

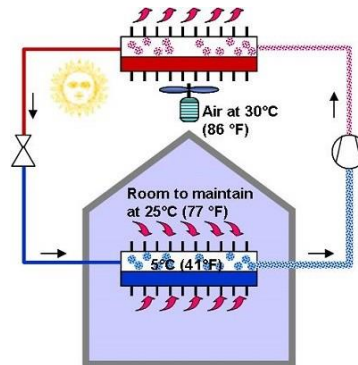
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HVAC Learning.com

# Exercise Booklet

Print this exercise booklet before studying the lesson on-line. It will enable you to write your answers to the HVAC learning exercises. You will thus be able to switch between reading or listening to the file on-line and writing in the booklet.



## GENERAL PRESENTATION OF REFRIGERATING MACHINES

English lesson

<https://hvac-learning.com/air-conditioning-cooling/air-conditioners-training/general-presentation-of-refrigerating-machines/>

French version:

<https://formation.xpair.com/climatisation-machines-frigorifiques/module/machines-frigorifiques.htm>

For each exercise, you will write your answer, then you will study its correction on-line before going to the next exercise.

If you cannot do an exercise, you will be able to study its correction directly, but **force yourself to write your answer** as often as possible.

Note that between 2 exercises, you will find it necessary to study the course. As a warning, in the booklet, you will sometimes find the following indication:

- “ **Study the course on-line before doing the next exercise**” or
- “ **Study the course on-line before going to the next paragraph**”

Only study the paragraphs or the exercises which have an equal or a lower level than the one your training requires.

NVQ Level = Vocational Certificate

A Level = High school Diploma

HND Level = Associate's Degree

MSC Level = Engineering Schools

Then, when you have completed a file, you will be able to assess your level on-line through a Multiple Choice Questionnaire in which you will only answer the questions related to the themes you have studied.

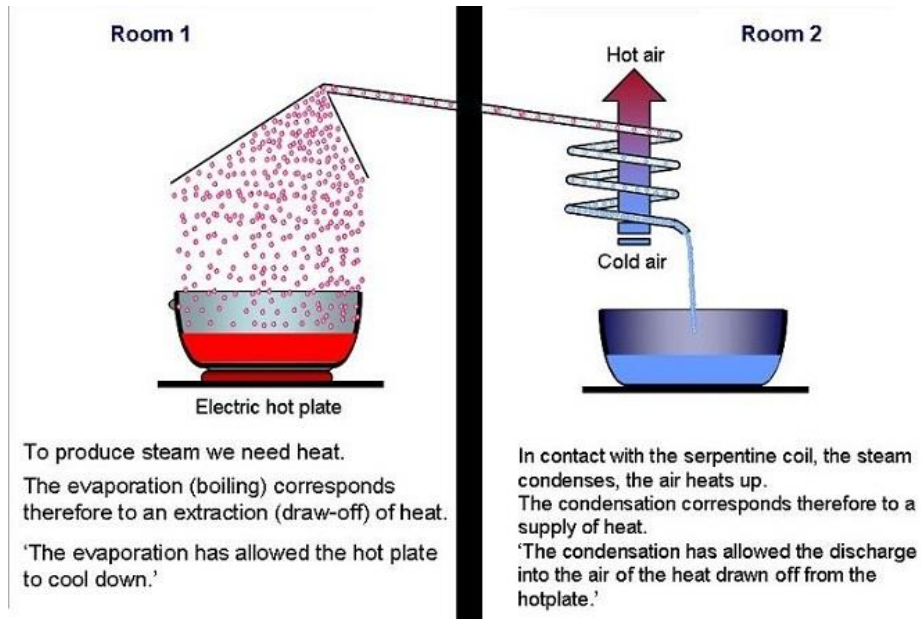
So now off you go and work well!

Good luck!

The Authors.

