

IGCSE PHYSICS REVISION

Q1 What is electric current measured with? [1]

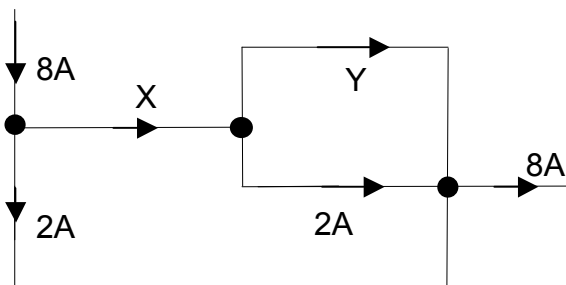
Q2 What is the unit of electric current? [1]

Q3 A series electric circuit is a circuit where the _____ electric _____ flows through all the devices in the circuit.

Q4 In the spaces below draw the circuit symbols of:
(a) a single electric cell (identify the +ve end)

(b) a variable resistor

Q5 State the sizes of currents X and Y in the circuit



Current X = _____

Current Y = _____

Q6 Complete the circuit diagram below inserting devices that measure the current and voltage of the light bulb. You must use the correct symbols.

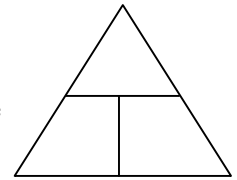


Q7 Sketch what a current against voltage graph looks like for a wire that obeys Ohm's law.

Q8 The wire used for your graph above is replaced by another wire of the same material but of a higher resistance.(a) What change(s) would occur to the line?

(b) In what two ways might the second wire be different from the first wire?

Q9 Complete the triangle for the equation relating current, resistance and voltage [2]



Q10 What is the frequency of the electricity supplied to homes in the UK?
frequency = _____ [2]

Q11 Why does the voltage available drop as power lines become longer? [2]

Q12 To what part of an electrical device is the earth wire connected?

Q13 What device is placed in the live wire to stop the outbreak of a fire?

Q14 A ruler is charged by rubbing it with a cloth. The cloth removes some of the electrons from the ruler. After rubbing with the cloth, what type of charge does:

(a) the ruler possess? _____

(b) the cloth possess? _____ [2]

Q15 What is the difference between an electrical insulator and an electrical conductor?

Q16 Insert the missing words in the passage below:

A sharp knife cuts bread better than a blunt one because its blade is narrow and so has a smaller surface _____ in contact with the bread. A smaller surface _____ means that for the same downward _____ the knife exerts a greater _____ and so cuts the bread more easily.

Q17 Calculate the pressure exerted by a book of surface area 50 cm^2 and weight 5 N .

pressure = _____ [3]

Q18 Give an example of a situation where a large surface area is used to reduce pressure.

Q19 Why does a sealed plastic bottle of air get crushed when it is taken below the surface of the sea?

Q20 A spring has an extension of 4cm when a load of 6N is hung from it.

(a) What would you expect the extension of the spring to be with a load of 9N?

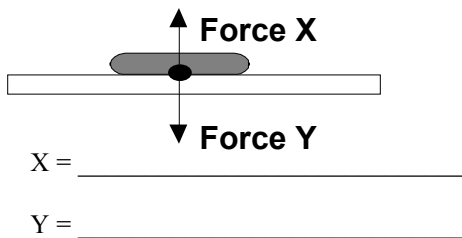
(b) What load would you expect to have to be used to give an extension of 12cm?

Q21 A car covers a distance of 150km in 2 hours. What is the average speed of the car?

car speed = _____ [3]

Q22 If a train is decelerating how is its motion changing?

Q23 Name the forces X & Y on the diagram that shows the forces acting on a book as it rests on the top of a table.



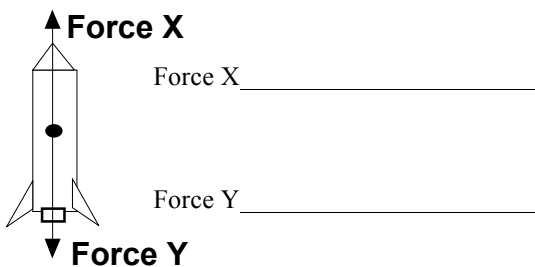
Q24 Complete the passage by inserting the missing words

According to _____'s first law of motion a body will either remain _____ or move at a constant speed in a _____ line when it is acted on by a _____ set of forces.

