S. 4 PHYSICS WALK TO UNEB

HEAT

1. (a) (i) Distinguish between temperature and heat and state their S I units

(ii) Convert 23 *kelvins to degrees celcius*

(b) (i) Define as a fixed point as applied to temperatures

(ii) Differentiate between upper and lower fixed points

(iii) Describe an experiment to determine the upper fixed point

(c) (i) The length of a mercury thread at a lower fixed point and the upper fixed point are $2cm$ and $8cm$ respectively for a certain liquid X. Given that the length of the mercury thread at unknown temperature, t is$6cm$, determine the value of t

(ii) Explain why steam is preferred to water in the determination of upper fixed point

2. (a) (i) Define the term thermometric property

(ii) State four physical properties that change with temperature

(iii) Give four reasons why water is not used as a thermometric liquid

(b) (i) Differentiate between conduction and convection of heat

(ii) Explain four factors that affect the rate of conduction

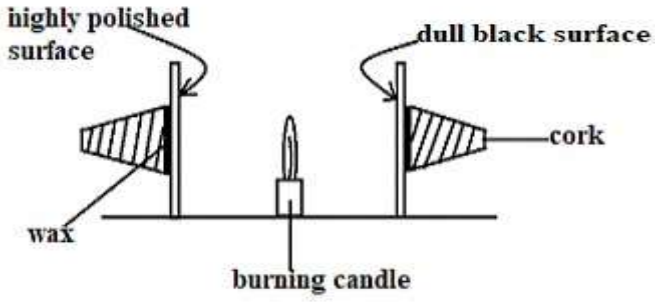
(iii) Describe an experiment to show that water is a poor conductor of heat

3. (a) (i) Define the term radiation

(ii) Describe an experiment to demonstrate convectional currents in air

(iii) State two applications of convectional currents in air

(b)(i) The diagram below shows an experiment to compare the rate of absorption of different surfaces. Explain what will happen after some times



(ii) Draw a well labelled diagram of a vacuum flask and give the functions of the parts

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4. (a) Define the following terms

(i) Ideal gas

(ii) Equation of state

(iii) Absolute temperature

(b) (i) State Boyles law

(ii) Sketch a graph to illustrate Charles law

(iii) Describe an experiment to verify Boyle's law

(c) A gas of volume $1000cm^3$ at a pressure of $40 \times 10^5 Pa$ and temperature of 17℃. Find the new volume of the gas at s.t.p

5. (a) (i) Differentiate between heat capacity and specific latent heat of vaporization. State the S I unit in each case

(ii) Describe an experiment to determine the specific heat capacity of a solid using a method of mixtures

(iii) A metal of mass $0.2kg$ at 100℃ is dropped into $0.08kg$ of water at 13℃ contained in a calorimeter of mass $0.12kg$ and $s.h.c$ of $400\ Jkg^{-1}K^{-1}$. The final temperature reached is35℃. Determine the $s.h.c$ of the solid

(b) State two factors that affect the boiling point of a substance

6. (a)(i) Define the term specific latent heat

(ii) Explain why temperature remains constant when water turns into steam

(b) (i) Describe an experiment to determine the specific latent heat of vaporization of water

(c) A calorimeter of mass $35.0g$ and $s.h.c$ $840Jkg^{-1}K^{-1}$ contains $143.0g$ of water at 7℃. Dry steam at 100℃ is bubbled through water into the calorimeter until the temperature of water rises to 29℃. If the mass of steam which condenses is $5.6g$

(i) Calculate the heat gained by the water and the calorimeter (ii)

(ii) Obtain an expression for heat loss by steam in condensing at 100℃ in cooling to 29℃

(iii) Find the $s.l.h$ of vaporization of water

7 (a) (i) Differentiate between boiling and evaporation

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(ii) Explain any two factors that affect the rate of evaporation