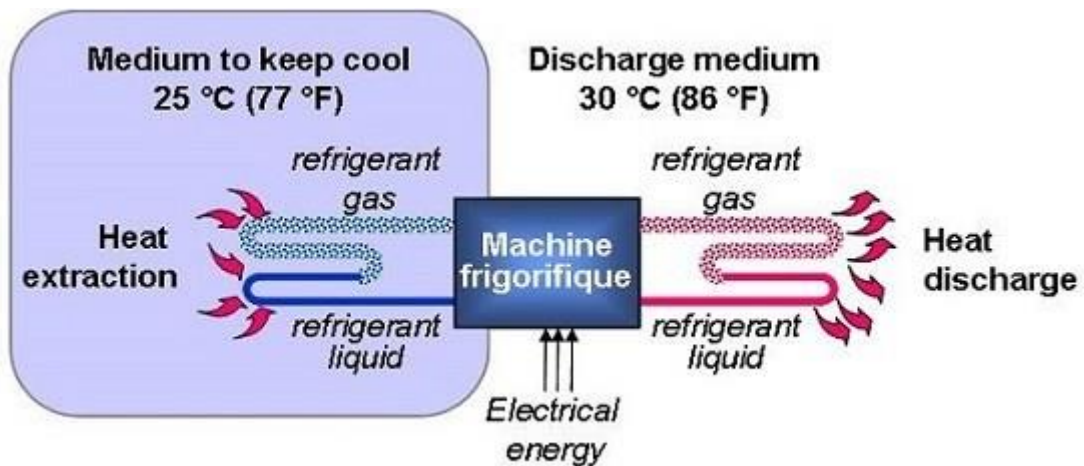
# N°1 – Evaporation and condensation of water training – NVQ to A level

**Study the course on-line.**



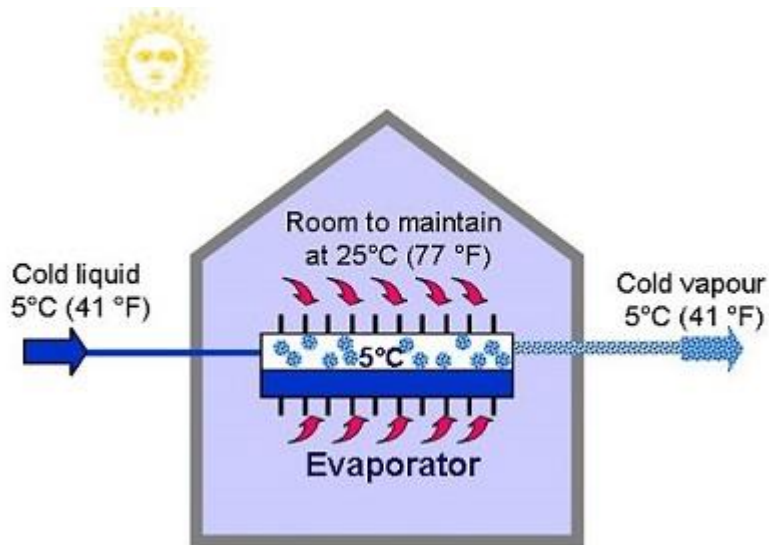
# N°2 – Presentation of the refrigerating machine training – NVQ to A level

