

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2014****Eighth Semester**

Branch : Aeronautical Engineering

ME 010 804 L03/AN 010 805 G03 – CRYOGENICS (Elective III, IV) (ME, AN)

(New Scheme – 2010 Admissions – Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 3 marks.*

1. List out five Application of cryogenics.
2. Discuss the mechanical properties of materials at cryogenic temperatures.
3. Define the term Gas liquefaction.
4. Write short note on adiabatic demagnetization.
5. Write a note on Cryogenic storage.

(5 × 3 = 15 marks)

Part B*Answer all questions.**Each question carries 5 marks.*

6. Explain the role of cryogenics in space technology.
7. What are the properties of cryogenic fluids-superconductivity and super fluidity?
8. Explain the difference between ortho-hydrogen and para-hydrogen.
9. What do you mean by magnetic refrigeration system?
10. Explain cryogenic insulation and its types.

(5 × 5 = 25 marks)

Part C*Answer all questions.**Each question carries 12 marks.*

11. List out the applications of cryogenics and briefly explain.

Or

12. Discuss the applications of cryogenics in biology and medicine.

Turn over

13. Explain Joule Thomson expansion process-efficiency to liquefaction and coefficient of performances-irreversibility and losses.

Or

14. What are the Properties of cryogenic fluids-super conductivity and super fluidity?

15. Explain briefly about general liquefaction system.

Or

16. Explain about the working of a precooled Linde-Hampson system with suitable diagram for neon and hydrogen.

17. Explain working principle of refrigerators using solid as working media.

Or

18. Explain about the refrigeration system working on adiabatic demagnetization method.

19. Briefly explain about the basic design parameters of cryogenic fluid storage vessels.

Or

20. Briefly explain cryogenic fluid transfer systems-cryo pumping.

(5 × 12 = 60 marks)