(iv) Describe an experiment to make by evaporation

(b) Define the following terms

(i) Boling point

(ii) Saturated vapour pressure

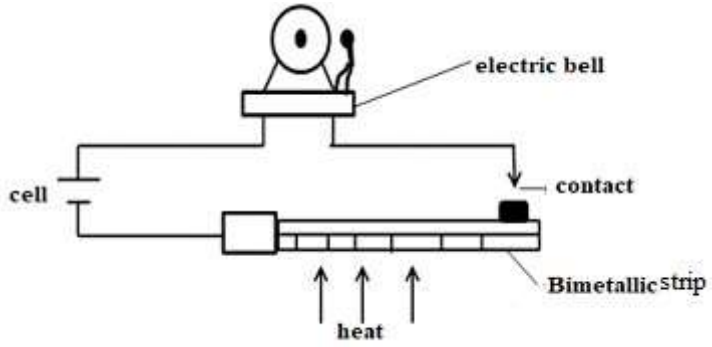
(c) Explain the cause of the difference between the duration of cooking at a low and a high altitude

8. (a) (i)Define the term thermal expansion

(ii) Describe an experiment to demonstrate thermal expansion and contraction in solids

(iii) State four applications of thermal expansion

(b) Explain what will happen when the metallic strip in the figure below is heated



(c) Explain why iron sheets are made with ridges

MECHANICS

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1. (a) (i)Distinguish between basic and derived quantities. Give three example in each case

(ii) Define the term volume and state its S I Unit

(iii) Describe an experiment to determine the volume of an object that floats in water

(b) (i)Define the term density and state its S I Unit

(ii) The density of water is $1000kgm^{-3}$. What does this mean?

(iii) State two reasons for studying density

(c) Describe an experiment to determine density of an irregular object

2. (a) (i) Define the term relative density

(ii) Describe an experiment to determine the relative density of a liquid

(iii) *An alloy is made* by mixing $40cm^3$ of metal X whose density is $2gcm^{-3}$ and another metal Y of density $3gcm^{-3}$ and volume $20cm^3$. Determine the density of the alloy

(b)(i) Explain one factor that affect density of a substance

(ii) A density bottle has a mass $75g$ when empty $95g$ when full of water and $99g$ when full of a liquid. Calculate the density of the liquid

3. (a) Define the following terms

(i) Force

(ii) Newton

(b)(i) A pendulum bob is fixed on a support and set to made horizontal circular motion. Draw a well a diagram to show all the forces that act on the bob

(ii) State two effects of a force on an object

(c) (i) Define the term weight

(ii) Explain why the weight of a body may from place to place on the earth's surface

(iii) State three differences between mass and weight

(d)(i) Differentiate between scalar and vector quantities. Give four examples in each case

(ii) A body of mass $2kg$ is acted on by two forces of $10N$ and $24N$ at right angles. Find the acceleration acting on the body

4. (a) (i) Define the term static friction

(ii) Describe an experiment to determine static between a block of wood and a table surface

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(iii) State two ways of reducing and increasing friction

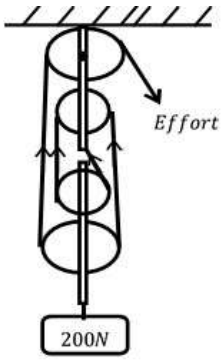
(b) Define the following terms as applied to machines

(i) work output

(ii) Velocity ratio

(iii) Efficiency

(c) Below is a pulley system of mass $0.5kg$ and there is a friction of $5N$



Calculate

(i)Effort required to lift the load

(ii) $M.A$

(iii) Efficiency of the machine

(d) Sketch a graph of mechanical advantage against the load of the pulley system shown above

5. (a) Define the following terms

(i) work

(ii) watt

(iii) potential energy

(b) (i) Distinguish between renewable and non-renewable sources of energy. Give two examples in each case

(ii) State the law of conservation of energy

(iii)Explain the energy changes that take place when a generator is switched on

(c) A pendulum bob of mass, $m = 0.1kg$ is raised to a height of 0.4 above its lowest point. It is then released, calculate

