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Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)



B. Tech (Fifth Semester - Regular) Examinations, November – 2024

22BCHPE35011 – Process Utility and Industrial Safety

(Chemical Engg.)

Time: 3 hrs

Maximum: 70 Marks

Answer ALL questions
(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Define carbonate hardness and non-carbonate hardness.	CO1	K1
b. Why should natural water not to be fed to the boiler?	CO2	K1
c. Define the mechanical efficiency of a reciprocating air compressor.	CO1	K1
d. Discuss the component of Fire triangle.	CO2	K1
e. Mentions the Biological Hazard and its preventive steps.	CO2	K1

PART – B

(15 x 4 = 60 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Illustrate the Electro dialysis process for Desalination of Brackish Water.	8	CO3	K2
b. Discuss the Boiler trouble removal by internal treatment.	7	CO3	K2
(OR)			
c. Describe demineralisation Process of water softening. Explain the cation exchange and Anion exchange resin. Analyse the reaction, regeneration process involved in this process.	15	CO1	K3
3.a. Mention the Selection criteria of a Steam boiler. Discuss applications of a boiler with respect to industrial operations.	8	CO2	K2
b. Compare between fire tube boilers and water tube boilers with respect to technical parameter.	7	CO2	K2
(OR)			
c. Analyse the roll of each component of Boiler Accessories. Discuss with diagram of each component of Boiler Accessories in detail.	10	CO2	K2
d. Classify the Boilers according to the contents in the tube, position of the furnace, axis of the shell, number of tubes	5	CO2	K2
4.a. Draw p-V diagram of a two stage reciprocating air compressor.	8	CO3	K2
b. Differentiate among rotary and reciprocating compressors with reference to technical parameter.	7	CO3	K2
(OR)			
c. Discuss in length about Construction and Working Principle of Single stage Reciprocating Air Compressor.	8	CO3	K2
d. Differentiate among Low pressure, Medium Pressure and High Pressure Air Compressor	7	CO3	K2
5.a. Classify the different types of Fire? How to deal these different types of fire by Fire Extinguisher.	8	CO4	K2

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| b. Elaborate the objectives the of Risk Management and elaborate the procedure to analyse, Assessment and Controlling measures. | 7 | CO4 | K2 |
| (OR) | | | |
| c. Enumerates the Hierarchy of of risk assessment and Hazards control | 8 | CO4 | K2 |
| d. Analyze the 4 E'S principle of Industrial safety. | 7 | CO4 | K3 |

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