing radiation.
- 2) Discuss about different types of ventilations used in industries.
- 3) What are the different operational parameters in a process plant?
- 4) What are the safety measures to be taken in the case of processes involving gases and vapours?
- 5) Explain the significance of preliminary hazard analysis.
- 6) Differentiate between flash point and fire point. What is the significance of these two in process industries?
- 7) Discuss about the site emergency plan.
- 8) Write a note on biosafety guidelines.
- 9) Explain the concept of biological safety cabinets.
- 10) Name the different laboratory associated infection.

**PART B**

Answer **one full** question from **each** Module. Each carries **20** marks

**MODULE I**

11. a) Explain how mechanical hazards are controlled. **(10 Marks)**  
b) Explain the role of industrial hygienists. **(10 Marks)**

**Or**

12. a) Define hazardous waste. Discuss about hazards waste management. **(10 Marks)**  
b) Explain the role of instrumentation for the safe process plant operation. **(10 Marks)**

## MODULE II

13. a) Describe in detail about fire protection in process plants. (10 marks)  
b) Explain in detail about classification of hazards in chemical process industries. (10 marks)

**Or**

14. a) Write a detailed account on occupational diseases. (10 marks)  
b) Write the procedure for Quantitative risk assessment (QRA) of a hazardous storage tank. (10 marks)

## MODULE III

15. a) What are the various factors to be considered in the selection of methods for decontamination of wastes? (10 marks)  
b) Explain in detail plume dispersion and jet dispersion models. (10 Marks)

**Or**

16. a) Discuss about dense gas dispersion models. (10 Marks)  
b) Discuss the evaluation of individual risk contours. (10 Marks)

## MODULE IV

17. a) Discuss the biosafety guidelines in detail published by Government of India. (10 Marks)  
b) What are the advantages and disadvantages of genetically modified organism? How it will affect the environment. (10 Marks)

**Or**

18. a) Discuss about biosafety in relation to transgenic crops. (10 Marks)  
b) Describe biosafety and Cartagene protocol. (10 Marks)