EXAMEN : baccalauréat Général – Série S –SVT ou S-SI	SESSION 2014
EPREUVE : Evaluation spécifique de Langue en section européenne	
PHYSIQUE – CHIMIE en langue ANGLAISE	
THEME : ONDES ET MATIERE	Sujet n°01

SOAP BUBBLES

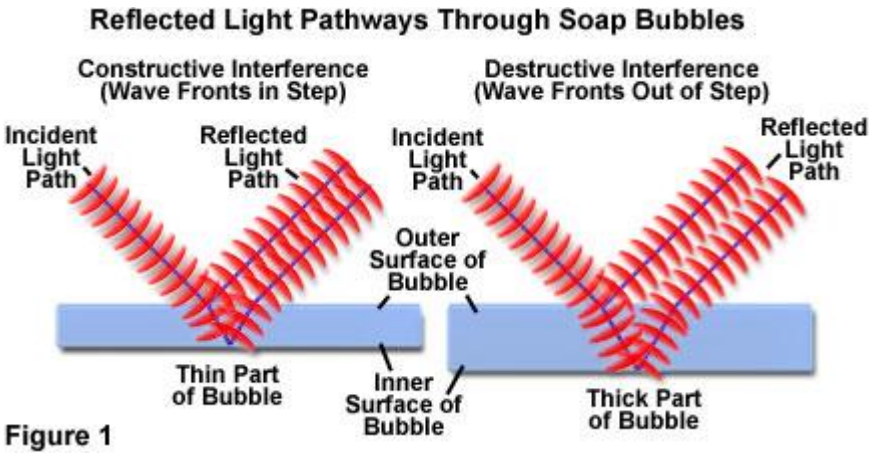

Figure 1

Most of us observe some type of optical interference almost every day, but usually do not realize the events in play behind the often-kaleidoscopic display of color produced when light waves interfere with each other. One of the best examples of interference is demonstrated by the light reflected from a film of oil floating on water. Another example is the thin film of a soap bubble, which reflects a spectrum of beautiful colors when illuminated by natural or artificial light sources. When the wavefronts are in phase, they interfere constructively to produce white light. Alternatively, when the wavefronts are out of phase, they undergo destructive interference to produce a series of colors that is dependent upon the phase relationship between the two wavefronts. In the case where the wavefronts are 180-degrees out of phase, there is a total absence of reflected light. The dynamic interplay of colors often observed on soap bubbles derives from simultaneous reflection of light from both the inside and outside surfaces of the bubble. The two surfaces are very close together (separated by only a few micrometers) and light reflected from the inner surface interferes both constructively and destructively with light reflected from the outer surface.

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From http://micro.magnet.fsu.edu/primer/java/interference/soapbubbles/

Questions:

1. Present and comment on this document.

2. Do not forget to focus on at least one physics topic as for example the principle of interferences observed on a soap bubble.

3. Do you know other properties of waves and their applications?