(Pages : 2) **2627**

Reg. No. : .....

Name : .....

Eighth Semester B.Tech. Degree Examination, April 2015
(2008 Scheme)
08.805.13 : CRYOGENIC ENGINEERING (MPU)

Time : 3 Hours Max. Marks : 100

Instructions : *1) Answer **all** questions in Part – **A**, **each** carries **4** marks.*
*2) Answer **one full** question from **each** Module in Part – **B**, **each** carries **20** marks.*
*3) **Use** of approved charts and tables are **permitted**.*

PART – A

1. Mention any five important historical developments in cryogenics since 1877.
2. Write on electrical properties of engineering materials at cryogenic temperatures.
3. Discuss on the role of cryogenics in manufacturing.
4. What is the importance of inversion temperature in liquefaction of gases.
5. List critical components of liquefaction systems.
6. Mention the advantages of closed cycle cryocoolers over open systems.
7. Explain the working of platinum resistance thermometers.
8. What is superinsulation ? Discuss.
9. Write on ortho-para hydrogen.
10. What is adiabatic demagnetization ? Discuss.

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P.T.O.

PART – B

Module – I

11. Explain in detail, on the effect of cryogenic temperatures on the mechanical and thermal properties of commonly used engineering materials.

OR

12. Discuss on the role of cryogenics in (a) biology and medicine and (b) food industry.

Module – II

13. a) Explain with a schematic and Ts diagram, working of precooled Linde Hampson system. Also derive for the liquid yield. **15**

    b) What are the advantages and limitations of precooled Linde Hampson cycle ? **5**

OR

14. Explain the working of (a) Cascade system and (b) Stirling cryocooler.

Module – III

15. With a neat sketch explain the various components including suspension systems, safety devices and fill and drain of a cryogenic storage vessel.

16. a) Write notes on insulations used in cryogenic practice. **10**

    b) Explain the working of turbine flow meter and capacitance type level gauge. **10**
