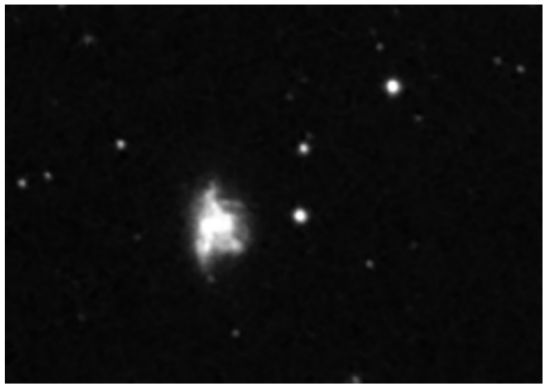
16 In the 18th century, Herschel discovered an irregular-shaped galaxy. This galaxy, now known as NGC 6052, is shown in the photograph.



(Source: dcf21-www@dcford.org.uk)

(a) Light from NGC 6052 has a red-shift z equal to 0.0158

(i) Explain what is meant by redshift.

(2)

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(ii) Calculate the distance of NGC 6052 from Earth.

$H_0 = 1.62 \times 10^{-18}\ s^{-1}$

(3)

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Distance of NGC 6052 from Earth = ...

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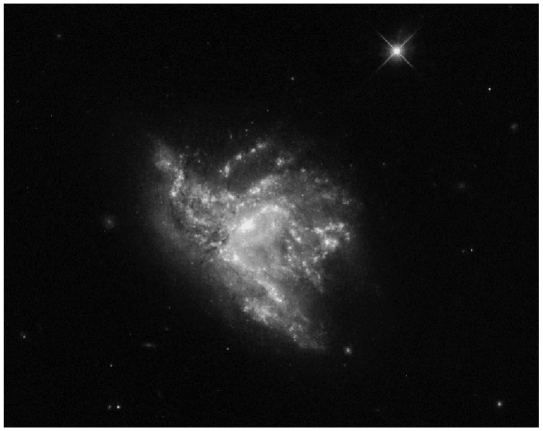
(b) Recent photographs from the Hubble Space Telescope show that NGC 6052 actually consists of two galaxies that are colliding.



(Source: © Nasa)

The galaxies are accelerating towards each other.

Explain why the acceleration increases as time passes.

(2)

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(Total for Question 16 = 7 marks)

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