



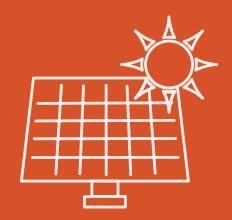


3 2 Wave, motion without material Conservation Principles transter of matter Field at rest and in motion Pg 04 Pg 12 Pg 18

Contents

Energy quantization and duality

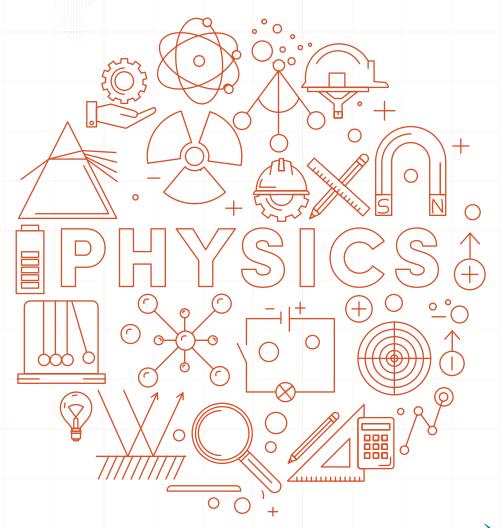




Conservation Principles

Wave, motion without material transfer
Field at rest and in motion
Energy quantization and duality of matter
Physics in Technology

ENERGY AND SOCIETY





- 1. The major source of energy in Nigeria is
 - 1. [A] Hydro
 - 2. [B] Fossil fuel
 - 3. [C] Geothermal
 - 4. [D] Wind
 - 5. [E] Heat

The correct answer is **B.**

Explanation

Nigeria depends mostly on crude oil. **A, C, D,** and **E** are not correct, because the resources of the energy have not been fully utilized.

- 2. Chemical energy is a
 - 1. [A] Geothermal
 - 2. [B] Hydro
 - 3. [C] Renewable
 - 4. [D] Non-renewable

Correct Answer

The correct answer is **D.**

Explanation

The energy cannot be used again once used. The correct answer is D : A, B, C, Are not correct, because they are not chemicals.

- 3. Firewood is a
 - 1. [A] Nuclear energy
 - 2. [B] Chemical energy
 - 3. [C] Biomass energy
 - 4. [D] Heat energy

The correct answer is **C.**

Explanation

Yes, that's correct! The energy is obtained from dead plants. The correct answer is C: A, B, D, are not correct, because they are not from dead plants.

- 4. The energy obtain from the movement of the ocean is
- 1. [A] Mechanical
- 2. [B] Wind
- 3. [C] Tidal
- 4. [D] Breeze

Correct Answer

The correct answer is **C.**

Explanation

The correct answer is C: A, B, D, are not correct, because they are not wave motion

- 5. The energy obtain from bituminous sand is
- 1. [A] Coal sand
- 2. [B] Crude sand
- 3. [C] Sand tune
- 4. [D] Tar sand

Correct Answer

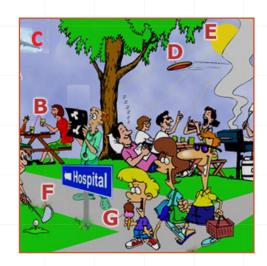
The correct answer is **D.**

Explanation

The correct answer is D : A, B, C, are not correct, because they are not bituminous sand.



6. From A to G identify the forms of energy.



Correct Answers

1.	[A]	Light	energy

- 2. [B] Chemical energy
- 3. [C] Wind
- 4. [D] Mechanical (kinetic) energy
- 5. [E] Solar energy
- 6. [F] Chemical energy
- 7. [G] Mechanical (potential) energy
- 7. Sun produces sound energy. True or False

Correct Answer

True

Explanation

Sun can produce a sound that cannot be heard on earth because the space between the earth and the sun is a vacuum that is the space without air. In that case, the sound does not travel through a vacuum.



8. State the forms of energy you know

Correct Answer

Any form of energy

Explanation

Students to expound and name the forms they know

9. Identify 5 sources of energy you know and there uses

Correct Answer

Any sources of energy

Explanation

Students to expound and name the sources they know

10. a. Explain briefly the energy crisis in Nigeria.

Answer

The Nigerian energy supply crisis is the ongoing failure of the Nigerian government to provide adequate energy for its citizens to boost the economy. There is a high cost of fuel, no adequate supply of electricity for domestic and industrial use. We have all these in excess and abundant but no adequate technology and bad government policies to exploit them.

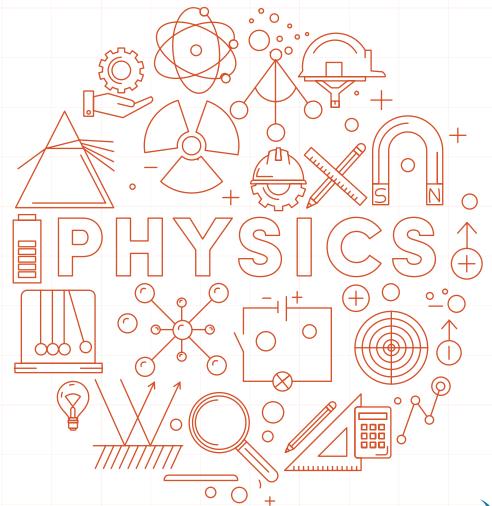
b. Describe eco-friendly energy

Answer

Renewable energy sources are eco-friendly energy unlike fossil fuels and others. Technologies that are being used in harnessing the Earth's renewable energy create no negative impact on the environment. The energy includes but not limited to solar, wind, and hydropower etc.



ENERGY CONVERSION





1. Chemical energy is converted to mechanical energy in a solar panel: True or False				
Correct Answer				
False Explanation				
Yes, that's correct! Because there is no mechanical energy in the sun.				
2. The cell converts heat energy to sound to light: True or False				
Correct Answer				
False				
Explanation				
Yes, that's correct! Because there is no mechanical energy in the sun.				



THEME 1

Conservation Principles

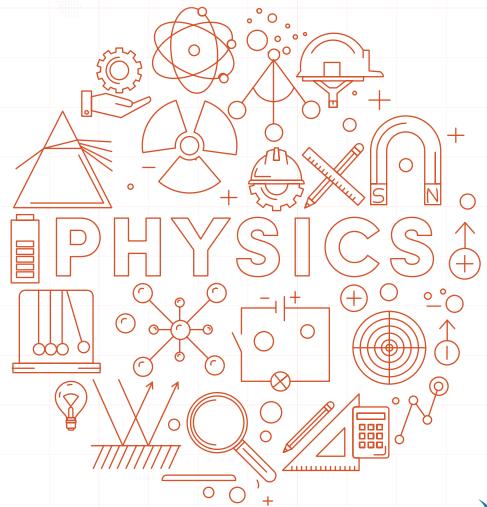
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PROPERTIES OF WAVES





- 1. The chirality of organic compound are tested by
- 1. [A] Refraction
- 2. [B] Interference
- 3. [C] Polarization
- 4. [D] Reflection
- 5. [E] Diffraction

The correct answer is **C.**

Explanation

Yes, that's correct! Because it uses polarization method

- 2. The bouncing off of wave when contacting a barrier is
- 1. [A] Polarization
- 2. [B] Refraction
- 3. [C] Diffraction
- 4. [D] Reflection

Correct Answer

The correct answer is **D.**

Explanation

Yes, that's correct. Because it is only reflection in which wave bounces

- 3. The spreading of wave through openings is
- 1. [A] Polarization
- 2. [B] Refraction
- 3. [C] Diffraction
- 4. [D] Interference



The correct answer is **C.**

Explanation

Yes, that's correct! Because diffraction has to do with the spreading of wave through opening

- 4. The wave that cannot be polarized is
- 1. [A] Reflection
- 2. [B] Transverse
- 3. [C] Longitudinal
- 4. [D] Longitudinal

Correct Answer

The correct answer is **D.**

Explanation

Yes, that's correct! It is only the longitudinal wave that cannot be polarized.

