

List of Reference Books for the physics selection test

- F.J. Bueche, Schaum's outline series (10th edition Nov. 2005 - available in English, French, Dutch): **'Theory and problems of college physics'** (Reference numbers: ISBN-10: 0071448144, ISBN-13: 978-0071448147)
- Any Secondary Education course book for students having 2 or 3 hours of physics per week.

1. SUBJECTS TO KNOW

- basic physics sizes (length, mass, angle, t°, volume, speed, acceleration)
- units (meter, kilogram, second, amps)
- distance traveled, speed, acceleration
- weight, mass, density and volume
- Newton's law, inertia, forces
- determination of center of gravity
- work, energy, power (kinetic energy, pressure energy)
- thermometric scales: °C, °F, °K
- pressure, density, t° of a liquid or a gas
- perfect gases law, Boyle-Mariotte law, Gay-Lussac law, Dalton's law
- change of state of a liquid/gas/solid
- Basics of electricity: DC and AC current, tension, equivalent resistance, Ohm
- Basics of magnetism: magnetic field, permanent magnet, lines of flux

2. QUESTION EXAMPLE

- A quantity of gas ($p = 3 \times 10^5$ Pa, $T=300$ K) is compressed until the half of its initial volume and is heated to 70°C. What is the final gas pressure?
(Answer: $P_2 = 6,86 \times 10^5$ Pa)
- Determine the weight (in Newton) of a sphere that has a volume of $1,1 \times 10^{-7}$ m³ and a density of 2,7 kg/dm³ (gravitation acceleration: 9.81m/s²)
(Answer: $2,91 \times 10^{-3}$)
- 3 resistances of 5Ω are placed in parallel. Find the value of a unique equivalent resistance.
(Answer: 1.67Ω)

General information: the questions are in English but the candidates may answer in their mother language.