

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER – 2023**

REFRIGERATION & AIR CONDITIONING

[Maximum Marks : 100]

[Time : 3 hours]

PART – A
(Maximum Marks : 10)

Marks

I. Answer **all** questions in one or two sentences. Each question carries 2 marks.

1. Draw the PV & TS Diagram of Reversed Carnot cycle.
2. State the function of accumulator in a vapour compression refrigeration system.
3. List any 4 desirable properties of Refrigerants.
4. Define Joule - Thomson effect.
5. What are the factors affecting human comfort? (5x2=10)

PART – B
(Maximum Marks : 30)

II. Answer any **five** of the following questions. Each question carries 6 marks.

1. Differentiate Refrigerator, Heat engine and Heat pump with schematic diagrams.
2. List the advantages and disadvantages of Air refrigeration system.
3. Distinguish between hermetically sealed and semi-hermetically sealed compressor.
4. Explain by-pass factor of a cooling coil.
5. Define specific humidity, absolute humidity and relative humidity.
6. Explain heating and humidification process with simple diagram and represent it on psychrometric chart.
7. Classify and list out the air conditioning system.

(5x6=30)

PART – C

(Maximum Marks : 60)

(Answer **one full** question from each unit. Each full question carries 15 marks)

UNIT – I

- III.** (a) Explain the working of simple vapour compression refrigeration system with schematic diagram. (9)
- (b) Illustrate the effect of Sub cooling of refrigerant in vapour compression refrigeration system with T - S and P-H diagram. (6)

OR

- IV.** (a) A certain machine works on reversed Carnot cycle between the temperature limits of - 10°C and 27°C.
Find the C.O.P, when working as
- (i) A refrigerating machine.
 - (ii) A heat pump.
 - (iii) A heat engine. (9)
- (b) What are the various methods of refrigeration? (6)

UNIT – II

- V.** (a) Explain the working of an Electrolux refrigeration system with flow diagram. (9)
- (b) Compare the vapour compression system with vapour absorption system. (6)

OR

- VI.** (a) Explain the working of shell and tube type water cooled condensers. (9)
- (b) State various methods of defrosting . (6)

UNIT –III

- VII.** (a) Explain Liquefaction of Hydrogen with neat sketch. (9)
- (b) Explain and represent psychrometric process such as sensible heating and sensible cooling. (6)

OR

- VIII.** (a) With the help of schematic diagram explain cascade refrigeration system. (9)
- (b) Draw and explain a typical psychrometric chart. (6)

UNIT – IV

- IX.** (a) Explain the working of Year Round Air Conditioning with line sketch. (9)
- (b) What are the factors affecting 'Effective Temperature'. (6)

OR

- X.** (a) Explain Winter Air conditioning with figure. (9)
- (b) List the sources of heat loads in an air conditioning system. (6)