- 5. The wave that travel with the speed of light is
- 1. [A] Mechanical
- 2. [B] Sound
- 3. [C] Electromagnetic
- 4. [D] Water wave.

Correct Answer

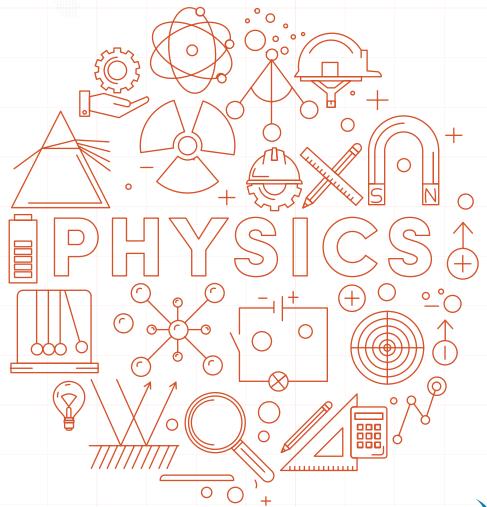
The correct answer is **C.**

Explanation

Yes, that's correct! The electromagnetic wave is the only wave that travels with the speed of light



ELECTROMAGNETIC WAVES

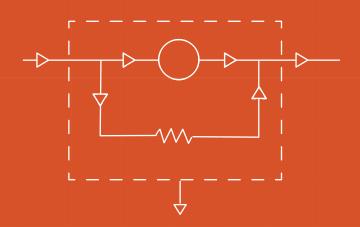




1. Microwave is a type of radiation. True or False	
Correct Answer	
True	
2. Radio wave has the highest frequency in the electromagnetic spectrum. True or False	
Correct Answer	
False	
3. X-ray is the strongest radiation. True or False	
Correct Answer	
False	
4. Electromagnetic radiations can be used to sterilize medical equipment. True or False	
Correct Answer	
True	
5. Human eyes cannot detect visible light radiation . True or False	
Correct Answer False	







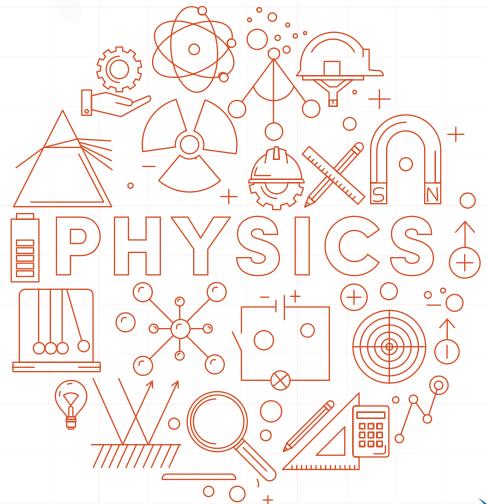
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GRAVITATIONAL FIELD





- 1. Satellite is by
 - Moving 1. [A]
 - 2. [B] Orbiting
 - 3. [C] Energy

 - 4. [D] Mass5. [E] Skipping

The correct answer is **B.**

Explanation

Yes, that's correct! Satellite only orbiting

- 2. Field is a
 - 1. [A] Force of attraction
 - 2. [B] Gravity
 - 3. [C] Space where force is experienced
 - 4. [D] Constant

Correct Answer

The correct answer is **C.**

3. "g" varies in all planets. True or False

Correct Answer

True

4. Natural satellites are

Correct Answer

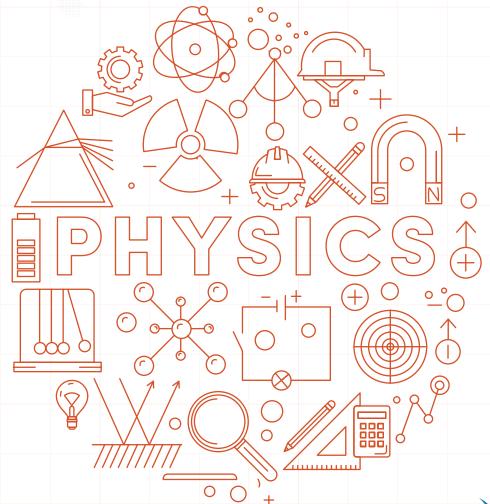
The moons

5. Aeroplanes can escape from the gravitational field of the earth

Correct Answer

False

ELECTRIC FIELD





- 1. Which of the following is not a components of cells
- 1. [A] Dilute acid
- 2. [B] Diamond
- 3. [C] Ammonium chloride
- 4. [D] Graphite
- 5. [E] Zinc rod

The correct answer is **B.**

Explanation

Diamond cannot conduct electricity, but the rest can

- 2. A galvanometer which has 200Ω gives a full scale deflection for a current of 10mA. Calculate the values of the resistance to convert the galvanometer to an ammeter reading up to 10A
- 1. [A] 2Ω
- 2. [B] 20Ω
- 3. [C] 0.2Ω
- 4. [D] 200Ω
- 5. [E] 0.02Ω

Correct Answer

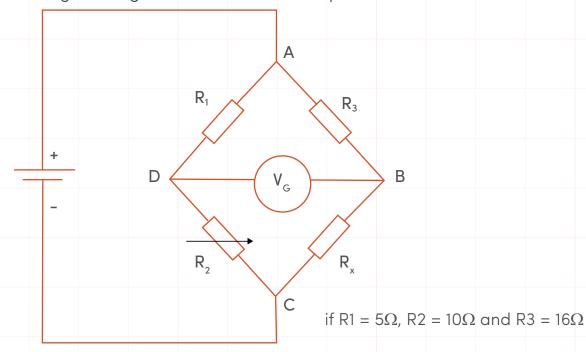
The correct answer is **C.**

Explanation

By calculation 0.2 $\!\Omega$ is the correct answer



3. Using the diagram below to solve the question



- 1. [A] 30Ω
- 2. [B] 35Ω
- 3. [C] 42Ω
- 4. [D] 32Ω
- 5. [E] 20Ω

Correct Answer

The correct answer is **D.**

Explanation

Yes, that's correct! option D 32 $\!\Omega$

- 4. The conditions in which gases conduct electricity are
- 1. [A] High current and high voltage
- 2. [B] Low current and low voltage
- 3. [C] High current and low voltage
- 4. [D] Low current and high voltage
- 5. [E] Low current and high resistance

The correct answer is **D.**

Explanation

Yes, that's correct! Gases conduct electricity in Low current and high voltage

5. State the electric force between charges

Correct Answer

The correct answer is **D.**

Explanation

Yes, that's correct! Gases conduct electricity in Low current and high voltage

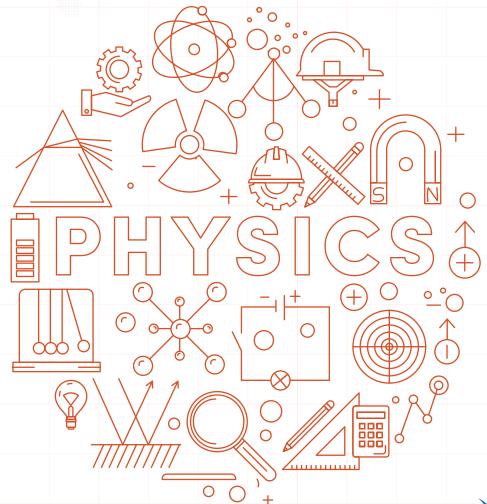
- 6. State electric field intensity and electric potential
- 7. On which of the following factors does the capacitance of a parallel plate's capacitor depend?
 - (i) The area of the plates
 - (ii) The distance between the plates
 - (iii) The nature of the dielectric constant between the plates
 - (iv) The amount of charge on the plates
- 1. [A] (i) and (ii) only
- 2. [B] (i), (ii) and (iii) only
- 3. [C] (i), (iii) and (iv) only
- 4. [D] (ii) and (iii) only
- 5. [E] (i), (ii), (iii) and (iv) only

