EXAMEN : Baccalauréat général - Série S-SVT ou S-SI	Session 2014
ÉPREUVE : Évaluation spécifique de Langue en section européenne	
PHYSIQUE-CHIMIE en langue ANGLAISE	
Thème : Mécanique	Sujet n°11

First Planet Discovered Orbiting a Brown Dwarf*

[…]Astrophysical calculations show that any star that is smaller than about 1/10th of the mass of the sun cannot sustain* hydrogen fusion reactions at its core. These failed stars never light up. Instead they wander the galaxy as warm, dark balls of hydrogen known as brown dwarfs.

Brown dwarfs probably form through the same process that lead to ordinary stars but merely on a smaller scale. […]

Until now, however, they've never seen a planet orbiting a brown dwarf. That's not really surprising. […]

The brown dwarf in question is almost 6000 light years from Earth in the Scorpius constellation. Astronomers first noticed an unusual change in its brightness in April 2012. […]

These guys conclude that the brown dwarf is being orbited by a planet about twice the mass of Jupiter at a distance of just under one astronomical unit. The brown dwarf itself is about 10 times larger than its companion.

That's the first time astronomers have found an object orbiting a brown dwarf that can be truly described as a planet. […]

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MIT Technology Reviews, *http://www.technologyreview.com,* July 29, 2013

brown dwarf : *naine brune*
to sustain fusion reactions : *alimenter des réactions de fusion nucléaire*

Questions:

1. Present and comment on this document.

2. Do not forget to focus on at least one physics topic as for example explaining the orbits of planets around stars using Newton's and Kepler's Laws.

3. Why is it so important to discover exoplanets ? Do you know other technics to detect them ?