



Registration No:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages : 01

M.TECH

AR-18

M.TECH 1ST SEMESTER EXAMINATIONS(BACK), NOV/DEC 2019

TE,MTEPC1010

ADVANCED FLUID MECHANICS

Time: 3 Hours

Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A

(10 X 2=20 MARKS)

1. Answer the following questions.

- Name a refrigerant which works as Primary, Secondary as well as tertiary refrigerant.
- What is the use of air washer?
- Explain why sudden expansion causes cooling.
- Differentiate between Relative humidity and Specific humidity.
- Write atleast one advantage and disadvantage of capillary tube over expansion valve.
- Discuss the advantages of compound compression with intercooler over single stage compression.
- Define the term by-pass factor.
- What is a power fluid in a thermostatic expansion valve?
- What is dry ice?
- What is the difference between WBT and DBT called?

PART-B

(5 X 10=50 MARKS)

Answer any five questions from the following.

Q.2.

- Write the working principle of a thermostatic expansion valve.
- Discuss the balancing point of compressor and capillary tube

Q.3.

- Explain with neat schematic diagram the working principle of dry ice manufacturing.
- Explain the liquefaction of air.

Q.4.

- The amount of air supplied to an air conditioned hall is $300\text{m}^3/\text{min}$. The atmospheric conditions are 35°C DBT and 55% RH. The required conditions are 20°C DBT and 60% RH. Find out the sensible heat and latent heat removed from the air per minute. Also find sensible heat factor for the system.
- A mixture of dry air and water vapor is at a temperature of 21°C under a total pressure of 736 mm Hg. The dew point temperature is 15°C . Find:
 - Partial pressure of water vapor
 - Relative humidity
 - Degree of saturation
 - Specific humidity

Q.5.

- Derive an expression for the COP of a Thermo-electric refrigeration system.
- Why Multi-staging is required for low temperature refrigeration system?

Q.6.

- Derive an expression for optimal inter stage pressure of a two stage compression refrigeration system.
- Discuss the method of producing liquid nitrogen?

Q.7.

- Discuss different methods of intercooling.
- Derive an expression for the COP of a Thermoelectric refrigeration system

Q.8. Write short notes on

- Fouling factor
- Cooling Tower