Correct Answer

The correct answer is **E.**



MAGNETIC FIELD





- 1. Which of the following sets comprises magnetic materials only?
- 1. [A] Brass, nickel and steel
- 2. [B] Lead, copper and steel
- 3. [C] Nickel, brass and copper
- 4. [D] Iron, steel and nickel
- 5. [E] Iron, copper and steel

The correct answer is **D.**

Explanation

Yes, that's correct! Iron, steel and nickel are the magnetic materials

- 2. Which of the following statement explains why soft iron is used in making the armature of an electric bell?
- 1. [A] Decreases the magnetic effect of a direct current
- 2. [B] Is not easily magnetized
- 3. [C] Losses its magnetism readily
- 4. [D] Returns its magnetism for a long time
- 5. [E] It cannot loss its magnetism

Correct Answer

The correct answer is **C.**

Explanation

It loses its magnetism readily and easily



- 3. Which of the following statement about an electromagnet is not correct?
- 1. [A] Its strength depends on the current
- 2. [B] It has permanent poles
- 3. [C] It is a temporary magnet
- 4. [D] Its strength depends on the number of turns in its coil
- 5. [E] Its magnetism can be loss easily

The correct answer is **B.**

Explanation

Electromagnet does not have permanent poles

- 4. A magnetic needle suspended at its centre of gravity settles at an angle to the horizontal. This shows that the
- 1. [A] Earth's field has both horizontal and vertical components
- 2. [B] Earth rotates
- 3. [C] Needle has two poles
- 4. [D] Magnetic pole is different from the geographic pole
- 5. [E] Earth's magnetic field is from north pole to the south pole.

Correct Answer

The correct answer is A.

Explanation

Earth's field has both horizontal and vertical components



- 5. Find the magnetic force experienced by an electron projected into a magnetic field of flux density 20T with a velocity of $15x10^7$ m/s in a 60^0 direction, where the charge of electron $1.6x10^{-19}$ C
- 1. [A] 6 x 10⁻¹⁰N
- 2. [B] 4.2 x 10⁻¹⁰N
- 3. [C] 5.2 x 10⁻¹⁰N
- 4. [D] 7.2 x 10⁻¹⁰N
- 5. [E] 4.6 x 10⁻¹⁰N

The correct answer is **B.**

Explanation

By using $F = qvBsin\theta$

- 6. A conductor of length 1.8m carrying current of 5A is placed in a magnetic field of flux density 0.6T.Calculate the magnitude of the force on the conductor.
- 1. [A] 5.4N
- 2. [B] 2.7N
- 3. [C] 1.3N
- 4. [D] 0.9N
- 5. [E] 1.8N

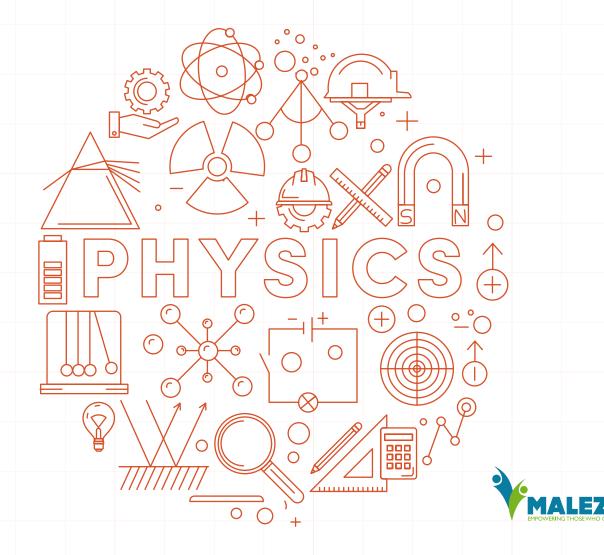
Correct Answer

The correct answer is A.

Explanation

By using F = BIL

ELECTROMAGNETIC FIELD



- The force experienced by a current-carrying conductor moving in a magnetic field is employed in the working of the
 - (i) Moving coil ammeter
 - (ii) Electric bell
 - (iii) Electric motor.

Which of the statements above is correct?

- 1. [A] (i) And (ii) only
- 2. [B] (i) and (iii) only
- 3. [C] (ii) and (iii) only
- 4. [D] (i), (ii) and (iii)
- 5. [E] None

Correct Answer

The correct answer is **B.**

Explanation

Only option B is correct

- 2. If the direction of current flowing in a straight wire is reversed, the magnetic field
- 1. [A] Remain the same
- 2. [B] Ceases to exist
- 3. [C] Becomes parallel to the conductor
- 4. [D] Is oppositely directed
- 5. [E] Unchanged

Correct Answer

The correct answer is **D.**

Explanation

When current is reversed, magnetic field will be directed opposite way



- 3. Fleming's right hand rule is also called the
- 1. [A] Motor rule
- 2. [B] Screw rule
- 3. [C] Thumb rule
- 4. [D] Dynamo rule
- 5. [E] Lenz's rule

The correct answer is **D.**

Explanation

The rule that describes how charges is produced when there is a relative motion between conductor and magnetic field at perpendicular to each other

- 4. The main function of the commutator in a simple DC motor is to
- 1. [A] Increase the flux linking the armature windings
- 2. [B] Maintain a direct current in the armature
- 3. [C] Provide uniform magnetic field around the armature
- 4. [D] Enable the armature to rotate freely
- 5. [E] Reverse the direction of the current in the armature

Correct Answer

The correct answer is **E.**

Explanation

That is the correct answer



- 5. Transformer can only change the phase of
- 1. [A] Current
- 2. [B] Resistance
- 3. [C] Voltage
- 4. [D] Induced current
- 5. [E] Magnetic field

The correct answer is **C.**

Explanation

Transformer is a device that changes the AC voltage

- 6. Energy losses due to eddy currents are reduced by using
- 1. [A] Low resistance wire
- 2. [B] Few turns of wire
- 3. [C] High resistance wire
- 4. [D] Insulated soft iron wires
- 5. [E] Opened soft iron wires

Correct Answer

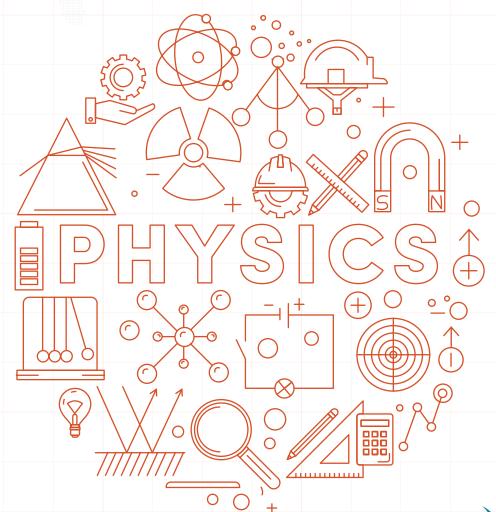
The correct answer is **D**

Explanation

Eddy current is reduced when the soft iron is laminated to prevent heat loss.



