Department of Mech. Power Engineering
Faculty of Engineering
Menofiya University

Post graduate Exam in Cold Storage Plants
Date : 6/1/2015
Time allowed : 3 hours

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1. What are the required functions of cold store?
2. Define cooling capacity and cooling storage?
3. What are the factors that affect the cooling capacity of cold store?
4. What are the most important conditions that must be considered when determining the size of the cold store?
5. What are the conditions that should be available at site suggest for cold store?
6. Fifty thousand bushels (20 kg each) of Grapes have to be cooled and stored in a cold store has the following inside dimensions, 12X8 meter and 4 meter height at the rate of 5000 bushels per day. The walls, ceiling and floor have R-values as following respectively 2.69, 3.28 and 1.8 m^2 K/W. The cold store will be operated at 5 ^{o}C during summer where the ambient temperature is 35 ^{o}C determine the cooling capacity of the required Refrigeration unit assuming appropriate values for the missing data and draw a section sketch for the cold store. (Specific heat and heat of respiration of grapes are 3.56 kJ kg K and 4.6 kJ/kg day.
7. Discuss the design and structural precautions that must be considered regarding following matters (Insulation Panel Make-Up, Sills, Frames Doors, Foundation and floor, Panel to Panel Joints, Wall & Ceiling Panel Joints, Cold Store External Steelwork, Ceiling Panel Structural Support, Interconnection of Ceiling Panels, Floor Build-Up, Floor to Wall Junctions, Vapor Sealing, Pipe Work Penetrations) illustrating your answer with sketch drawings.