6. Space physics

6.1 Earth and the Solar System

Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

1 Which list gives the names of the planets in the correct order?

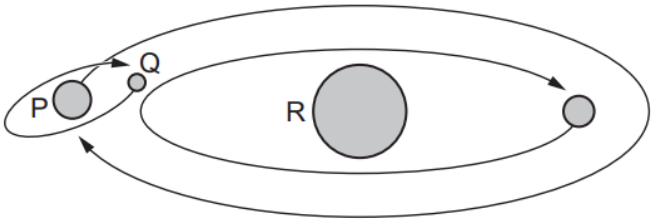
A Mercury, Mars, Earth, Venus, Jupiter, Saturn, Uranus, Neptune

B Mercury, Venus, Earth, Mars, Saturn, Uranus, Jupiter, Neptune

C Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

D Venus, Mars, Earth, Mercury, Jupiter, Saturn, Uranus, Neptune

2 The diagram shows part of a solar system.



Which row correctly identifies the bodies P, Q and R?

	P	Q	R
A	moon	planet	star
B	planet	moon	star
C	planet	star	moon
D	star	planet	moon

3 The Earth is a planet that orbits the Sun once in approximately 365 days.

What does this enable us to explain?

A the cycle of day and night

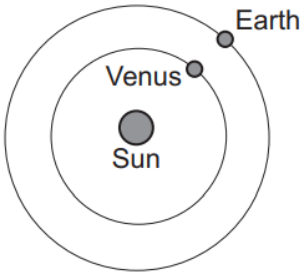
B the cycle of phases of the moon

C the periodic nature of the seasons

D the apparent daily motion of the Sun

4 The radius of the orbit of Venus around the Sun is 110×10^6 km.

The radius of the orbit of the Earth around the Sun is 150×10^6 km.



The speed of light is 0.30×10^6 km/s.

How long does light take to travel from Venus to the Earth when these planets are closest to each other?

A 130 s **B** 370 s **C** 500 s **D** 870 s

5 Which planet is classed as a rocky planet?

A Jupiter

B Saturn

C Uranus

D Venus

6 What is the cause of the phases of the Moon?

A the movement of the Earth around the Sun

B the movement of the Moon around the Sun

C the movement of the Moon around the Earth

D the movement of the Sun around the Moon

7 Which planet orbits the Sun between Mars and Saturn?

A Earth

B Jupiter

C Mercury

D Neptune

8 Approximately how long does the Moon take to orbit the Earth?

A 1 day

B 7 days

C 28 days

D 365 days

9 Which planet in our Solar System is nearest to the Sun and what is the nature of the planet?

	planet	nature
A	Mercury	rocky
B	Mercury	gaseous
C	Venus	rocky
D	Venus	gaseous

10 Which statement about the Solar System is correct?

A All the planets are rocky.

B Only the Earth has a moon.

C Pluto is a dwarf planet.

D There are many stars in the Solar System.

Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

11 Which type of object rotates around the Sun with an elliptical orbit? **(extended only)**

A planet

B galaxy

C red giant

D moon

12 The table gives information about some of the planets in our Solar System. **(extended only)**

planet	mass compared with the Earth	average density g/cm^3	gravitational field strength at surface N / kg
Earth	1.0	5.5	9.8
Jupiter	320	1.3	25
Mercury	0.060	5.4	3.8
Uranus	15	1.3	10

Which statement about these planets is correct?

A As the mass compared with the Earth increases, the average density increases.

B As the mass compared with the Earth increases, the gravitational field strength increases.

C As the average density increases, the gravitational field strength decreases.

D The average density is directly proportional to the gravitational field strength.

13 A planet in the Solar System is at the point in its orbit where it is closest to the Sun.

Which row is correct? **(extended only)**

	orbital speed	energy in gravitational potential store
A	at its maximum	at its maximum
B	at its maximum	at its minimum
C	at its minimum	at its maximum
D	at its minimum	at its minimum

14 The Earth orbits the Sun once in approximately 365 days. **(extended only)**

The average radius of the orbit is 1.5×10^{11} m.

What is the average orbital speed of the Earth?

A 3.0×10^{4} m/s

B 1.1×10^{8} m/s

C 2.6×10^{9} m/s

D 1.3×10^{15} m/s

15 It is summer in the northern hemisphere of the Earth in June.

Which statement explains why?

A The Earth is closer to the Sun in June.

B The Earth spins on its axis in the opposite direction to that in which it rotates around the Sun.

C The Moon is full in June.

D The north pole of the axis of the Earth's rotation is tilted towards the Sun in June.

16 The time taken for the Earth to orbit the Sun is approximately 365 days. **(extended only)**

The average radius of the Earth's orbit around the Sun is 1.5×10^8 km.

What is the average orbital speed of the Earth?

A 30 m/s

B 4.8×10^3 m/s

C 3.0×10^4 m/s

D 4.1×10^{10} m/s

17 A space station orbits the Earth at a distance of 7000 km from the Earth's centre. It makes 15 orbits in every 24-hour period.

What is the speed of the space station in its orbit? **(extended only)**

A 2900 km/h **B** 4400 km/h **C** 8800 km/h **D** 27 000 km/h

18 Comets are bodies which orbit the Sun in the Solar System. **(extended only)**

What is the shape of the orbit and how is the Sun positioned within the orbit?

	shape of orbit	position of the Sun
A	circular	centre of orbit
B	circular	**not** at centre of orbit
C	elliptical	centre of orbit
D	elliptical	**not** at centre of orbit