SIMPLE A.C CIRCUIT





- 1. An ammeter connected to an AC circuit records 5.5A. The peak current is
- 1. [A] 7.8A
- 2. [B] 3.9A
- 3. [C] 7.1A
- 4. [D] 2.4A
- 5. [E] 3.5A

The correct answer is A

Explanation

Using the correct $I_0 = V_{rms} \sqrt{2}$

- 2. In an RLC circuit, power is mainly dissipated by the
- 1. [A] Inductive parts
- 2. [B] Capacitive parts
- 3. [C] Resistive parts
- 4. [D] Reactive parts
- 5. [E] Impedance parts

Correct Answer

The correct answer is **C.**

Explanation

Power is only dissipated in the resistive part of an AC circuit



- 3. In a purely inductive circuit, the current
- 1. [A] Lags behind the voltage in phase by 90°
- 2. [B] Leads the voltage in phase by 90°
- 3. [C] Is in the same phase with the voltage
- 4. [D] Leads the voltage by 180°
- 5. [E] Lags the voltage by 180°

The correct answer is A.

Explanation

In an inductive circuit I, lags V, by 900

- 4. Series RLC is said to resonate, when
- 1. [A] Capacitive reactance is zero
- 2. [B] Current is minimum
- 3. [C] Inductive reactance is zero
- 4. [D] Conductance is maximum
- 5. [E] Impedance is minimum

Correct Answer

The correct answer is **E.**

Explanation

That is correct, the impedance is minimum



- 5. When an ac current given by $I = 10\sin(120\pi)t$ passes through a resistor of 10Ω , the power dissipated in the resistor is
- 1. [A] 500W
- 2. [B] 100W
- 3. [C] 770W
- 4. [D] 1400W
- 5. [E] 2000W

The correct answer is A.

Solution

Using
$$I_{rms} = \frac{I_0}{\sqrt{2}}$$
, $P=I^2R$

- 6. Using the parameters V_{rms} =240V, R=4 Ω , X_{L} =3 Ω ,calculate the I_{rms}
- 1. [A] 60A
- 2. [B] 32A
- 3. [C] 48A
- 4. [D] 80A
- 5. [E] 84A

Correct Answer

The correct answer is **C.**

Explanation

That is the correct answer, using the appropriate formula



Conservation Principles

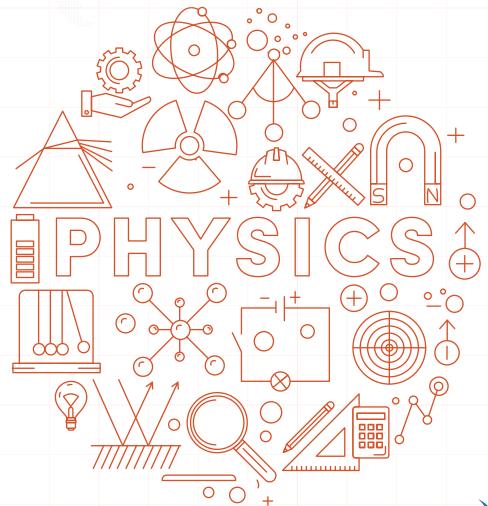
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MODELS OF THE ATOM





- 1. Plum-pudding model was proposed by?
 - 1. [A] Ernest Rutherford
 - 2. [B] Neil Bohr
 - 3. [C] J.J Thomson
 - 4. [D] Isaac Newton
 - 5. [E] John Dalton

The correct answer is **C.**

Explanation

Yes, that's correct!

- 2. The diameter of an atom is about
 - 1. [A] 10⁻⁷m
 - 2. [B] 10⁻⁸m
 - 3. [C] 10⁻¹³m
 - 4. [D] 10⁻¹⁰m
 - 5. [E] 10⁻¹²m

Correct Answer

The correct answer is **D.**

Explanation

The diameter of an atom is about 10⁻¹⁰m

- 3. Who proposed that an atom has a concentrating mass at the centre
 - 1. [A] J.J Thomson
 - 2. [B] Neil Bohr
 - 3. [C] Milikan
 - 4. [D] John Dalton
 - 5. [E] Ernest Rutherford

The correct answer is **E.**

Explanation

Yes, that's correct!

- 4. The limitation of Rutherford model is
 - 1. [A] The model could not explain the alpha scattering
 - 2. [B] The mass of an atom is concentrated at the centre
 - 3. [C] The nucleus is positively charged
 - 4. [D] Could not explain the existence of line spectra of atoms
 - 5. [E] The perimeter of a circle at which the electrons orbiting the nucleus without energy radiation is quantised.

Correct Answer

The correct answer is **D.**

Explanation

Could not explain the existence of line spectra

- 5. The limitation Bohr has is that
 - 1. [A] It explains how electrons are arranged in an atom
 - 2. [B] By calculating the total energy of an atom
 - 3. [C] Could not explain the spectra lines of complex atoms
 - 4. [D] Electrons are treated as a wave and particles
 - 5. [E] By determine the spectra lines of hydrogen atom.

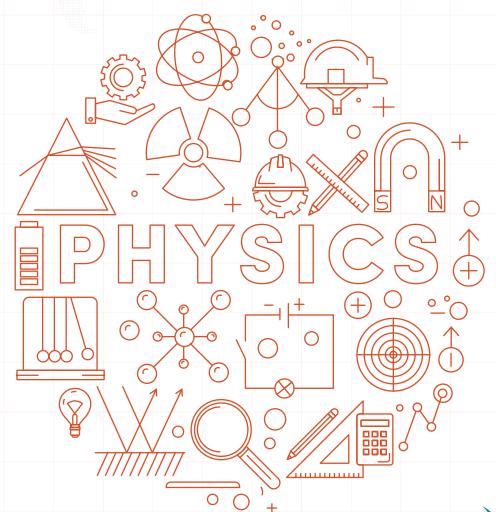
Correct Answer

The correct answer is **C.**

Explanation



NUCLEUS





- 1. The heaviest part of an atom is
- 1. [A] Proton
- 2. [B] Electron
- 3. [C] Neutron
- 4. [D] Nucleus
- 5. [E] Orbit

The correct answer is **D.**

Explanation

Yes, that's correct!

- 2. The radioactive particle that is deflecting towards the south pole of magnet is
- 1. [A] Beta particle
- 2. [B] Gamma particle
- 3. [C] Positron
- 4. [D] Alpha particle
- 5. [E] Neutron

Correct Answer

The correct answer is **D.**

Explanation

Being the positive charged particle its always deflected towards the negative parts of any material



3. This type of radioactivity is

$$^{226}_{88}$$
Ra + α \longrightarrow $^{222}_{86}$ Rn + E

- 1. [A] Artificial
- 2. [B] Fusion
- 3. [C] Natural
- 4. [D] Alpha radioactive
- 5. [E] Radioisotopes

Correct Answer

The correct answer is **C.**

Explanation

Yes, thats correct.

