Beyond Earth (F)

1. Which statement is **correct** about geostationary satellites?

A They are above the equator and they orbit the Earth in about 90 minutes at a high orbit.
B They are above the equator and they orbit the Earth in 24 hours at a high orbit.
C They are above the equator and they orbit the Earth in 24 hours at a low orbit.
D They are above the poles and they orbit the Earth in 24 hours at a low orbit.

Your answer ☐ **[1]**

2. Which of these is evidence for an expanding universe?

A. Light from galaxies is red shifted.
B. Nuclear fusion occurs in stars.
C. Many stars have orbiting planets.
D. Stars were formed from dust and gas.

Your answer ☐

[1]

3. The Sun was formed from a cloud of dust and gas.

Which force brought together the particles of the cloud?

A. electrostatic
B. frictional
C. gravitational
D. magnetic

Your answer ☐

[1]

4 (a). A rocket carrying a vehicle called the Mars Rover was sent to Mars.

The Mars Rover has a mass of 185 kg.

The gravitational field strength (g) on Mars is 3.75 N/kg.

Calculate the weight of the Rover vehicle on Mars.

Show your working and give your answer to 3 significant figures.

State the unit for weight.

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answer: …… unit…… **[5]**

(b). Why did the Mars Rover weigh more on Earth than on Mars?

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[1]

(c). Write down the name of the Earth's natural satellite.

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[1]

(d). Rockets carry satellites into space.

These satellites are kept in orbit around a planet by a force.

What is the name of this force?

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[1]

5 (a). A student looks at two identical metal spoons, **A** and **B**.

Spoon **A** was placed in hot water at 70 °C.

Spoon **B** is at 20 °C.

Which spoon emits the most radiation?

Tick (✓) **one** box.

Spoon **A** ☐

Spoon **B** ☐

Explain your answer.

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[1]

(b). Explain why both spoons look identical to the student, even though they are at different temperatures.

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[1]

6. This is a diagram to show a nuclear fusion reaction:

i. Explain why this is nuclear fusion.

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[1]

ii. It is difficult for nuclear fusion reactions to occur on Earth.

Explain why nuclear fusion reactions occur in the Sun.

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[2]

iii. What will happen to our Sun when it runs out of hydrogen?

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_____ **[1]**

7. Use the words from the list to complete the sentences about the Universe.

You may use each word once, more than once, or not at all.

Big-Bang	**Contracting**	**CMBR**	**Expanding**
LDR	**Red giant**	**Red shift**	**Solar system**

The ..... is a model of how the universe began.

Light from distant galaxies has a longer wavelength when it reaches Earth than when it was emitted.

This is called ..... .

Distant galaxies are moving away faster so the universe is ..... .

[3]

END OF QUESTION PAPER