

# P5 Revision Questions

## Part 1

# Question 1 .... of 50

- Describe 3 properties of a geostationary satellite

# Answer 1 .... of 50

- Orbits earth above equator, in 24hours, remains in fixed position, used for communications

# Question 2 .... of 50

- What is gravity, what is it caused by?

# Answer 2 .... of 50

- A force of attraction caused by mass

# Question 3 .... of 50

- What is a satellite?

# Answer 3 .... of 50

- An object that orbits a larger object

# Question 4 .... of 50

- How does the height above the Earth affect the orbital time of a satellite?



# Answer 4 .... of 50

- The higher the satellite, the longer it takes to orbit

# Question 5 .... of 50

- Name 3 uses of satellites

# Answer 5 .... of 50

- Communications, weather, military, scientific research, GPS, imaging the earth

# Question 6 .... of 50

- What keeps things in orbit?

# Answer 6 .... of 50

- Gravity (a centripetal force)

# Question 7 .... of 50

- What is a centripetal force?

# Answer 7 .... of 50

- A force that keeps an object moving in a circle

# Question 8 .... of 50

- What happens to the size of the gravitational force as you get further away from a body?  
E.g. the Sun



# Answer 8 .... of 50

- It decreases (if you double the distance the force reduces by 4) it is an inverse square law

# Question 9 .... of 50

- Describe three properties of a comet

# Answer 9 .... of 50

- Travels in an ellipse, made of ice and rock, has a tail, orbits the sun, orbits in a different plane to planets

# Question 10 .... of 50

- Are satellites accelerating?

# Answer 10 .... of 50

- Yes- as they are constantly changing direction  
(acceleration is a vector)

# Question 11 .... of 50

- Why do satellites in low orbits travel faster than those in higher orbits?

# Answer 11 .... of 50

- **At night just respiration happens ( $O_2$  into the plant and  $CO_2$  Gravity is stronger and distance is less**
- **) but in the day this process continues as well as photosynthesis ( $CO_2$  into the plant and  $O_2$  out)**

# Question 12 .... of 50

- What is a polar satellite?



# Answer 12 .... of 50

- A satellite that passes over the North and South pole. Weather and imaging

# Question 13 .... of 50

- What is a scalar and what is a vector?

# Answer 13 .... of 50

- Scalar- quantity with a magnitude. Vector=  
Quantity with a magnitude and direction

# Question 14 .... of 50

- Give 2 examples of scalars and 2 examples of vectors

# Answer 14 .... of 50

- Scalars- mass, time, speed, temperature
- Vector- velocity, acceleration, any force

# Question 15 .... of 50

- How do you calculate the resultant vector of two parallel vectors?

# Answer 15 .... of 50

- Add them together (if it is negative it will be subtracted)

# Question 16 .... of 50

- How do you calculate the resultant vector of two vectors at right angles to each other?



# Answer 16 .... of 50

- Make a triangle (no 2 arrow heads together) and find the hypotenuse using Pythagoras

# Question 17 .... of 50

- What is the name of the path of a projectile?

# Answer 17 .... of 50

- Trajectory

# Question 18 .... of 50

- What is the optimum angle for an object to be fired at to get a maximum range?

# Answer 18 .... of 50

- 45 Degrees

# Question 19 .... of 50

- What is the shape of the trajectory of an object when fired on Earth?

# Answer 19 .... of 50

- Parabola

# Question 20 .... of 50

- Describe the motion of an object if it is thrown vertically into the air



# Answer 20 .... of 50

- Decelerates due to gravity until speed = 0, then accelerates back down at same rate

# Question 21 .... of 50

- Describe the motion of an object if it is fired at an angle in the air (ignore air resistance)

# Answer 21 .... of 50

- Horizontal component stays constant (no forces acting on it) vertical component decreases then increases in negative y direction

## Question 22 .... of 50

- How does gravity affect the horizontal velocity of a projectile?

# Answer 22 .... of 50

- Does not affect it

# Question 23 .... of 50

- How does gravity affect the vertical velocity of a projectile?

# Answer 23 .... of 50

- Causes it to decrease then increase in the negative y-direction

# Question 24 .... of 50

- What is Newton's third law?



# Answer 24 .... of 50

- Every reaction has an equal and opposite reaction

# Question 25 .... of 50

- How do magnets show Newton's 3<sup>rd</sup> law?

