Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) gravitational force inwards and forces as a result of fusion reactions outwards

allow fusion energy for fusion reactions outwards

allow radiation pressure for fusion reactions outwards

1

are in equilibrium / balanced

dependant on scoring 1st mark point

*allow for **1** mark forces are in equilibrium*

1

(b) (the star will) expand to become a red giant

*the answers must be in the correct sequence to score all **3** marks*

1

(the star will) collapse to become a white dwarf

allowed outer layers ejected for collapsed

1

(the star will) cool to become a black dwarf

*if no other marks score, allow red giant, white dwarf, black dwarf in the correct order for **1** mark*

1

(c) **A**

1

it is (moving away from Earth) the slowest
or
it is the closest (to the Earth)

reason only scores if A is chosen

1

[7]

Q2.

(a) wavelength

this answer only

1

(b) (extremely) hot and dense

ignore very small

1

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(c) (directly) proportional

allow a correct description of direct proportionality
ignore positive correlation

1

(d) 6×10^{24}

1

(e) the furthest galaxies are moving the fastest

1

(this suggests) the universe is expanding (from a very small region)

1

(f) expanding at (an ever) greater rate

allow expanding faster

1

(g) any **one** from:

- detects false claims

  allow provides credibility
- detects inaccurate data

  allow detects mistakes
- detects bias

  allow removes bias
- verifies new data

  allow checks validity
- provides a consensus (of opinion)

  ignore shows data is accurate
  ignore proves a theory

1

(h) wavelength (seems to have) decreased

1

frequency (seems to have) increased

1

[10]

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