

Roll No.

3609

**B. Tech 7th Semester (ME) PEC-II
Examination – February, 2022
REFRIGERATION AND AIR-CONDITIONING**

Paper : PEC-ME-401-C

Time : Three hours] [Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all selecting one question from each Section. Question no. 1 is compulsory. All questions carry equal marks.

1. Explain the following : 2.5 × 6 = 15
- (a) Which cooling system is used to provide cooling effect in rockets and supersonic aircrafts?
 - (b) Define Cryogenics.
 - (c) Define 1 ton of refrigeration.
 - (d) Differentiate between specific humidity and humidity ratio.

- (e) Define by-pass factor.
(f) Define psychrometry.

SECTION - A

2. What is a refrigerant? How can you classify the refrigerants? And also explain the numbering system for refrigerants in details. 15
3. (a) What are different methods of refrigeration? 8
(b) Explain the fundamental of air conditioning in detail. 7

SECTION - B

4. Explain, with a neat sketch, principle and working of steam jet refrigeration system. 15
5. Discuss the properties of Aqua ammonia and Electrolux Refrigeration process. 15

SECTION - C

6. Establish the following expression for air-vapour mixture: 15

$$\text{Specific humidity } \omega = 0.622 \times \frac{p_v}{p_t - p_v}$$

7. (a) How does infiltration load differ from ventilation load? 8

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- (b) How an estimate is made of the heat gain through ducts? 7

SECTION - D

8. (a) Give a brief account of the different methods used for duct design. 8
(b) Explain winter air conditioning system. 7
9. Write short notes on the following: 15
(a) Types of compressor
(b) Types of evaporators

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