# Answer 25 .... of 50

- One magnet exerts a force on one magnet and the other magnet exerts a force on that magnet

# Question 26 .... of 50

- Give an example of a collision

# Answer 26 .... of 50

- Snooker balls, rockets, cars, fireworks

# Question 27 .... of 50

- How do gases exert a pressure on the wall of a container?

# Answer 27 .... of 50

- Particles collide with wall and change direction. Here their momentum changes by  $2mv$ . The force on the wall is  $2mv/t$ . The more frequent the collisions the higher the pressure

# Question 28 .... of 50

- Using Newton's 3<sup>rd</sup> law, how do rockets work?



# Answer 28 .... of 50

- The force pushing the particles backwards is equal to the force pushing the rocket forwards (the particles exert a force

# Question 29 .... of 50

- What are the units of momentum?

# Answer 29 .... of 50

- Kgm/s

# Question 30 .... of 50

- Why does a gun recoil when you fire it?

# Answer 30 .... of 50

- (Momentum of bullet = momentum of gun)  
Gun exerts a force on bullet and bullet exerts  
a force on gun

# Question 31 .... of 50

- How can increasing temperature affect volume and pressure?

# Answer 31 .... of 50

- Increases both of it

# Question 32 .... of 50

- How can increasing pressure affect the volume of a gas?



# Answer 32 .... of 50

- Increasing pressure increases volume

# Question 33 .... of 50

- What does the range of a projectile depend on?

# Answer 33 .... of 50

- Initial velocity and angle

# Question 34 .... of 50

- What is the conservation of momentum?

# Answer 34 .... of 50

- Momentum is never created or destroyed, it is always conserved

# Question 35 .... of 50

- What do we call it when objects stick together after a collision?

# Answer 35 .... of 50

- Coalesce

# Question 36 .... of 50

- What is the equation for momentum?



# Answer 36 .... of 50

- Momentum = mass x velocity

# Question 37 .... of 50

- How does the conservation of momentum apply to an explosion?

# Answer 37 .... of 50

- Particles all move away from centre of explosion in opposite directions- the total momentum is zero

# Question 38 .... of 50

- What is force in terms of momentum?

# Answer 38 .... of 50

- Force is the rate of change of momentum

# Question 39 .... of 50

- What is pressure?

# Answer 39 .... of 50

- Change in momentum of the particles striking the walls creating a force (the frequency of collisions)

# Question 40 .... of 50

- What is Newton's 3<sup>rd</sup> law of motion



# Answer 40 .... of 50

- When an object collides with another object they interact. The 2 objects exert an equal and opposite force on each other

# Question 41 .... of 50

- How does gravity obey Newton's 3<sup>rd</sup> law?

# Answer 41 .... of 50

- Person has a force on the earth and the earth exerts a force on that person

# Question 42 .... of 50

- How do rockets work in terms of momentum?

# Answer 42 .... of 50

- Gases move down so rocket moves up.  
Momentum is conserved as momentum of gas particles is equal to momentum of rocket

# Question 43 .... of 50

- Give three examples of situations where momentum is conserved

# Answer 43 .... of 50

- Explosions, recoil, rockets

# Question 44 .... of 50

- What 3 things can you change to increase the force provided by a rocket?



# Answer 44 .... of 50

- More particles, higher temp, particles have more KE to be moving at a faster speed

# Question 45 .... of 50

- What frequencies are needed for low orbit satellites?

# Answer 45 .... of 50

- Low frequency

# Question 46 .... of 50

- What frequencies are needed for geostationary satellites? Why?

# Answer 46 .... of 50

- High- as higher frequency waves have enough energy to penetrate through the atmosphere

# Question 47 .... of 50

- What does the ionosphere do to some radio waves?

# Answer 47 .... of 50

- Reflect them

# Question 48 .... of 50

- What can you say about the wavelength and frequency of microwaves?



# Answer 48 .... of 50

- Long wavelength, low frequency

# Question 49 .... of 50

- What do radio waves do when they meet a large object (a hill). What do microwaves do?

# Answer 49 .... of 50

- Radio waves spread out (diffract). Microwaves do not. Waves diffract if their wavelength is comparable to the size of the object/ gap they are moving through

# Question 50 .... of 50

- Give 3 examples of waves spreading out through a gap

# Answer 50 .... of 50

- Water waves, sound and light