

Q1.(2020)

a)

Complete the sentences.

[2 marks]

The Sun is a stable star. This is because the forces pulling inwards caused by _____ are in equilibrium with the forces pushing outwards caused by the energy released by nuclear _____.

b)

Write down the equation that links distance travelled (s), speed (v) and time (t).

[1 mark]

c)

The mean distance between the Sun and the Earth is 1.5×10^{11} m.

Light travels at a speed of 3.0×10^8 m/s.

Calculate the time taken for light from the Sun to reach the Earth.

[3 marks]

Time = _____ s

d)

Some stars are much more massive than the Sun.

Describe the life cycle of stars much more massive than the Sun, including the formation of new elements.

[6 marks]

e)

Stars emit radiation with a range of wavelengths.

Which property of a star does the range of wavelengths depend on?

[1 mark]

Tick (✓) **one** box.

Density

☐

Mass

☐

Temperature

☐

Volume

☐

Q2.(2021)

a)

A main sequence star in a distant galaxy is the same size and mass as the Sun.

Explain why the star is stable while it is in the main sequence stage of its life cycle.

[2 marks]

b)

Describe what will happen to the star between the main sequence stage and the end of the star's life cycle.

You should include the names of the stages in the life cycle of the star.

[3 marks]

Q3.(2022)

Galaxies contain billions of stars.

Compare the formation and life cycles of stars with a similar mass to the Sun to stars with a much greater mass than the Sun.

[6 marks]

Q4.(2024)

Some main sequence stars will eventually form black holes.

Table 3 gives the mass of four stars.

Table 3

Star	Mass in kg
Arcturus	2.2×10^{30}
Betelgeuse	2.2×10^{31}
Cygni A	1.4×10^{30}
The Sun	2.0×10^{30}

Which star in **Table 3** is most likely to form a black hole?

[1 mark]

Q5.(2024)

When stars are formed, they contain mostly hydrogen.

Describe how stars produce all other naturally occurring elements.

[4 marks]
