

GOVERNMENT DEGREE COLLEGE - NANDIKOTKUR

DEPARTMENT OF PHYSICS

III B.Sc.-PHYSICS :SEMESTER-V

Course 6B:LOW TEMPERATURE PHYSICS & REFRIGERATION

QUESTION BANK

Name of the Lecturer: C.SUMALATHA

UNIT-I

PRODUCTION OF LOW TEMPERATURE

Long Answer Questions.

- 1.What is Joule-Thomson effect? Obtain an expression for the cooling produced when a gas suffers Joule-Thomson effect?
- 2.Explain Adiabatic demagnetization.Describe an experiment of producing very low temperature using this process.
- 3.How can produce Liquid Nitrogen?
- 4.Explain the liquefaction of air by Linde's method.

Short Answer Questions.

- 1.What is meant by regenerative cooling?
- 2.Discuss the properties of substances at low temperatures.
- 3.What is superconductivity?

UNIT-II

MEASUREMENT OF LOW TEMPERATURE

Long Answer Questions.

- 1.What is Gas Thermometer? And explain its working.
- 2.Explain construction and working of Resistance Thermometer. What are its advantages?
- 3.What is a Thermocouple and give its working principles.What are the advantages ,disadvantages and applications of thermocouples?
- 4.What are the different types of Thermometers? What are its advantages and drawbacks?

Short Answer Questions.

- 1.Explain the concepts of correction and calibration in gas Thermometer?
- 2.What is magnetic Thermometer?
- 3.How does vapour pressure Thermometer works?

UNIT-III

PRINCIPLES OF REFRIGERATION

Long Answer Questions.

- 1.What is Refrigeration ? Explain natural and artificial Refrigeration.
- 2.How does a vapor compression refrigeration system works?
- 3.How does a vapor absorption refrigeration system works?
- 4.What is refrigeration cycle? Explain with its block diagram.
- 5.Classify different types of refrigerants.

Short Answer Questions.

- 1.Explain about ideal refrigerants.
- 2.What are the most common refrigerants used for air conditioning?
- 3.Discuss about Eco-Friendly refrigerants.

UNIT-IV

COMPONENTS OF REFRIGERATOR

Long Answer Questions.

- 1.How does a Refrigerator works, explain with its Block diagram?
- 2.What are the types of Air Compressors?
- 3.Define Evaporator. How does it works.
- 4.What is condenser and explain about different types of condensers.

Short Answer Questions.

- 1.What is Coefficient Of Performance(COP) of a Refrigerator?
- 2.Define Tons of Refrigeration(TR).
- 3.What s Energy Efficiency Ratio(EER)?
- 4.How to find a Refrigerant Leak?

UNIT-V

APPLICATIONS OF LOW TEMPERATURE AND REFRIGERATION

Long Answer Questions.

- 1.What is safe storage temperatures for biological materials?
- 2.What is freezing of food?
- 3.What are the medical applications of liquid nitrogen and liquid hydrogen?
- 4.Explain superconducting magnets in Magnetic Resonance Imagery(MRI).
- 5.What is cold storage? How does it works? what are the uses of cold storages?

Short Answer Questions.

- 1.What is a Domestic Refrigerator? How does it works?
- 2.Explain working of water cooler.

- 3.Explain construction and working of an Ice plant.
- 4.What are the different food preservation methods?
- 5.What are the applications of Refrigeration in chemical and process industries?
- 6.What is meant by Desalination of water?
7. What are the applications of Refrigeration in Data centres?

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