(i)$P.E$ at this height

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(ii)K.E at its lowest height

(iii)The maximum velocity

6. (a)(i) State the kinetic theory of matter

(ii) State three differences between solids, liquids and gases

(b) (i) Define the term diffusion

(ii) Describe an experiment to demonstrate Brownian motion using a liquid

(iii)Explain two factors that affect the rate of diffusion

(c) (i) Define the term surface tension

(ii) Given that the diameter of an oil drop is $1.0mm$ and the diameter of the oil film of the same drop on water is $20cm$. Calculate the thickness of the oil molecule

7. (a) (i) Describe an experiment to demonstrate surface tension

(ii) State two effects of surface tension

(iii)State two ways of reducing surface tension

(b) (i) Define the term centre of gravity

(ii) Describe an experiment to determine the centre of gravity of a regular body using balancing method

(iii) With the aid of diagrams differentiate between stable and unstable equilibrium

8. (a)(i) Define moment of a force

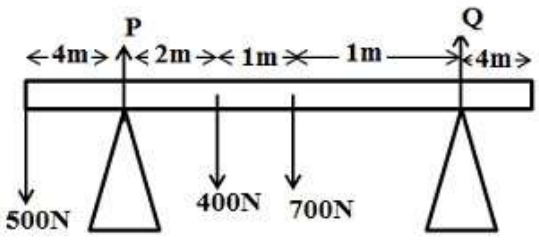
(ii) State the conditions under which a rigid body is said to be in equilibrium

(iii) State two applications of moment of a force

(b) (i) State the principle of moment of a force

(ii) Describe an experiment to determine mass of a uniform metre rule using a known mass

(iii) Calculate forces P and Q shown on the figure below



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9. (a) (i) Define the term pressure and state its S I Units

(ii) State the factors that affect pressure in solids

(iii) A rectangular block of metal $2cm$ by $10cm$ by $10cm$ weighs $5kg$. Calcultate the maximum and minimum pressure

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(b) (i) State the factors that affect pressure in liquids

(ii) Show that pressure in liquids is given as $\boldsymbol{P = h\rho g}$

(iii) Describe an experiment to show how depth affects pressure in liquids

(c) (i) State Pascal's principle

(ii) State two applications of the principle of transmission of pressure in liquids

10. (a)(i)Define Atmospheric pressure

(ii) Describe an experiment to demonstrate atmospheric pressure

(iii) A mercury barometer reads a pressure of $75cmHg$ at the bottom of a mountain and $73.5cmHg$ at the top. If the density of mercury is $13600kgm^{-3}$ and that of air is $1.25kgm^{-3}$, calculate the height of the mountain

(b) (i) State two applications of atmospheric pressure

(ii) A man blows in one end of a water $U\ tube$ manometer until the level differ by $40.0cm$. if the atmospheric pressure is $1.0 \times 10^5 Nm^{-2}$ and the density of water is $1000kgm^{-3}$, calculate his lung pressure

(c) Describe an experiment to determine liquid pressure using a manometer

11. (a) Define the following terms

(i) Stiffness

(ii) Ductility

(iii) Elastic limit (iv) Strength

(b) (i) State two examples of brittle materials

(ii) State three factors that affect the strength of a material

(c) (i)State Hooke's law of elasticity

(ii) State two applications of Hooke's law of elasticity

(iii) Describe an experiment to verify Hooke's law of elasticity

(iv) A spring stretches by $6cm$ when supporting a load of $15N$. By how much would it stretch when supporting a load of $5kg$?

12. (a) (i) Distinguish between Stress and Strain

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(ii) Sketch on the axes a graph to show the elasticity of Glass, Rubber and Copper.

