

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (ME) (2011 Batch) (Sem.-7,8)
REFRIGERATION AND AIR-CONDITIONING

Subject Code : BTME-802

Paper ID : [A3063]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What is refrigeration?
- b) Define the term gas refrigeration.
- c) Draw a PV & PH diagram for vapour compression refrigeration cycle.
- d) Write the full form of (DART).
- e) What do you mean by Flash Chamber ?
- f) What is the term Zeotropes used in RAC?
- g) List the methods of refrigeration.
- h) Define the term Psychometric.
- i) What is Moist Air?
- j) What are the physical properties of refrigerants?

SECTION-B

2. Explain the steam jet refrigeration with the neat sketch.
3. Explain the Cascade refrigeration system with P-H & T-S?

4. Derive the equation for the bypass factor (For both heating and as well as cooling coils)
5. A cold storage is to be maintained at -5°C while the surrounding are at 35°C the heat leakage from the surrounding in the cold storage is estimated to be 29kw. The actual. C.O.P of the refrigeration plant is One-third of an ideal plant working between the same temperature . Find the power required to derive the plant.
6. What is simple air cooling system ? Explain it with neat sketch?

SECTION -C

7. A simple ammonia-compression system operates with a capacity of 150 tonnes. The condensation temperature in the condenser is 35°C , the evaporation temperature in brine cooler is -25°C , the ammonia leaves the evaporator and enters the compressor at -8°C .
8. Ammonia enters the expansion valve at 30°C wire drawing through the compressor valves Suction = 0.118 bar, Discharge = 0.23bar, compression index=1.22, volumetric efficiency=0.75. Calculate power, heat transferred to cylinder water jacket piston displacement, coefficient of performance
9. Draw a neat labeled sketch of Lithium Bromide Absorption System. Explain it's working and principle.