

Menoufiya University
Faculty of Engineering
Shebin El-Kom
Mechanical Power Eng. Department
Academic Year 2019/2020



Post Graduate Exam
Level 500, Diplomat
MPE510 Air Conditioning Applications
Date: 10/08/2020
Time Allowed: 3 hours

Refrigeration and air conditioning charts, design tables and Catalogues belong to the students are allowed.

Answer all the following Questions

(Full Marks 100)

Question (1)

(10-15=25 Marks)

- With the aid of drawing, explain the different types of air conditioning system.
- Draw a schematic diagram for the mechanical system of a window air conditioning system works on the principles of reversed cycle, in winter case, showing its all details and explain how does the system work.

Question (2)

(5-5-5=15 Marks)

- Draw a schematic diagram for the mechanical system of a split air conditioning system showing its all details and explain the function of each part.
- Explain also the advantages and disadvantages of the system.
- Represent the cycle on the psychrometric chart and explain how is the cooling capacity calculated.

Question (3)

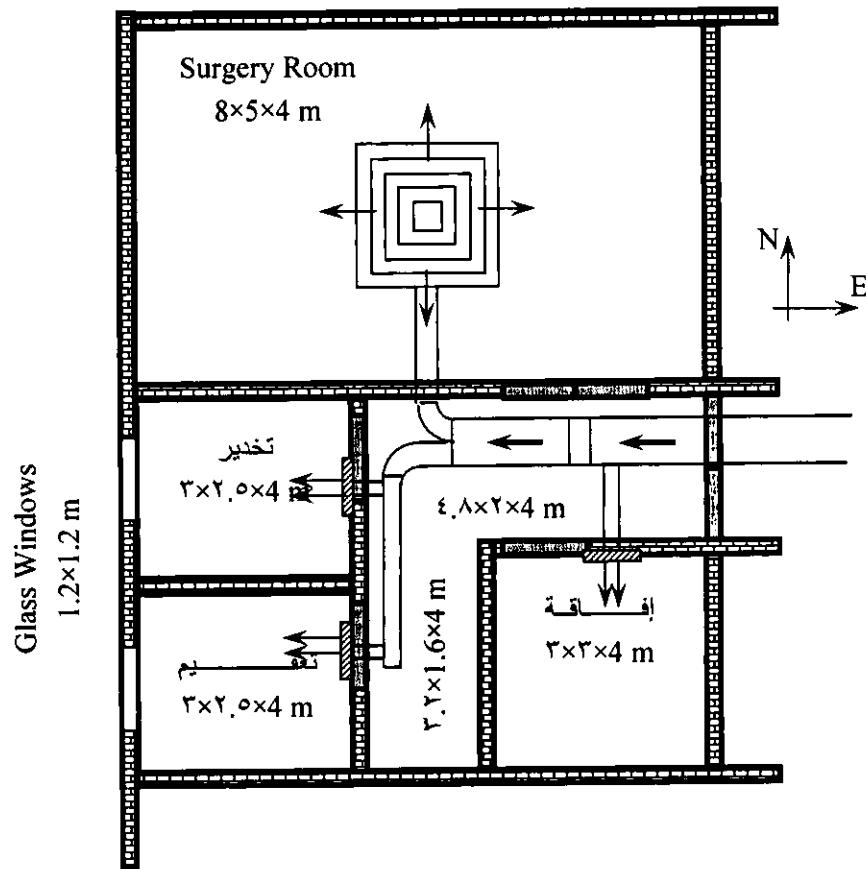
(5-5=10 Marks)

- State the types of Fan Coil Units. Represent the cycle for it on the psychrometric chart.
- Mention the types of chiller, showing the advantages and disadvantages of each type.

Question (4)

(6-5=11 Marks)

- Mention the requirements for designing the air conditioning system of surgery room and intensive care rooms in Hospitals. Draw a suitable system for a surgery room.
- The Figure shown indicates the surgery department in a private hospital at Cairo. The total load could be taken as 1 T.R for each 12 m² of floor area. Consider the room sensible heat factor as 0.85. Suggest any suitable data and find the following:
 - Cooling load and the amount of air required for each Zone.
 - Refrigeration Capacity of a DX system required.
 - Selection of the air outlets.
 - The duct dimension for each section.
 - The total static pressure of the duct system.
 - Selection of the air handling unit.



This exam measures the following ILOs:			
Question No	Knowledge & Understanding Skills	Intellectual Skills	Professional Skills
1	KU3-3,		
2	KU3-3	I1-2	PP5-1
3	KU3-4		
4	KU3-5, KU5-2	I3-1	