- 4. An element whose half-life is 3years has N atoms would have decayed after 9years?
- 1. [A] 6/8 N atoms
- 2. [B] 7/8 N atoms
- 3. [C] 5/8 N atoms
- 4. [D] 1/8 N atoms
- 5. [E] 3/8 N atoms

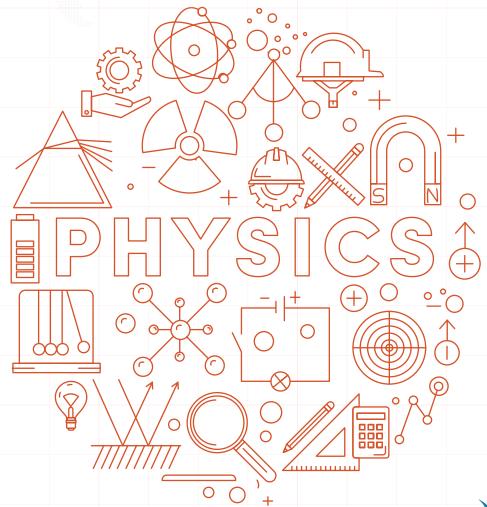
Correct Answer

The correct answer is **B.**

Explanation

٥.	The ho	alf-life of a radioactive substance is 14days. If 48g of this substance is stored,
		now many days will 1.5g of the original substance remains?
1.	[A]	75days
2.	[B]	70days
3.	[C]	65days
	[D]	60days
5.	[E]	55days
	Corre	ct Answer
Th	e corre	ect answer is B.
	Expla	nation
Ye	s, that'	s correct!
6.	Eight (α -particles and six β -particles are emitted from an atom of uranium-238
	(92) el	ectrons before it achieves stability, the nucleon number of the final product
	` '	cerrons before it deflieves stability, the flucteon flutible of the flutible product
		chain reaction is
1.		
1.	in the	chain reaction is
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ENERGY QUANTIZATION





1	Quantum	energy	was	discovere	d by
١.	Qualifulfi	energy	WUS	alscovere.	u by

- 1. [A] Isaac Newton
- 2. [B] De Broglie
- 3. [C] Carl Max
- 4. [D] Max Planck
- 5. [E] Becquerel

The correct answer is **D.**

Explanation

Yes, that's correct!

- 2. Which of the following gives rise to the line spectra observed in atoms?
- 1. [A] Kinetic energy of moving atoms
- 2. [B] Potential energy of an electron inside an atom
- 3. [C] Excitation of an electron in the atom
- 4. [D] Change of an electron from higher to a lower energy level in the atom
- 5. [E] Disturbed proton in the nucleus.

Correct Answer

The correct answer is **D.**

Explanation



3. The figure below represents



- 2. [B] Bight line spectra
- 3. [C] Band spectra
- 4. [D] Continuous spectra
- 5. [E] Emission spectra

Correct Answer

The correct answer is **D.**

Explanation

Yes, that's correct!

- 4. An electron makes a transition from a certain energy level E_n to the ground state E_0 , if the frequency of emission is $8x10^{14}$ Hz, the emitted energy is
- 1. [A] 8.25x10⁻¹⁹J
- 2. [B] 5.20x10⁻¹⁹J
- 3. [C] 5.28x10⁻¹⁹J
- 4. [D] 52.8x10¹⁹ J
- 5. [E] 825x10¹⁹ J

Correct Answer

The correct answer is **C.**

Explanation



- 5. Which of the phenomenon is called photoelectric effect?
- 1. [A] Two electrons are created from a quantum of light
- 2. [B] A metal absorbs quanta of light and then emits electrons
- 3. [C] A high energy photon emits photons as it is slowed down
- 4. [D] High energy electrons impinge on a metallic anode which then emits photons
- 5. [E] Low energy photon emits electrons

The correct answer is **B.**

Explanation

Yes, that's correct!

- 6. When a radiation strikes a metal surface, electrons may be ejected from the metal. The maximum kinetic energy which may be acquired by an ejected electron depends on the
- 1. [A] Source of the radiation
- 2. [B] Intensity of the radiation
- 3. [C] Wavelength of the radiation
- 4. [D] Frequency of the emitted electrons
- 5. [E] Detection device for the electron.

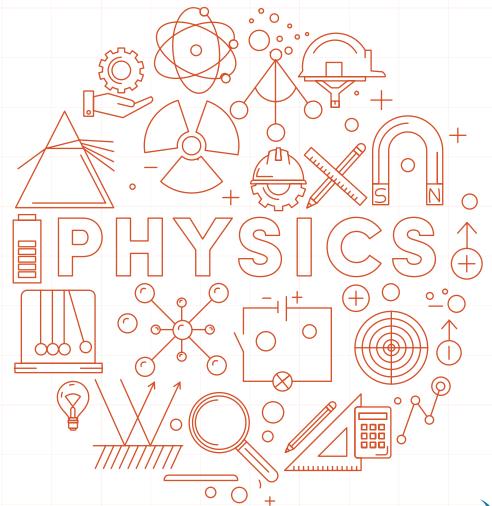
Correct Answer

The correct answer is **C.**

Explanation



DUALITY OF MATTER





- 1. Which of the following are not complementary variables
- 1. [A] Energy and position
- 2. [B] Energy and time
- 3. [C] Velocity and position
- 4. [D] Energy and mass
- 5. [E] Acceleration and time

The correct answer is [B],[D] and [E].

Explanation

Options [A] and [C] are not part

- 2. The particle nature of matter are
- 1. [A] Emission of light by hot objects
- 2. [B] Emission of electrons from a metal surface when it is irradiated by light of sufficient frequency
- 3. [C] Neutron diffraction by crystals
- 4. [D] Proton diffraction by crystals
- 5. [E] Electron diffraction by crystals

Correct Answer

The correct answer is [A],[B].

Explanation

Options [C], [D] and [E] are not correct



3. Duality of matter means

- 1. [A] Absorption of radiation by Gold objects
- 2. [B] Neutron diffraction by crystals
- 3. [C] Electron diffraction by crystals
- 4. [D] Matter behaves as a wave as well as a particle but cannot be displayed simultaneously.
- 5. [E] Emission of light by hot objects

Correct Answer

The correct answer is **D.**

Explanation

Yes, that's correct!

4. The equation below is known as

$$\lambda = \frac{h}{mv}$$

- 1. [A] Einstein equation
- 2. [B] Max Planck equation
- 3. [C] De Broglie equation
- 4. [D] Becquerel equation
- 5. [E] Marie curie equation

Correct Answer

The correct answer is **C.**

Explanation

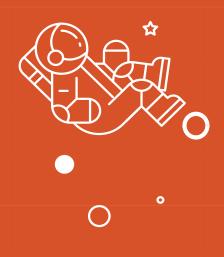
- 5. Which of the following statement is a correct consequence of the Uncertainty Principle?
- 1. [A] A particle kinetic energy cannot be measure accurately at any time
- 2. [B] Both momentum and energy of a particle can be known with absolute certainty
- 3. [C] The uncertainty in our knowledge of energy and the duration taken to measure it, are each less than Planck's constant
- 4. [D] The complete knowledge of the position of a particle implies the complete ignorance of its energy
- 5. [E] It is possible to measure exactly both the position and momentum of a particle at the same time.

The correct answer is **A.**

Explanation

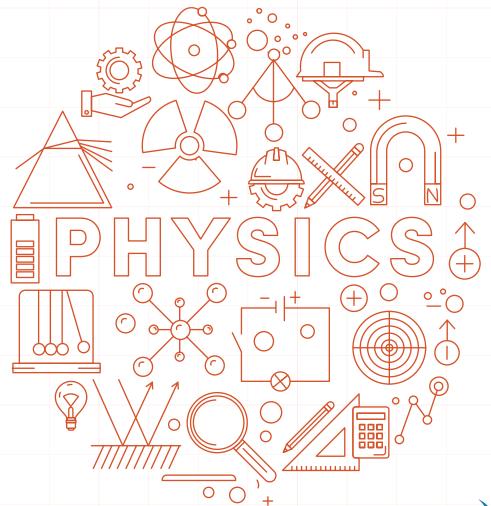






Conservation Principles
Wave, motion without material transfer
Field at rest and in motion
Energy quantization and duality of matter
Physics in Technology

BATTERY





- 1. The first scientist that discovered the battery was Luigi Galvani 1. [A] Alessandro Volta 2. [B] 3. [C] John Daniell William Hyde Wollaston 4. [D] Georges Leclanché 5. [E] **Correct Answer** The correct answer is **B. Explanation** Yes, that's correct! 2. Biocell was discovered by Allesandro Volta 1. [A] Luigi Galvani 2. [B] 3. [C] John Daniell 4. [D] Williams Hydes Georges Leclanché 5. [E] **Correct Answer** The correct answer is **B. Explanation** Yes, that's correct!
 - 3. The type of cell found in the car is
 - 1. [A] Coin cell
 - 2. [B] Lithium cell
 - 3. [C] Lead-acid cell
 - 4. [D] Lechlanche cell
 - 5. [E] Daniell cell

The correct answer is **C.**

Explanation

Yes, that's correct!

