Question 2
part a, 4%
part b, 4%
part c, 4%

(*a*) Figure 1 shows a Hertzsprung–Russell diagram. *Without reproducing this diagram*, state what each letter represents.

(*b*) Outline *two* methods of measuring the photospheric temperature of a star.

(*c*) The photospheric temperature of the star Canopus is 6 900 K, and its luminosity is 5.4×10^{29} W. Calculate the radius of Canopus, *expressing your answer in solar radii*. Show all details of your working.

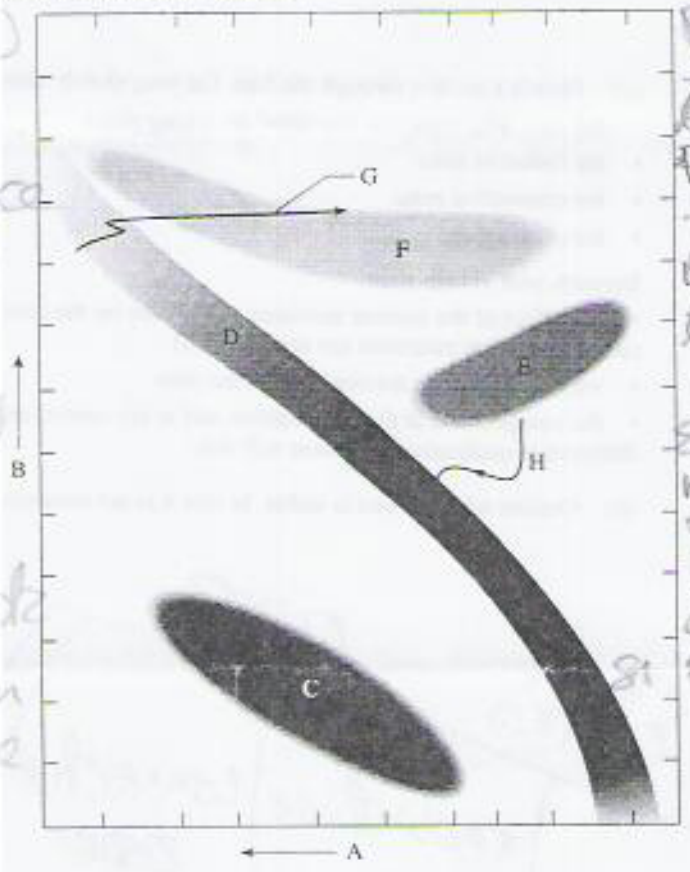

Figure 1 A Hertzsprung–Russell diagram for use with Question 2 part *a*.

Question 3
part a, 3%
part b, 6%
part c, 3%

(*a*) Outline two sorts of *observational* evidence that stars form in dense clouds.

(*b*) Given that a certain dense cloud is not contracting,

(i) name three external influences on the cloud that could initiate contraction, stating why contraction is initiated, and

(ii) describe why a cluster of stars is likely to form, rather than a single massive star.

(*c*) A protostar is shrouded in a dusty shell, and infrared observations indicate that the peak of the spectrum is at a wavelength of 5.8 μm.

(i) Estimate the temperature of the dusty shell. Show all details of your working.

(ii) State qualitatively how the temperature of the dusty shell compares with typical temperatures of dense clouds, and of protostars.