Explain the features of your graph

(iii) A mass of $200g$ is placed at the end of a wire $15m$ long and cross sectional area $0.2m^2$. If the mass causes an extension of $15m$, calculate the stress and strain

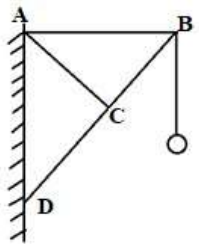
(b) (i) Explain the features of steel that make it a good construction material

(ii) State two advantages of reinforced concrete over ordinary concrete

(iii) State three advantages of hollow beams

13. (a)(i) Distinguish between a strut and a tie

(ii) Identify ties and struts from the structures below



(b)(i) What is a notch?

(ii) State two applications of a notch effect

(c) (i) State three advantages of wood as a construction material

(ii) Explain the effect of bending a beam

(iii) Explain why one side of a bridge should be rested on rollers

14. (a) Define the following terms ***(i) Uniform velocity***

(ii) Uniform deceleration (iii) Displacement

(b)(i) State the difference between velocity and speed

(ii) A car covers $72km$ in $2hours$. Find its speed in ms^{-1}

(c) (i) State the Newton's equations of motion

(ii) Sketch a velocity time graph for a body that is thrown upwards vertically

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(d) A car starting from rest accelerates uniformly to $20ms^{-1}$ in $10s$. It continues at that velocity for$100s$. It then decelerates uniformly to rest in $5s$

(i) Sketch a velocity – time graph for the motion

(ii) Determine the distance covered by the car

(iii) Find the average speed of the car

15. (a) (i) Define the term ***acceleration due to gravity***

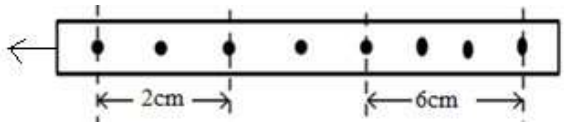
(ii) Describe an experiment to determine the value of acceleration due to gravity

(b) An object is released from an aircraft travelling horizontally with a velocity of $200ms^{-1}$ at a height of $500m$, find;

(i) How long it takes the object to reach the ground

(ii) The horizontal distance covered by the object

(c) The figure below shows part of a ticker tape timer of frequency $25Hz$. Calculate the acceleration



16. (a) (i) State ***Newton's first law of motion***

(ii) Explain one application of Newton's second law of motion

(b)(i) Define the term linear momentum

(ii) State the law of conservation of linear momentum

(iii) Distinguish between elastic and inelastic collision

(iv) Two particles of masses $0.2kg$ and $0.4kg$ are approaching each other with velocities $4ms^{-1}$ and $3ms^{-1}$ respectively. On collision, the first particle reverses its direction and moves with a velocity of $2.5ms^{-1}$. Find the velocity of the second particle after collision

(c) Explain why a loaded truck takes more time to stop when brakes are applied that an empty one

17. (a) Explain why a person feels heavier at instant when a lift starts to move up wards

(b) State;

(i) Archimedes principle

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(ii) The law of floatation

(c) (i) Describe an experiment to verify Archimedes Principle

(ii) A solid of volume $1 \times 10^{-3} m^3$ floats on water of density $1 \times 10^3 kgm^{-3}$ with $\frac{3}{5}$ of its volume submerged, find the mass of the solid

18. (a) (i) Define the term ***terminal velocity***

(ii) Describe the motion of a ball bearing that falls freely through a viscous fluid

(iii) Sketch a velocity time graph for a body that falls freely in a fluid

(b) (i) State Newton's first law of motion

(ii) Explain one effect of the Newton's first law of motion

(c) (i) Explain why a hydrometer is made with a wide bulb and a loaded base

(ii) State two applications of a hydrometer

(d) A glass block weighs $25N$ in air. When completely immersed in water, the block weighs $15N$. Calculate the density of the glass block

MAGNETISM

1. (a)Define the following terms

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1. Magnet
2. Ferromagnetic material

(b) Distinguish between magnetic and non-magnetic materials. Give two examples in each case

(c) (i) state two properties of a magnet

(ii) state the law of magnetism

3. Describe a simple experiment to verify the laws of magnetism

2. (a) (i) Define the term magnetisation

(ii) Briefly explain the domain theory of magnetism

(b) Describe a simple experiment to magnetise a piece of steel bar using electrical method