- 4. The scientist that showed that electricity from voltaic piles was the same as the electricity produced by friction was
- 1. [A] John Daniell
- 2. [B] Georges Leclanché
- 3. [C] William Hyde Wollaston
- 4. [D] Alessandro Volta
- 5. [E] Luigi Galvani

Correct Answer

The correct answer is **C.**

Explanation

Yes, that's correct!

- 5. The type of cell used for uninterrupted power supply is
- 1. [A] Lead-acid
- 2. [B] Ni-Cd
- 3. [C] Ni-MH
- 4. [D] Li-ion
- 5. [E] Li-Po

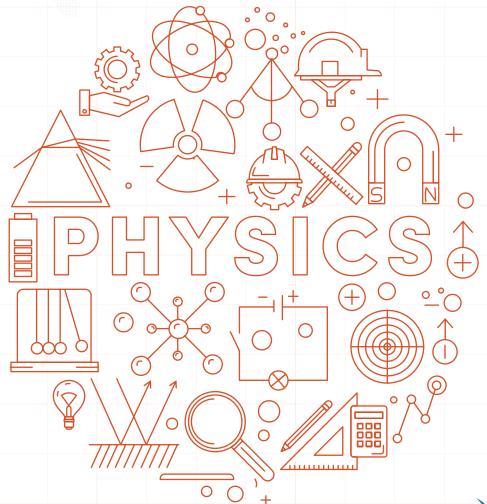
Correct Answer

The correct answer is A.

Explanation



ELECTROPLATING





- The process of plating a metal onto the other by hydrolysis to prevent corrosion of metal and for decorative purposes.
- 1. [A] Electoplating
- 2. [B] Eletroplating
- 3. [C] Electroplating
- 4. [D] Hydrolysis
- 5. [E] Electropainting

The correct answer is **C.**

Explanation

Yes, that's correct!

- 2. The place where the electrochemical reduction reactions occur
- 1. [A] Anode
- 2. [B] Cathode
- 3. [C] Anode-Anode
- 4. [D] Cathode-Cathode
- 5. [E] Anode-Cathode

Correct Answer

The correct answer is **B.**

Explanation

- 3. The place where the electrochemical oxidation reactions occur
- 1. [A] Anode
- 2. [B] Cathode
- 3. [C] Anode-Anode
- 4. [D] Cathode-Cathode
- 5. [E] Anode-Cathode

The correct answer is A.

Explanation

Yes, that's correct!

- 4. Making duplicates of printing plates in a process called
- 1. [A] Electroplating
- 2. [B] Electrophorus
- 3. [C] Electrocoating
- 4. [D] Electroforming
- 5. [E] Electro-typing

Correct Answer

The correct answer is **E.**

Explanation

In an inductive circuit I, lags V, by 900

- 5. Galvanization means
- 1. [A] Coating with Gold
- 2. [B] Coating with copper
- 3. [C] Coating with bronze
- 4. [D] Coating with zinc
- 5. [E] Coating with tin

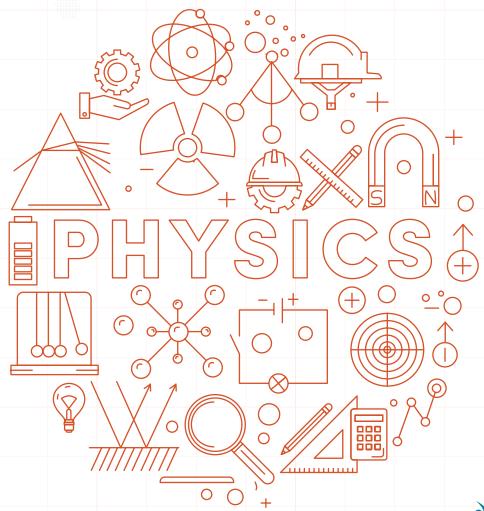
Correct Answer

The correct answer is **D.**

Explanation



APPLICATIONS OF ELECTROMAGNETISM





- 1. The high sensitivity enables
- 1. [A] Very high currents to be detected or measure
- 2. [B] Very small currents to be detected or measure
- 3. [C] Very small resistance to be detected or measure
- 4. [D] Currents to be detected or measure
- 5. [E] High currents to be detected or measure

The correct answer is **B.**

Explanation

That is correct!

- 2. A device for converting electrical energy to mechanical energy is
- 1. [A] Dynamo
- 2. [B] Motor
- 3. [C] Generator
- 4. [D] Bulb

Correct Answer

The correct answer is **B.**

Explanation

That is correct!

- 3. If a current-carrying conductor wound on a high permeability iron core creates
- 1. [A] a magnetic effect
- 2. [B] an electric effect
- 3. [C] an electromagnetic effect
- 4. [D] an electric field

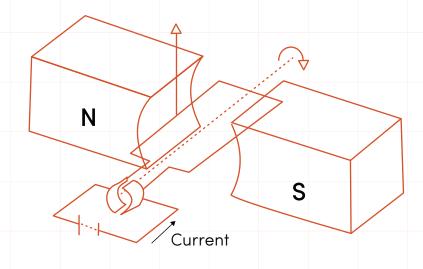


The correct answer is A.

Explanation

That is correct!

4. Identify the figure below.

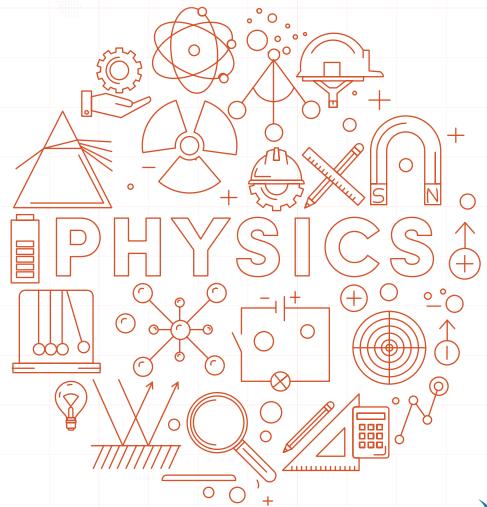


Correct Answer

The correct answer is a galvanometer



TRANSMISSION SYSTEM





- 1. The bulk movement of electrical energy from a generating site, such as a power plant, to an electrical substation to the consumers is called
- 1. [A] Transmission system
- 2. [B] Electric energy
- 3. [C] Electrical power
- 4. [D] Transformer
- 5. [E] Regulator

The correct answer is **A.**

Explanation

Yes, that's correct!

- 2. In transmission, line power is transmitted at high voltage and low current
- 1. [A] to avoid over-heating and melting in the wires
- 2. [B] to avoid low heating and high voltage
- 3. [C] to avoid heating and freezing in the wires
- 4. [D] to avoid over-heating and freezing in the wires
- 5. [E] to avoid high resistance and melting in the wires

Correct Answer

The correct answer is A.

Explanation



3. The minimum voltage produced from the generating plant to the step-up transformer

is

- 1. [A] 132V
- 2. [B] 161KV
- 3. [C] 132KV
- 4. [D] 220V
- 5. [E] 100KV

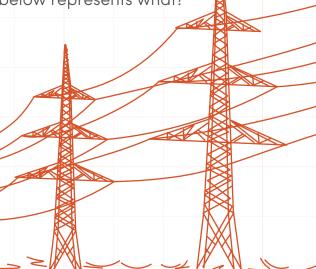
Correct Answer

The correct answer is **B.**

Explanation

Yes, that's correct!





