

Printed Pages : 2



ECH-041

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 151755**

Roll No.

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**B. Tech.**

(SEM. VII) (ODD SEM.) THEORY  
EXAMINATION, 2014-15  
**PROCESS UTILITIES AND  
SAFETY IN CHEMICAL PLANTS**

Time : 3 Hours]

[Total Marks : 100

- 1 Attempt any four parts : 5×4=20
- a) Mention various process utilities and discuss their role and importance in chemical plants.
  - b) Elaborate fire water system.
  - c) Differentiate between D. M water and soft water.
  - d) Discuss the characteristics of cooling water.
  - e) Explain the treatment methods of water in chemical industries.
  - f) Discuss water resource management.
- 2 Attempt any **two** parts : 10×2=20
- a) State the practices adopted for efficient distribution and utilization of steam in process industries.
  - b) Explain the design of a flash tank.
  - c) Discuss the requirements of steam traps and their applications.

- 3** Attempt any **two** parts : **10×2=20**
- a) Compare different types of vacuum pumps and describe any one of them with a neat sketch.
  - b) Explain the functioning of reciprocating compressor with a neat sketch.
  - c) Write in detail about the different insulation materials used for high and low temperature insulation.
- 4** Attempt any **two** parts : **10×2=20**
- a) Explain the safety aspects involved in location, site selection, plant layout unit plot planning.
  - b) Discuss identification and assessment of hazards in process industries.
  - c) Discuss the control of toxic chemicals and flammable materials.
- 5** Attempt any **two** parts : **10×2=20**
- a) Elaborate the provision of automatic control systems for pressure and temperature flow in process industries.
  - b) What are the roles of government, safety organization and trade unions in providing industrial safety?
  - c) Explain how emergency response system training will improve the process safety.
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