(c) (i) What is demagnetization

(ii) Explain how a magnet gets demagnetised by heating

(d) (I) Define the term magnetic saturation

(ii) Explain the effect of breaking a magnet into pieces

3. (a) Distinguish between soft and hard magnetic materials. Give two examples in each case

(b) (i) Describe an experiment to distinguish between soft and hard magnetic materials. Give two applications of each type of a material

(ii) Define a magnetic field and state two properties of magnetic fields

(c) (i) Sketch the magnetic field lines between two bar magnets placed horizontally with their south poles facing each other

(ii) Distinguish between an angle of dip and angle of declination

4. (a) (i) Sketch a magnetic field pattern between two wires placed parallel to each othe and carrying electric current in opposite direction

(ii) Define the term electromagnet and state two applications of electromagnetism

(iii) State two factors that affect the strength of an electromagnet

(b) (i) With the aid of a diagram describe how an electric bell works

(ii) State the laws of electromagnetic induction

(iii) Define the term magnetic screening

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5. (a)(i) Describe the structure and mode of operation of a simple D C motor

(ii) State four ways of increasing the strength of a D C motor

(b)(i) A current of o.2A passes through a galvanometer of resistance 30 Ω. How can the galvanometer be used to measure a p.d of 25V

(ii) State two ways of increasing the sensitivity of a galvanometer

(c) Describe a simple experiment to verify the laws of electromagnetism

6. (a) (i) Define the term a transformer

(ii) Describe the structure and mode of operation of a step up transformer

(iii) State four energy losses in a transformer and suggest ways of minimising them

(iv) A step up transformer is designed to operate from a 20V supply and deliver energy at 240 V . if the transformer is 90% efficient . determine the current in the primary windings when the output terminal is connected to a 240V , 100W lamp

(c)(i) Define the term mutual induction

(II) State the advantages of using AC over DC in power transmission

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WAVES

1. (a)(i) What is a wave?

(ii) Briefly describe how a wave travels

(b)(i) Distinguish between mechanical and electromagnetic waves. Give two examples in each case

(ii) Differentiate between transverse and longitudinal waves. Give two examples in each case

(c) Define the following terms as applied to waves

(i) Amplitude

(ii) Wavelength

(iii) Period

(iv) Node

(v) Frequency

2. (a) Show that $\boldsymbol{v = \lambda f}$

(b) A vibrator produces waves which travel $35m$ in$2s$. If the waves produced are $5cm$ apart. Calculate;

(i) the wave velocity

(ii) the wave length (iii) the wave frequency

(d) Explain:

(i) How the speed of waves in a ripple tank can be increased

(ii) The effect of increasing the depth of water in a ripple tank on the frequency of waves produced

(e) Sketch a ray diagram to show to show the behaviour of circular waves when they strike a convex reflector

3. (a) (i) Distinguish between refraction and diffraction of waves

(ii) Use a diagram to show how plane waves are refracted by a convex lens

(ii) Use a diagram to show how plane waves pass through a narrow slit

(b) (i) Define the term interference of a wave

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(ii) Differentiate between constructive and destructive interference. Illustrate your answer with diagrams

(c) (i) State four properties of electromagnetic waves

(ii) Sketch an electromagnetic spectrum in order of reducing wavelength

(iii) Explain the difference between infra-red and X-rays in terms of their effect on matter

4. (a)(i) What do you understand by the term sound waves

(ii) Give four differences between sound and light waves

(b) (i) Explain the factors that affect the speed of sound

(ii) Describe an experiment to show that sound is a mechanical wave

5. (a) (i) what is an echo

(ii) Describe an experiment to determine the speed of sound in air

(iii) A student is standing between two walls and makes a clap. He hears the first echo after $2s$ and anther after a further $3s$. If the velocity of sound is $330ms^{-1}$. Find the distance between the walls

(iv) Write short notes on the term reverberation

(b)(i) State three applications of reflected sound

(ii) Distinguish between timbre and loudness

6. (a) (i) Define a standing wave

(ii) State two difference between stationary and progressive waves

(iii) Sketch a diagram to show the formation of a fundamental note in a closed pipe

(b)(i) Describe an experiment to determine the wavelength of a sound wave using resonance method. Write an expression for the speed of sound in air using the wavelength obtained

(ii) A tube closed at one end resonates first at the length of $17.5cm$ and again at $51.5cm$.