Q25 What is the weight on the Earth's surface of a mass of 5 kg?; 40g?
weight of 5kg = _____

weight of 40g = _____ [4]

Q26 Name the forces X & Y on the diagram below that shows a rocket moments after take off.



Q27 In the diagram above; which is the greater force? Why?
greater force (X or Y) = _____
Reason:

Q28 What do waves transfer? [1]

Q29 In the space below draw a picture of a water wave. Label clearly the wavelength on your picture.

Q30 Define **frequency**. [2]

Q31 What is a transverse wave? [2]

Q32 Below is a list of the regions of the electromagnetic spectrum. Rearrange this list in order of INCREASING frequency.

Regions: Radio; X-rays; visible; gamma; ultra-violet; infra-red; microwaves [3]

Lowest frequency: _____

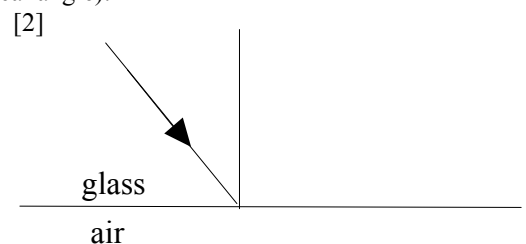
Highest frequency: _____

Q33 Which type(s) of electromagnetic wave is used for cooking? [1]

Q34 Which type(s) of electromagnetic wave is used for getting a sun-tan? [1]

Q35 Which type(s) of electromagnetic wave is used for security cameras? [1]

Q36 Complete the diagram below showing a light ray incident on a glass-air boundary at an angle of 40° (just below the critical angle):



- Q37 Use the equation:
speed = frequency x wavelength
 to complete the table below: [6]

wave speed	frequency	wavelength
	6 Hz	5 m
	2 kHz	3 m
340 m/s		2 m
400 m/s		500 cm
50 m/s	10 Hz	
400 km/s	4 MHz	

- Q38 What produces sound? [2]

- Q39 What can light travel through but not sound? [1]

- Q40 State three ways in which heat energy can move from one place to another. [1]

- Q41 Complete the following passage by inserting the missing words. [4]

Hot air rises because when air molecules are heated they move more _____ and take up more space. This increase in volume for the _____ mass of gas results in a decrease in the _____ of the heated air. The hotter air therefore rises above the surrounding, colder, more dense air. This movement of air constitutes a _____ current.

- Q42 How does a vacuum flask reduce heat transfer by conduction? [2]

- Q43 Complete the following: [2]

Conservation of energy states that energy cannot be created or _____ but can only _____ from one form to another.

- Q44 Complete the table below showing the **MAIN** initial and final energy forms of various energy changing devices or situations. [5]

Device	Input energy	Output energy
Electric motor	electrical	
Electrical generator		electrical
Microphone	sound	
Battery		electrical
Car brakes		heat

- Q45 Complete: [6]

Virtually all the energy on Earth originates from the _____. Green plants convert _____ energy into _____ energy. This energy can be released when the plant is _____. Coal is the fossilised remains of plants that lived approximately 300 _____ years ago. It is estimated that Great Britain has about 250 years reserve of coal. In a power station 35% of the coal's energy produces _____.

- Q46 Another power station produces 600 joules of electrical energy from a total energy input from coal of 2400 joules. What is the efficiency of this power station? [2]

Efficiency = _____

- Q47 What is the scientific unit of work and energy? [1]

- Q48 A man pushes a car with a force of 200N. If the car moves by 3 metres, how much work has the man done? [2]

Work done = _____

- Q49 A girl lifts a suitcase of mass 4 kg up by 0.5 metre.
 (a) What is the weight of the suitcase?

- (b) What is the minimum force that she must exert upwards on the case in order to lift it?

- (c) How much work must she do?

- (d) How much gravitational potential energy has been gained by the suitcase?

[8]

- Q50 Complete the following sentences: [3]

- (a) Magnetic _____ are the parts of a magnet where the magnetic force is strongest.
 (b) Like magnetic poles _____; unlike _____.
 (c) Magnetic lines of force run from _____ poles to _____ poles.