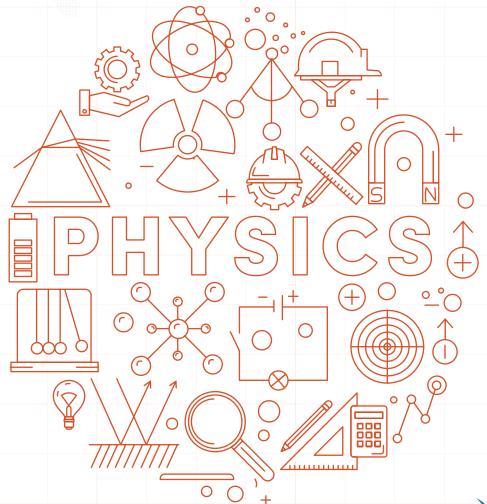
Correct Answer

The figure represents a Pylon Grid

5. The s	standard voltage distributed to a household in Nigeria is about
1. [A]	180V
2. [B]	220V
3. [C]	100V
4. [D]	260V
5. [E]	132V
Corr	rect Answer
The corr	rect answer is B.
Explo	anation
Yes, tha	t's correct!
6. The c	conducting wire used for power transmission in Nigeria is
1. [A]	Copper
2. [B]	Zinc
3. [C]	Silver
4. [D]	Aluminum
5. [E]	Iron
Corr	ect Answer
The corr	rect answer is D.
Expl	anation
Yes, tha	t's correct!



USES OF MACHINES





- A simple machine designed to rotate about a fixed point called
 [A] Pulley
- 2. [B] Screw
- 3. [C] Lever
- 4. [D] An inclined plane
- 5. [E] Hydraulic press

The correct answer is **C.**

Explanation

Yes, that's correct!

- 2. A wheel and axle are used to raise a load of 600N by the application of an effort of 200N, if the radii of the wheel and axle are 0.5cm and 0.1cm respectively, what is the efficiency of the machine?
- 1. [A] 50%
- 2. [B] 45%
- 3. [C] 60%
- 4. [D] 30%
- 5. [E] 25%

Correct Answer

The correct answer is **C.**

Explanation

- 3. The velocity ratio of the pulley system is determined by the number of
- 1. [A] Pulleys
- 2. [B] Load
- 3. [C] Effort
- 4. [D] Mechanical advantage
- 5. [E] Efficiency

The correct answer is A.

Explanation

Yes, that's correct!

- 4. Wheelbarrow belongs to what order of lever
- 1. [A] Second-order
- 2. [B] First-order
- 3. [C] Third-order
- 4. [D] A and B
- 5. [E] A, B, and C

Correct Answer

The correct answer is A.

Explanation

Yes, that's correct!

- 5. The efficiency of a machine is always
- 1. [A] Load per effort
- 2. [B] Effort per load
- 3. [C] Output force per input force
- 4. [D] Mechanical advantage per velocity ratio
- 5. [E] Distance moved by effort per distance moved by the load

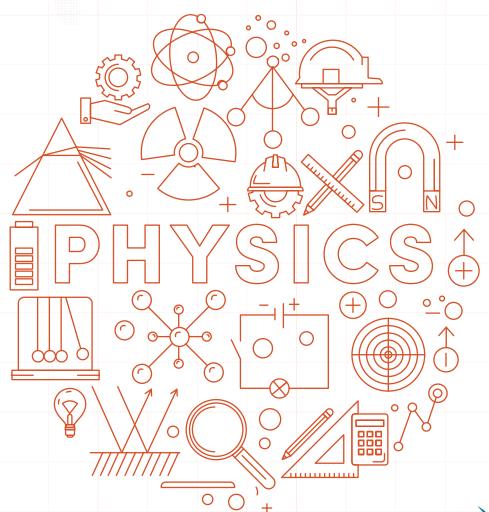
Correct Answer

The correct answer is **C.**

Explanation



REPAIR AND MAINTENANCE OF THE SIMPLE MACHINES





- 1. Maintenance can be defined as
 - 1. [A] Components in a machine so that it will continue to operate at a specified availability for a specified period.
 - 2. [B] A combination of actions carried out to repair, replace, service, and modify the components in a machine so that it will continue to operate at a specified availability for a specified period.
 - 3. [C] A specified availability for a specified period
 - 4. [D] Activity conducted on any machine which has stopped functioning owing to shear or crushing
 - 5. [E] Subject to wearing and failure due to their use and exposure to environmental conditions

The correct answer is **B.**

Explanation

- 2. Breakdown maintenance is a maintenance activity
 - [A] Conducted on any machine which has stopped functioning owing to shear or crushing or buckling or elongation or swelling
 - 2. [B] On any machine which has stopped functioning owing to shear
 - 3. [C] The machine depends largely on the operators, as far as possible, one operator be allocated each machine, and when the same machine is used in more than one shift
 - 4. [D] Maintenance should be done considering all the above mention factors.

 Daily maintenance is done by the operators
 - 5. [E] To keep the machine in proper condition to maintain the quality of the product



The correct answer is A.

Explanation

Yes, that's correct!

- 3. A maintenance activity is done on any machine as per laid down schedule or frequency by making necessary or need-based replacement and/or reconditioning of component(s) within the pre-fixed period of the said work to reduce and avert breakdown.
 - 1. [A] Break down
 - 2. [B] Preventive
 - 3. [C] Proactive
 - 4. [D] Reactive
 - 5. [E] Proaction

Correct Answer

The correct answer is **B.**

Explanation

- 4. A maintenance activity conducted on any machine which has stopped functioning owing to shear
 - 1. [A] Break down
 - 2. [B] Preventive
 - 3. [C] Proactive
 - 4. [D] Reactive
 - 5. [E] Proaction



The correct answer is A.

Explanation

Yes, that's correct!

- 5. Breakdown of a machine can occur due to the
 - 1. [A] To keep the machine in proper condition to maintain the quality of the product.
 - 2. [B] To ensure the safety of the workers
 - 3. [C] To obtain maximum availability of the plant by avoiding breakdown and by reducing the shutdown periods to a minimum.
 - 4. [D] By minimizing the wear and tear, preserve the value of the plant
 - 5. [E] Unpredictable failure of components which cannot be prevented.

Correct Answer

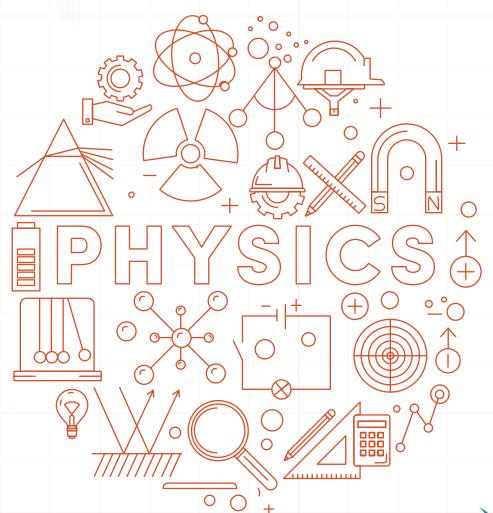
The correct answer is **E.**

Explanation

Yes, that's correct!



DAMS AND ENERGY PRODUCTION





- 1. The first and the biggest dam in Nigeria is
- 1. [A] Shiroro dam
- 2. [B] Benue dam
- 3. [C] Niger dam
- 4. [D] Kanji dam
- 5. [E] Hadejia dam

The correct answer is **D.**

Explanation

Yes, that's correct!