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find the frequency of the vibration

(Speed of sound in air$= 340ms^{-1}$)

(iii) A pipe open on both ends has a length of$10cm$. The velocity of sound in air is$320ms^{-1}$. Calculate;

(i) Fundamental note

(ii) The first overtone

MODERN (ATOMIC) PHYSICS

1. (a)(i)Describe a simple model of an atom

(ii) Distinguish between atomic number and atomic mass

(iii) Define a nuclide and describe the composition of $^{235}{}_{92}M$

(b) Define the following terms

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(i) Isotopes

(ii) Radioactivity

(iii) Radioactive nuclides

(iv) Background radiation

(c) (i) Define the term Alpha particle

(ii) State four differences between alpha particles and gamma rays

(iii) Sketch a diagram to show the deflection of the radioactive passage in an electric field

2. (a) Uranium $^{238}_{92}U$ decays by emission of two beta particle, 0ne alpha particle and a gamma ray. Using an equation describe the composition of the daughter nuclide

(b) (i) Define the term half life

(ii) Thorium has a half life of 24 days. How many days would it take 8g of thorium to disintegrate to 1g

(iii) Sketch a graph for a process in b(ii) above

(c) (i) State two medical uses and two industrial uses of radioactivity

(ii) State four health hazards of radioactivity

(iii) Describe how radioactivity is used to treat cancer

3. (a) Differentiate between nuclear fission and nuclear fusion

(b) (i) Define the term thermionic emission

(ii) With the aid of a diagram describe how cathode rays are produced in a cathode ray tube

(iii) State four properties of cathode rays

(iv) Distinguish between cathode rays and beta particles

(c) Explain the behaviour of cathode rays when directed through an electric field

4. (a) (i)Define the term X-rays

(ii) Describe how X-rays are produced

(iii) Explain how the intensity and strength of X-rays produced can be increased

(b) (i) State four properties of X-rays

(ii) State four uses and four hazards of X- rays

(iii) State two differences between hard and soft X-rays

5. (a)(i) Draw a well labelled diagram of a Cathode ray oscilloscope

(ii) Explain the function of the electron gun on a cathode ray oscilloscope

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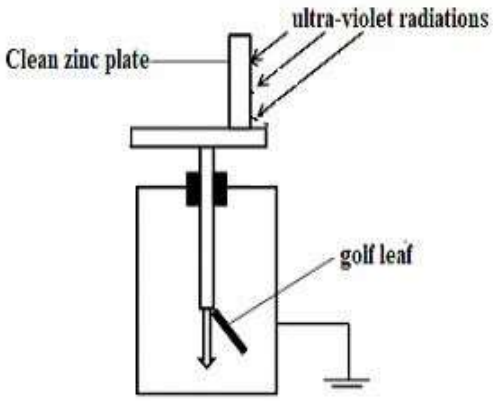
(iii) State four uses of a cathode ray oscilloscope

(iv) Sketch a graph to show the appearance of the screen of a CRO when A C is on Y plates and the time base is on

(b) State two advantages a CRO has over a voltmeter

6. (a) Define the term photoelectric emission

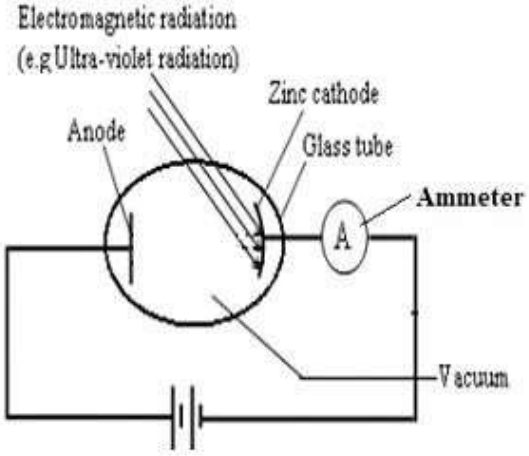
(b) Use the diagram shown in figure below to explain the behaviour of the gold leaf when



