

**REFRIGERATION AND AIR CONDITIONING**  
**III<sup>RD</sup> YEAR**  
**VI<sup>TH</sup> SEMESTER**

**MECHANICAL-SF**

**ASSIGNMENT 1**

Unit - 1

1. Explain the construction & working of hermetically, semi hermetically compressors with a neat sketch?
2. Explain the construction & working of water cooled condensers, evaporative condensers with a neat sketch?
3. Explain the working of forced circulation natural circulation evaporators?
4. Explain the short notes on cooling towers?

Unit - 2

5. Explain the working of vapour compression system with a neat sketch?
6. Explain the working of vapour absorption system with a neat sketch?

**ASSIGNMENT 2**

Unit 3

- 1 Explain the working of thermostatic expansion valve?
2. Explain the working of automatic expansion valve?
3. Discuss the selection of an ideal refrigerant.
- 4 Describe the properties of ideal properties refrigerants?
5. Draw the sketch only Dairy refrigeration and storage type water coolers.
6. Difference between slow freezing and quick freezing.

**ASSIGNMENT 3**

Unit - 4

1. Mention the properties of a psychometric.
2. Mention the point's factors of governing optimum temperature? (Human comfort) .

Unit - 5

3. Explain the working of window A/C 4 explain the working of summer A/c

**ASSIGNMENT 4**

### **Two marks & Three marks**

#### Unit-1

- 1 what are the modes of heat transfer?
2. Explain Fourier's law of heat conduction?
3. Explain Newton's law of cooling?
- 4 write down the formula for C.O.P of heat engine, heat pump, and refrigeration machine?
- 5.What are the types of a cooling tower.

#### Unit:2

6. Define sub cooling or under cooling.
- 7 what is the use of flash chamber and accumulators?

#### Unit - 3

- 8 what is the application of refrigeration?
9. What are the types of milk coolers?
10. define - cryogenic

### **ASSIGNMENT 5**

#### **Two marks & three marks**

#### Unit - 4 unit-5:

1. Define psychometric
2. Explain Dalton's law of a partial pressure.
3. Explain Avogadro's laws.
4. What are equipments used A/C
5. Define filters.
6. What are the types of insulating materials?
7. Define fans blowers
8. Define Occupants load
9. Define-equipments load
10. Define - conduction heat load

## ASSIGNMENT 6

Course: **Refrigeration and Air Conditioning**  
Term: **VI**

Course code: **3E 6311.2**  
Time: **3 Hrs.**

*[Note: (1) Answer any FIVE questions in each PART - A and PART - B. Q.No. 8 in PART - A and Q.No. 16 in PART - B are compulsory. (2) Answer division (a) or division (b) of each question in PART - C. (3) Each question carries 2 marks in PART - A, 3 marks in PART - B and 10 marks in PART - C.]*

### **PART - A**

1. Define Refrigeration.
2. State Newton's law of cooling of heat convection.
3. What is the function of an accumulator?
4. Define slow freezing.
5. Define Relative humidity.
6. Define By-pass factor.
7. Define Induced draft fan.
8. Write any two effects of sub-cooling the liquid?

### **PART - B**

9. State and explain Fourier's law of heat conduction.
10. Draw and explain p-v diagram for reversed Carnot cycle.
11. What is the effect of superheating and undercooling?
12. What are the limitations of Vapor Absorption System?
13. State any three properties of good Lubricating oil.
14. What are the desirable properties of an ideal refrigerant?
15. State Dalton's law of partial pressure.
16. Brief about Gas-bulb thermostat.

### **PART - C**

17. a) A refrigeration plant is required to store 15 tonnes of fish. The fish is supplied at a temperature of  $30^{\circ}\text{C}$ . The specific heat of fish above freezing point is  $2.9 \text{ KJ/Kg.K}$ . The specific heat of fish below the freezing point is  $1.26 \text{ KJ/Kg.K}$ . The fish is maintained at  $-8^{\circ}\text{C}$ . If the plant requires  $60\text{kW}$  to drive it, find (a) the capacity of the plant & (b) the time taken to achieve cooling. Assume actual C.O.P of the plant as  $0.3$  of the Carnot C.O.P.

(OR)

- b) Explain the construction and working principle of Reciprocating Compressor.

18. a) Explain the working of vapor compression refrigeration system.

(OR)

- b) Explain the construction & working of Lithium-Bromide Absorption system.

19. a) Explain the construction and working of Thermostatic Expansion Valve.

(OR)

- b) Explain the working of Slow Freezing and Quick Freezing.

20. a) The values obtained from a sling Psychromotor are  $\text{DBT}=30^{\circ}\text{C}$  &  $\text{WBT}=20^{\circ}\text{C}$ . The barometric reading is  $740\text{mm}$  of Hg. Calculate (i) Dew point temperature & relative humidity (ii) degree of saturation (iii) Specific humidity (iv) Specific volume (v) Specific enthalpy.

(OR)

- b) Explain the various Psychrometric process in detail with the Psychrometric chart.

21. a) Explain the construction and working of Central Plant Air conditioning system.

(OR)

- b) Explain the condition for Design of Air conditioning system.