SL - 1005

Seat No.	

Total No. of Pages : 2

B.E. (Mechanical) (Semester - VIII) Examination, May - 2017
CRYOGENICS (Elective)
Sub. Code : 68519

Day and Date : Friday, 05 - 05 - 2017 **Total Marks : 100**

Time : 02.00 p.m. to 5.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

Q1) a) Explain with suitable example need of Cryogenic in manufacturing process. **[6]**

b) Discuss the Mechanical properties of cryogenic material at cryogenic scale. **[5]**

c) Discuss the range of field of Cryogenics on a log scale thermometer. **[5]**

Q2) a) What are the different pay off functions to indicate the performance of liquefaction system. **[6]**

b) Solve any two of following. **[10]**

i) Explain with neat sketch Simple Linde Hampson liquefaction system.

ii) Draw schematic sketch of ideal liquefaction system also discuss it on T-S diagram.

iii) Explain principles of Joule Thomson Expansion and Adiabatic expansion.

Q3) Write short notes on (any three) **[18]**

a) Cryogenics in food preservation

b) Pulse tube Cryocooler

c) Thermal properties of cryogenic material.

d) Claude system for liquefaction of Hydrogen.

e) Helium generated Hydrogen liquefaction system.

P.T.O.

Q4) a) Explain with neat sketch ideal refrigeration system also discuss the refrigeration systems with regenerative heat exchangers. **[6]**

b) Explain the working of sterling refrigeration system with the help of schematic sketch, also write expression for its COP. **[5]**

c) Explain the working of pulse tube refrigeration system with the help of schematic sketch. **[5]**

Q5) a) Explain with neat sketch the function of elements of Dewar vessel. **[6]**

b) Solve any two of following. **[10]**

i) General characteristics of mixture.

ii) Venturimeter flow meter.

iii) Constant volume thermometer.

Q6) Write short notes on (any three) **[18]**

a) Electrical resistance gauge for cryogenic liquid level measurement.

b) Need of insulation with suitable example.

c) Principle of gas separation.

d) Linde single column system for air separation.