

(The paper code and roll No. to be filled in your answer book)

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B TECH
(SEM VII) THEORY EXAMINATION 2016-17
PROCESS UTILITIES & SAFETY IN CHEMICAL PLANTS

Time: 3 Hours

Total Marks: 100

Note: - Attempt **all** questions.

1. Attempt any **four** parts of the following: **(5x4=20)**
 - (a) Discuss the advantages and disadvantages of water sources.
 - (b) Differentiate between Water tube boiler and Fire tube boiler.
 - (c) Discuss the surface sources of water with their important characteristics.
 - (d) Explain in detail about utilization of steam in chemical plants.
 - (e) Explain in detail conservation and reuse of water.
 - (f) Describe the important process utilities in chemical industry.

2. Attempt any **four** parts of the followings: **(5x4=20)**
 - (a) What do you mean by selection and sizing of boiler? Also discuss about flash tank.
 - (b) Discuss the water resources management strategies in India.
 - (c) Discuss the various equipments used for steam generation.
 - (d) Define 'Super Heaters'. Also explain the operation of a steam condenser.
 - (e) What do you understand by 'steam economy'? Give any practical application in a chemical process plant.
 - (f) What is a steam trap? Discuss different types of steam traps.

3. Attempt any **two** parts of the followings: **(10x2=20)**
 - (a) Give the various methods for developing vacuum in process plants and also explain the limitation for each one of them.
 - (b) How to select a site for a plant set-up? Also discuss about the plant safety.
 - (c) Write short notes on the
 - (i) Tackling Disaster
 - (ii) Pressure relief valve

4. Attempt any **two** parts of the following: - **(10x2=20)**
 - (a) Discuss in detail about the disaster management. Also discuss Risk Management Routines.
 - (b) Discuss various methods for the extinction of fire. Differentiate between Hazard and Risk. What is HAZOP?
 - (c) Discuss the operation of following:
 - (i) Reciprocating compressor
 - (ii) Steam jet ejector

5. Attempt any **two** parts of the following: - **(10x2=20)**
 - a) Explain, in detail, Water Treatment Process.
 - (b) Discuss various legislations on safety control presently applicable in process chemical plants.

- (c) What are the desired properties of good insulating materials? How thermal insulators are classified? Discuss the importance of insulation.

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