(i) leaf is positively charged

(ii) leaf is negatively charged

(c) Explain what happens to the galvanometer



(d)(i) Define the term rectification

(ii) Describe how a bridge rectifier works

LIGHT

1. (a) (i) What is meant by the term light ?

(ii) Differentiate between luminous and non-luminous sources of light. Give two examples in each case

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(b) (i) Define the term a right ray

(ii) State the principle of rectilinear propagation of light

(iii) Describe an experiment to verify the principle of rectilinear propagation of light

(iv) State two applications of rectilinear propagation of light

(c) Draw a well labelled diagram to show the formation of a solar eclipse

2. (a) (i) Draw a labelled diagram to show the formation of an image by a pin hole camera

(ii) Explain the effect of narrowing the pin hole on the image formed by a pinhole camera

(iii) The length of a pinhole camera is $25cm$. An object $2m$ high is placed $100cm$ from the pin-hole camera. Calculate the height of the image produced and its magnification

(b) (i) Define the term reflection of light

(ii) State the laws of reflection of light

(c) Differentiate between regular and diffuse reflection and illustrate your answer with a diagram

3. (a) (i) Distinguish between real and virtual image

(ii) Sketch a ray diagram to show the formation of an image by a plane mirror. Give the properties of an image formed by a plane mirror

(iii) An object is placed 20cm in front of a plane mirror if the object is moved 2cm towards the mirror and later 1.5cm away from the mirror, calculate the distance between the final image and the object (b)(i) State two applications of a plane mirror

(ii) Sketch a ray diagram to show how a an eye sees an image formed by a periscope

(iii) State two advantages of using prisms in a periscope over plane mirrors

4. (a) Define the following terms as applied to concave mirrors

(i) Focal length

(ii) Pole

(iii) Centre of curvature

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(b) (i) sketch a ray diagram to show how a concave mirror forms an image when an object stands on the principal axis between the pole and the principal focus. State the properties of the image formed.

(ii) An object is $32cm$ in-front of a convex mirror f focal length$16cm$. Find the nature and position of the image formed

(c) (i) state four applications of concave mirrors

(ii) With the aid of a labelled diagram explain why parabolic mirrors are preferred to concave mirrors for use in a car headlamps

(d) Describe an experiment to determine the focal length of a concave mirror using a an illuminated object

5. (a) Define the following terms

(i) Refraction of light

(ii) Refractive index of a glass block

(iii) Critical angle

(b) (i) With the aid of a ray diagram, explain one effect of refraction of light

(ii) State the laws of refraction of light

(iii) Describe an experiment to determine the refractive index of a glass material

6. (a) (i) state the conditions for total internal reflection to occur

(ii) The critical angle of a medium is 24^0. Find the refractive index of the medium

(iii) State two applications of total internal reflection

(b) (i) A ray of red light is incident on a prism of refractive index, $n = 1.48$ and refracting angle 60^0. The ray emerges from the prism at an angle of 43^0. Find the angle of incidence

(ii) Sketch a ray diagram to show the formation of a mirage

7. (a) Define the following as applied to lenses

(i) Optical centre

(ii) Power

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(iii) Dioptre

(b) (i) state the properties of an image formed by a convex lens when an object is placed between centre of curvature and the principal focus

(ii) Draw a ray diagram to find the position of an image formed by a convex lens of focal length $15cm$ if the object distance is $30cm$

(c) (i) describe an experiment to determine the focal length of a convex lens using a distant object