**Study the course on-line.**



### N°3 – The components of the refrigerating machine training – NVQ to A level

*Study the course on-line.*

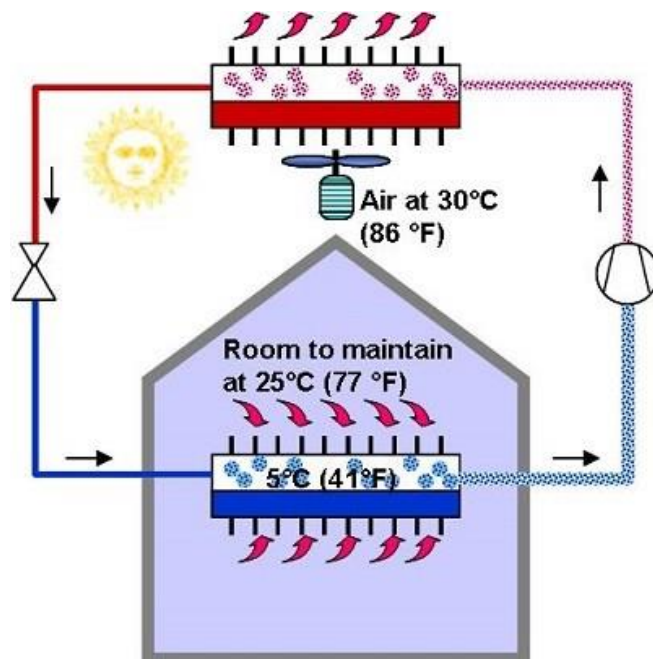


### N°4 – Visual display of the components of the refrigerating machine – NVQ to A level

*Study the course on-line before treating the next paragraph.*

#### Question 1

Name & position on the diagram below the 4 main components of a refrigerating machine.

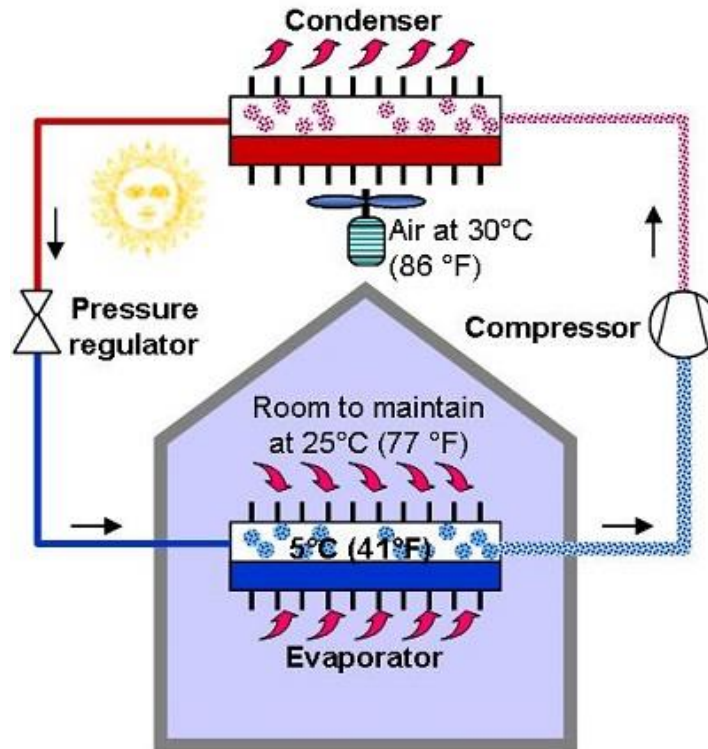


# N°5 – Summarising exercises: Refrigerating machines training – NVQ to A level

**Study the course on-line before treating the next paragraph.**

## Question 1

Indicate on the diagram below, between the main components of the refrigerating machine, the physical state (liquid or gas) of the refrigerant, its pressure status (HP or LP) and a scale of its temperature.



## Question 2

The cooling power of the evaporator of a refrigerating machine used for air conditioning is of 30 [kW].

Indicate a scale of size for:

- The power of the compressor
- The power of the condenser

What will thus be the refrigeration Energy Efficiency Ratio (EER)?

## Question 3

The cooling power of the evaporator of a refrigerating machine used for air conditioning is of 45 [kW].

Indicate a scale of size for:

- The power of the compressor
- The power of the condenser

What will thus be the refrigeration EER?

#### Question 4

An air conditioner blows air at 15 [°C] (59°F).

It discharges the heat in the street at 35 [°C] (95°F).

Indicate a scale of size of the temperatures of the evaporator and the condenser.