- 2. In a hydropower dam, the device that produces electricity is
- 1. [A] Turbine
- 2. [B] Dynamo
- 3. [C] Motor
- 4. [D] Shaft
- 5. [E] Reservoir

Correct Answer

The correct answer is **B.**

Explanation

Yes, that's correct!

- 3. In any hydropower dam, living creatures cannot survive in it
- 1. [A] True
- 2. [B] False
- 3. [C] Cannot be determine
- 4. [D] Agreed
- 5. [E] Strongly agreed

The correct answer is **B.**

Explanation

Yes, that's correct!

- 4. The electric voltage produced from the dam is always
- 1. [A] Step down
- 2. [B] Step up
- 3. [C] Minimized
- 4. [D] Maximized
- 5. [E] Unchanged

Correct Answer

The correct answer is **B.**

Explanation

Yes, that's correct!

- 5. In hydro-power dam water is falling as a result of
- 1. [A] Gravity
- 2. [B] Force
- 3. [C] Pressure
- 4. [D] The density of the water
- 5. [E] Tension

Correct Answer

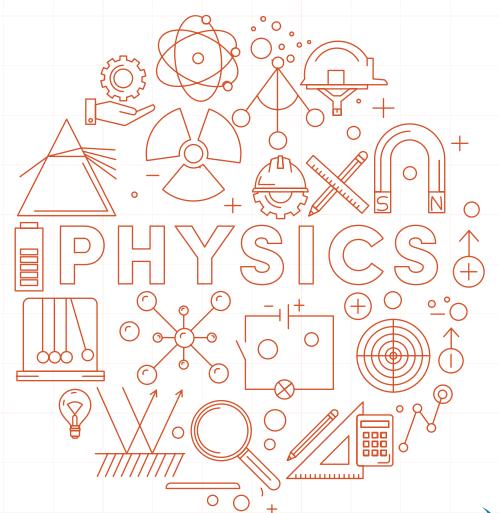
The correct answer is A.

Explanation

Yes, that's correct!



ROCKETS AND SATELLITES





1. The hollow cylinder to which all other parts are attached 1. [A] The fin 2. [B] The body tube 3. [C] The cabin 4. [D] The tail 5. [E] The nose **Correct Answer** The correct answer is **B. Explanation** That is correct! 2. The main part that is causing propulsion contains solid fuels or propellants The nose 1. [A] 2. [B] The tail 3. [C] The fin 4. [D] Rocket engine 5. [E] The cabin **Correct Answer** The correct answer is **D. Explanation** That is correct! 3. An object that orbits or moves around a planet Rocket 1. [A] Saturn 2. [B] 3. [C] Satellite 4. [D] Orbit 5. [E] Sun

The correct answer is **C.**

Explanation

That is correct!

- 4. Rockets are the only flying machine that can escape from the earth's gravity
- 1. [A] False
- 2. [B] True
- 3. [C] Cannot say
- 4. [D] Undetermined
- 5. [E] Not agree

Correct Answer

The correct answer is **B.**

Explanation

That is correct!

- 5. The fuels of rockets are
- 1. [A] Liquid hydrogen and gaseous oxygen
- 2. [B] Gaseous hydrogen and liquid oxygen
- 3. [C] Gaseous hydrogen and gaseous oxygen
- 4. [D] Solid hydrogen and liquid oxygen
- 5. [E] Liquid hydrogen and liquid oxygen

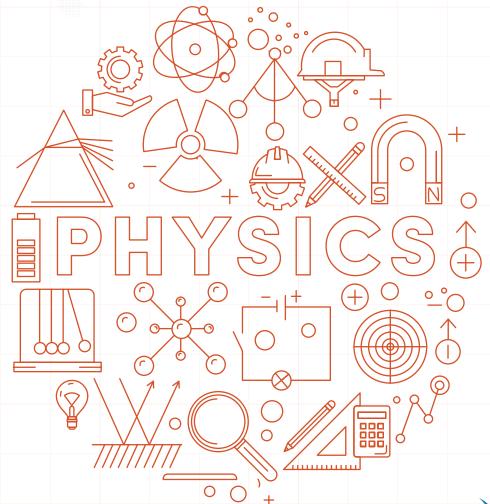
Correct Answer

The correct answer is **E.**

Explanation



NIGERSAT 1





- 1. NigerSat 1 was launched in the year
- 1. [A] 26th September 2003
- 2. [B] 24th September 2003
- 3. [C] 25th September 2003
- 4. [D] 27th September 2003
- 5. [E] 29th September 2003

The correct answer is **D.**

Explanation

That is correct!

- 2. How many DMC consortium countries own the NigerSat 1
- 1. [A] 5
- 2. [B] 6
- 3. [C] 8
- 4. [D] 7
- 5. [E] 9

Correct Answer

The correct answer is **D.**

Explanation

- 3. The weight of NigerSat 1 is about
- 1. [A] 120kg
- 2. [B] 86kg
- 3. [C] 100kg
- 4. [D] 150kg
- 5. [E] 93kg

The correct answer is **C.**

Explanation

That is correct!

- 4. The ground control station of NigerSat 1 is located in
- 1. [A] Beijing China
- 2. [B] Ankara Turkey
- 3. [C] Asokoro Abuja Nigeria.
- 4. [D] Manilla Philippine
- 5. [E] London UK

Correct Answer

The correct answer is **C.**

Explanation

That is correct!

- 5. The agency in charge of NigerSat 1 is
- 1. [A] UK space agency
- 2. [B] ISRO
- 3. [C] NASA
- 4. [D] NASRDA
- 5. [E] China space agency

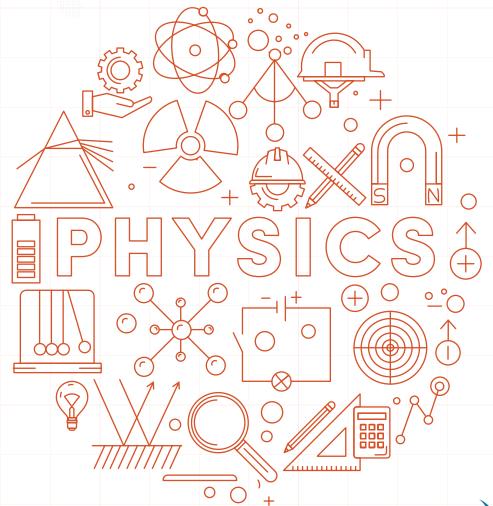
Correct Answer

The correct answer is **D.**

Explanation



NICOMSAT 1





- 1. Nigeria Communication Satellite 1 which was launched
- 1. [A] On 13th May 2006
- 2. [B] On 13th May 2003
- 3. [C] On 13th May 2005
- 4. [D] On 13th May 2007
- 5. [E] On 13th May 2008

The correct answer is **D.**

Explanation

That is correct!

- 2. The main purpose of NicomSat 1 is
- 1. [A] For research
- 2. [B] For military
- 3. [C] For surveying
- 4. [D] For communication
- 5. [E] For capacity building

Correct Answer

The correct answer is **D.**

Explanation

- 3. The agency in charge of NicomSat 1 is
- 1. [A] NASA
- 2. [B] UK space agency
- 3. [C] China space agency
- 4. [D] ISRO
- 5. [E] NASRDA

The correct answer is **E.**

Explanation

That is correct!

- 4. The ground control station of NigerSat 1 is located in
- 1. [A] Beijing China
- 2. [B] London UK
- 3. [C] Ankara Turkey
- 4. [D] Abuja Nigeria
- 5. [E] Accra Ghana

Correct Answer

The correct answer is **D.**

Explanation

That is correct!

- 5. The weight of NicomSat 1 is about
- 1. [A] 100kg
- 2. [B] 120kg
- 3. [C] 220kg
- 4. [D] 80kg
- 5. [E] 90kg

Correct Answer

The correct answer is A.

Explanation

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