(ii) state four applications of a convex lens

8. (a) (i) with the aid of a diagram, describe how a projector works

(ii) State two differences between a lens camera and a pin hole camera

(iv) Using a diagram, explain how short sightedness can be corrected

(b) (i) Define the term pure spectrum

(ii) Describe how a pure spectrum can be obtained

(c) (i) Distinguish between primary and secondary colours of light. Give two examples in each case

(ii) Explain why an object may appear coloured in white light

(iii) Explain the appearance of a white shirt with blue dots in red light

ELECTRICITY

1. (a) (i) Define the term electrification

(ii) State two methods of electrification

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(iii) Explain the difference between an insulator and a conductor. Give two examples in each case

(b) (i) state the basic law of electrostatics

(ii) Explain how an insulator can be charged

(iii) Describe how a body can be charged positively by induction. State the precautions taken

(iv) Draw a well labelled diagram of a gold leaf electroscope

2. (a) (i) state any three uses of a gold leaf electroscope

(ii) Describe how a gold leaf electroscope can be used to test the insulating properties of a material

(b) A metallic hollow can is placed on the cap of a neutral gold leaf electroscope and a positively charged metal sphere is suspended inside the can. Explain what happens to the leaf when

(i) When the sphere is suspended and removed without touching the can

(ii) When the sphere is made to touch the can

(c) (i) Sketch an electric field for two opposite point charges placed near each other

(ii) Explain the dangers of lightning

3. (a)(i) Distinguish between a primary cell and a secondary cell. give one example in each case

(ii) State four sources of electromotive force

(iii) With the aid of a diagram, describe the action of a simple cell

(b)(i) State the defects of a simple cell and suggest ways to minimise them

(ii) Briefly describe the process of charging an accumulator

(iii) State six precautions taken to maintain the life span of an accumulator

4. (a) Define the following terms

(i) Electric current

(ii) Electromotive force

(iii) Internal resistance

(iv) Potential difference

(b) (i) A charge of $4C$ is flowing through a conductor at a rate of $0.5s$. calculate the current flowing

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(ii) State the advantage of connecting cells in parallel

(iii) Define the term ampere

(c) (i) state two effects of an electric current

(ii) Explain how temperature affects the resistance

(d) Sketch a graph to show how current varies with p.d in

(i) Copper wire

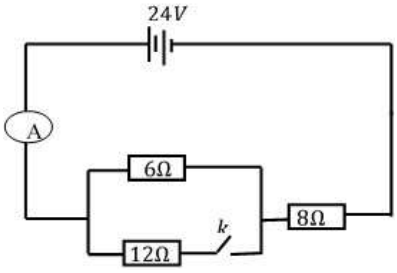
(ii) An acid

4. (a)(i) State Ohms law

(ii) Describe an experiment to determine the resistance of a resistor

(iii) Derive an expression for the effective resistance of two resistors connected in parallel

(b)



Find the ammeter reading when

(i) Switch k is open

(ii) Switch k is closed

(iii) Power expended in the parallel arrangement

5. (a)(i) Define the term electrical power

(ii) Explain why an electrical conductor heats up when current flows through it

(b) A battery of $e.m.f$ $24V$ is connected in series with a resistor R and a lamp rated $10V$, $20W$. If the lamp is operating normally, calculate the

(i) $p.d$ across the resistor

(ii) the value of R

(iii)Power dissipated in R

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(c)(i)Define the term kilowatt hour

(ii) A house has a $100W$, two $75W$ bulbs and one $40W$ bulbs. Find the cost of having all these switched on for 5 1 2 hours every day for $45days$ at a cost of $Shs.$ 435 per unit 7.

(a)State the functions of the following during house wiring

(i) Fuse

(ii) Switch

(iii) Earth wire

(b) (i) State the precautions taken while wiring a house

(ii)Explain why a switch is connected to the live wire in a circuit during house wiring

(iii) Explain why appliances are connected in parallel during a house wiring

(c) (i) Define the term mutual induction

(ii) Describe how a step down transformer works

END

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