M1. giant

1

supernova

1

neutron

1

[3]

M2. (a) gravitational

accept gravity

*do **not** accept weight*

1

(b) (i) planet(s)

accept comet(s)

accept asteroid(s)

*do **not** accept moon(s)*

1

(ii) balanced

accept equal / the same / are in equilibrium

1

(iii) Milky Way

accept milky way

1

[4]

M3. (a) Earth

Sun

Milky Way

Universe

all four in correct order
*allow **1** mark for Earth <u>and</u> Universe in correct places*

2

(b) equal to

1

(c) (i) explosion (of a star)
ignore implosion

1

(ii) only very massive stars become supernova

1

Mira large enough but sun too small
*allow **1** mark for each statement*
Sun too small to give a supernova
or
Mira large enough to give a supernova

1

[6]

M4. (a) (i) gases (1)

gravity (1)

correct order essential for credit

2

(ii) fusion

1

(iii) billions

1

(b) Milky Way

u.c. initials not essential

1

[5]

M5. red supergiant

1

supernova

1

black hole

1

[3]

M6. (a) all correct

M
L
L

*allow **1** mark for one correct*

2

(b) speed

accept 'velocity'

1

(c) (i) any **one** from:

- it's natural
- slowest
- furthest (from the centre of the Earth)

accept 'others are artificial / made by humans'

1

(ii) as the (average) distance decreases the speed increases

accept 'there is a negative correlation (between them)'
*do **not** accept 'they are inversely proportional'*

1

[5]

M7. (a) any **one** from:

- Earth is at the centre (not the Sun)
- there are fewer planets

accept there is no asteroid belt shown

accept there are only 5 planets (and not 8)

accept other planets have no moons shown

1

(b) Shows the moon in orbit around the Earth

accept the planets have circular orbits

1

(c) circular

accept elliptical

1

(d) gravity

1

(e) Mira is much more massive

1

[5]

M8. red supergiant

*do **not** accept red giant*

1

supernova

1

black hole

1

[3]

M9. (a) main sequence star

correct order only

1

supernova

1

(b) balanced by

1

[3]

M10. (a) (enough) dust / gas (from space)

1

are pulled together

1

by gravitational attraction

1

(b) fusion

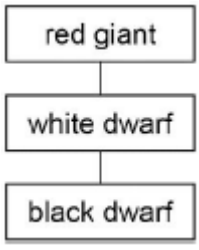
accept fusion circled in box

1

(c) forces within it are balanced

1

(d)



correct order only

1

ignore reference to planetary nebula

1

1

[8]