## N°6 – The refrigerator training – NVQ to A level

*As we all have access to this sort of refrigerating machine, we are going to profit from this to increase our understanding of the refrigeration cycle.*

*The refrigerator has a refrigerating circuit in which a refrigerant fluid permits the draw off of heat inside the unit and to discharge it into the kitchen.*

#### Question 1

While limiting your answer to the inside atmosphere of the refrigerator, explain what permits it to maintain its chill.



#### Question 2

At the rear of the refrigerator, there is a hot grill..

This is where the heat, drawn from inside, is discharged..

Starting at the refrigerator evaporator, explain how the heat is discharged into the kitchen..

Where is the compressor situated, inside or outside the refrigerator? Why?

### Question 3

If I find that the kitchen is too hot, can I cool it down by opening the refrigerator door?

### Question 4

Finally, we will use our common thermal senses.

The kitchen is at 30 [°C] (86°F), the food products must be conserved at 6/7 [°C] (43/45°F), and the refrigerator we are studying also produces ice.

Give a scale of size of the temperature of the evaporator inside the refrigerator.

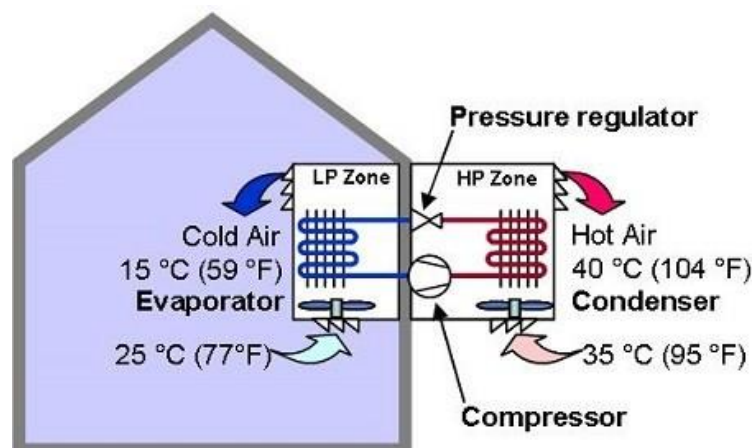


### Question 5

Give a scale of size of the temperature of the condenser outside the refrigerator.

## N°7 – Reversible machines training – NVQ to A level

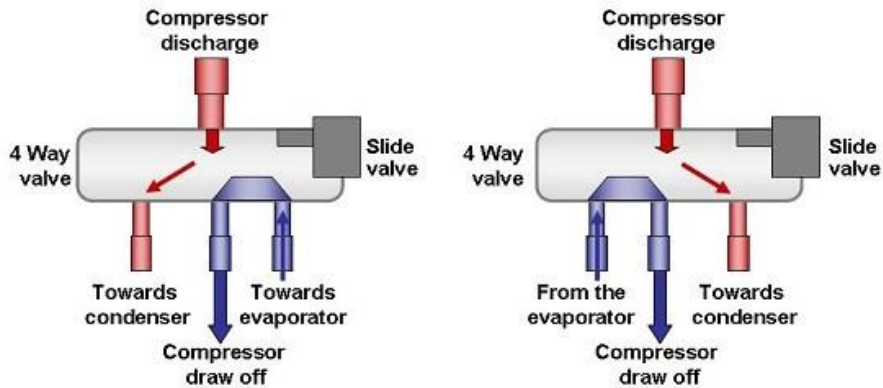
**Study the course on-line before treating the next exercise.**



## Question 1

Studying the 2 diagrams below indicate respectively the cycle reversal valve in “cold” mode (air conditioning) and in “hot” mode (heat pump).

Indicate for the pipes below, left and right, from, or to which element (evaporator or condenser) the refrigerant comes or goes.



**Study the course on-line before treating the next paragraph.**

*English lesson*

<https://hvac-learning.com/air-conditioning-cooling/air-conditioners-training/general-presentation-of-refrigerating-machines/>

*French version:*

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