- Q51 In the space below sketch a diagram of the magnetic field around a bar magnet. [3]

- Q52 In the space below sketch a diagram of an electromagnet. Label the part that is called a solenoid. [3]

- Q53 Give three ways of increasing the strength of the magnetic field produced by a coil of wire. [3]

1 _____

2 _____

3 _____

Q54 State two devices that use of an electromagnet [2]

1 _____

2 _____

Q55 State the three most common forms of nuclear radiation. [3]

Q56 Which type of radiation: [5]

(a) Is stopped by a piece of card?

(b) Requires lead before it is stopped?

(c) Is a member of the electromagnetic spectrum?

(d) Is emitted when a neutron turns into a proton and an electron.

(e) Is identical to the nucleus of an atom of helium?

Q57 What does an alpha particle consist of? [3]

Q58 Give one natural and one man-made source of background radiation. [2]

Natural _____

Man-made _____

Q59 What meant by 'ionisation'? [2]

Q60 Give two types of change that can result from exposure to an ionising radiation. [2]

Q61 Which type of radiation causes the most damage to living cells? [1]

Q62 (a) What type of radiation is used in radiotherapy to obtain internal pictures of the body?

(b) Why cannot the other two types be used here?

[2]

Q63 Complete the following passage by inserting the missing words. [4]

Carbon 14 dating can be used to estimate the _____ of a piece of a wooden building found on an archaeological site. Living material contains a known ratio of carbon 14 to other isotopes of _____. Carbon 14 is unstable and so the amount contained by the _____ falls away once the tree it was part of dies. By measuring how much _____ is left in the old piece of wood it is possible date when the wood was used to make the building and so how long ago the building was constructed.

Q64 Give another use of radioactivity not mentioned [1]

Q65 What is a flow of electric charge called? [1]

Q66 Calculate the resistance of of a light bulb that allows a current of 2A to flow when connected to a 8V power supply.

resistance = _____ [3]

Q67 Calculate the power of the light bulb in Q 66.

power = _____ [2]

Q68 A battery supplies 60J of electrical energy for every 15 coulombs of charge that it supplies. What is the voltage of this battery?

battery voltage = _____ [2]

Q69 How much energy, in joules, is used by a 2000W fire in 15 seconds?

energy = _____ [2]

Q70 How much electrical charge must move when a current of 4A flows for 1 minute?

charge moved = _____ [3]

Q71 How can speed be found from a distance against time graph? [1]

Q72 Calculate the acceleration of a car that moves from rest to 12m/s over a time of 4 seconds. [3]

acceleration = _____

Q73 In the space below sketch a speed against time graph of a person walking to a bus stop, waiting for awhile, travelling on the bus and then getting off at the second stop.

[6]

Q74 Use the equation: **Force = mass x acceleration** to complete the table below: [5]

force	mass	acceleration
	2 kg	5 m/s ²
200 N		5 m/s ²
50 N	25 kg	
	400 g	5 m/s ²
4 kN		5 m/s ²

(b) have a short half-life

Q75 Calculate the power of a machine that performs 5000 joules of work over a 20 second period. [2]

power = _____

Q76 A car of mass 1200 kg moves at 10m/s.
What is its kinetic energy? [2]

kinetic energy = _____

Q77 What must occur within a wire for it to experience a force when it is placed inside a magnetic field? [1]

Q78 Complete the following passage by inserting the missing words. [3]

Electromagnetic _____ occurs when a wire is passed through a magnetic field. The current produced in the wire can be _____ by moving the wire more quickly. The current can be _____ by reversing the direction of movement.

Q79 A transformer is used to change 240V to 12V. It has a primary coil of 4000 turns.

(a) Is this a step-up or step-down transformer? [1]

(b) Calculate the number of turns on the secondary coil.

secondary turns = _____ [3]

Q80 Define what is meant by '**Half-life**' [2]

Q81 A substance has a half-life of 15 days. At the start of an experiment there is 800g of this substance. How much of this substance will there be left after: [3]

(a) 15 days? (b) 30 days? (c) 60 days?

Q82 Calculate the half-life of a substance if after 75 days only 50g of the substance is left from an original 400g. [3]

Half-life = _____

Q83 Why should a substance injected into the body for a bone scan; [2]

(a) be a gamma emitter