

CBCS SCHEME

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18AS822

Eighth Semester B.E. Degree Examination, June/July 2023 **Cryogenics**

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain thermophysical and fluid dynamic properties of Liquid and Gas Hydrogen. (10 Marks)
b. With neat sketch, explain the Liquefaction systems of Hydrogen. (10 Marks)

OR

- 2 a. Define Joule-Thomson effect. Also explain the significance of Inversion curve. (10 Marks)
b. Explain how the Helium gas is liquefied? (10 Marks)

Module-2

- 3 Explain any two recuperative refrigeration cycles with neat sketch. (20 Marks)

OR

- 4 a. Explain the principle of Striling cycle. (10 Marks)
b. Discuss about Slova refrigerator. (10 Marks)

Module-3

- 5 Write short notes on following :
i) Vacuum Insulation
ii) Evacuated porous insulation
iii) Gas filled powders and fibrous materials. (20 Marks)

OR

- 6 a. What are the advantages and disadvantages of solid foams cryogenic insulation? (08 Marks)
b. Describe about multilayer insulation and composite insulations. (12 Marks)

Module-4

- 7 a. List out the design considerations of cryogenic storage vessel. (10 Marks)
b. With neat sketch, explain the construction of Dewar vessel. (10 Marks)

OR

- 8 a. Explain about Two-phase flow and cool down process in cryogenic transfer systems. (12 Marks)
b. Brief about the measurement of Liquid level in cryogenic systems. (08 Marks)

Module-5

- 9 a. Explain the variables affecting Heat exchanger and system performance. (12 Marks)
b. What is cryo-pumping? Explain. (08 Marks)

OR

- 10 a. Explain about Magento-Carboric refrigerator (10 Marks)
b. Explain the applications of cryogenic engineering. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.