

Code No: C9101**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****M.Tech I Semester Examinations, March/April 2011****REFRIGERATION****(HEATING VENTILATION & AIR CONDITING)****Time: 3hours****Max. Marks: 60**

Answer any five questions
All questions carry equal marks

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- 1.a) Sketch and explain the working of vapour-compression system with $p-h$ and $T-\phi$ diagrams.
b) What is effect of condensing temperature and Evaporating temperature of COP and refrigerating effect? Explain. [12]
- 2.a) Describe with a neat sketch of two-stage cascade system with $p-h$ diagram.
b) What are the advantages of multi-stage refrigeration system and what is its effect of evaporating temperature? [12]
- 3.a) Describe with a neat sketch the working of Lithium-bromide vapour absorption systems.
b) In an absorption type refrigeration the heat is supplied to NH_3 generator by condensing steam at 2 bar and 90% dry. The temperature to be maintained in the refrigerator is -5°C . The temperature of the atmosphere is 30°C . Find the maximum COP possible of the refrigerator. If the refrigeration load is 20 tons and actual COP is 70% of maximum COP, find the mass of steam required per hour. [12]
4. Explain the following with a sketch:
a) Air refrigeration system
b) Steam-Jet refrigeration system
c) Thermo-electric refrigeration system
d) Vertex tube. [12]
- 5.a) Briefly discuss the industrial refrigeration.
b) What type of refrigeration is adopted in chemical industry? Explain in detail. [12]
6. Discuss in detail the following:
a) Dairy plants
b) Petroleum refineries. [12]
- 7.a) Differentiate between primary and secondary refrigerants.
b) What are the thermodynamics properties of a refrigerant? Explain. [12]
8. Write short notes on:
a) Methods of improving COP of vapour compression system.
b) Dry ice system
c) Electrolux-Refrigerator. [12]
