Physics Job Interview Questions And Answers

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Physics Interview Questions And Answers Guide.

Question - 1:

A truck travels 420 m. each tire on the truck has a diameter of 42 cm. if one revolution of a tire is equal to 2? times the radius of the tire (in meters), which of the following equations shows how many revolutions each tire makes as the distance is traveled?

Ans:

No Answer is Posted For this Question

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Question - 2:

All elements with an atomic number greater than what number are unstable?

Ans:

83
View All Answers

Question - 3:

What is the name of the device that is made by combining two basic types of solid state rectifiers allowing the device to both rectify and amplify a current?

Ans:

transistor
View All Answers

Question - 4:

A coil of wire that produces a magnetic field is typically called a:

Ans:

solenoid
View All Answers

Question - 5:

In radio transmission, what does the acronym AM stand for?

Ans:

amplitude modulation
View All Answers

Question - 6:

What law yields an equation that is used in determining crystal structure from interference patterns produced by monochromatic X-rays?

Ans:

Bragg's Law
View All Answers

Question - 7:

A color made from the addition of two primary colors is called:

Ans:

secondary color
View All Answers

Question - 8:

Who determined that the square of a planets period is proportional to the cube of its average distance from the sun?

Ans:

Kepler

View All Answers

Question - 9:

What is the dramatic increase in amplitude called when the frequency of forced vibrations on a body matches the bodys natural vibration frequency?

Ans:

resonance

View All Answers

Question - 10:

Heat cannot pass from a cooler substance to a warmer substance without some other process being involved. This is an example of which law of thermodynamics?

Ans:

the second law

View All Answers

Question - 11:

Sound frequencies below 16 Hertz are usually referred to by scientists as:

Ans:

infrasonic

View All Answers

Question - 12:

This perceived force, that seems to want to throw a person off a merry-go-round, is often regarded by physicists as a fictitious force:

Ans:

centrifugal force

View All Answers

Question - 13:

According to the standard model of particle physics, what is the name for the three leptons that have no electric charge and little if any mass?

Ans:

Neutrino

View All Answers

Question - 14:

What is the term for the speed at which an object will overcome the gravitational attraction of the Earth?

Ans:

escape velocity

View All Answers

Question - 15:

For projectiles fired at identical speeds but various angles from the ground, neglecting air resistance and the curvature of the Earth, at what angle will the maximum horizontal distance be attained?

Ans:

45 degrees

View All Answers

Question - 16:

For two objects separated by a distance d, if the mass of one of the objects is doubled, what will happen to the gravitational attraction between them?

Ans:

it is doubled

View All Answers

Question - 17:

If the distance separating two charges is doubled, the force between them decreases by what multiple factor?

Ans:

4

View All Answers

Question - 18:

What secondary color of light is produced by mixing the primary colors of red and blue?

Ans:

magenta

View All Answers

Question - 19:

Assuming g = 9.8 m/sec2, what is the weight on Earth, in Newtons, of a 60 kilogram person?

Ans:

588 Newtons

View All Answers

Question - 20:

This person established the one fluid theory of electricity and performed some of the first investigations into electrical grounding and insulation:

Ans:

Ben Franklin

View All Answers

Question - 21:

Considering the specific heat of aluminum is 0.21, iron is 0.10, and lead is 0.03, which metal will show the largest increase in temperature per calorie added to one gram of that metal?

Ans:

lead

View All Answers

Question - 22:

If blue light is combined with green light, what color of light is produced?

Ans:

Cyan

View All Answers

Question - 23:

PHYSICS Short Answer To two significant figures, what is the index of refraction of air?

Ans:

1.0

View All Answers

Question - 24:

What is the name for the physical constant with a value of 6.62×10^{-27} erg seconds?

Ans:

Planck's Constant

View All Answers

Question - 25:

How many femtometers are in a nanometer?

Ans:

one million

View All Answers

Question - 26:

What formula is most appropriate to compute the kinetic energy of a block of ice sliding down an inclined plane?

Ans:

KE=½ mv2

View All Answers

Question - 27:

By primarily using what simple machine did Galileo come to the conclusion on the existence of friction?

Ans:

inclined plane

View All Answers

Question - 28:

Laser is an acronym for what?

Ans:

light amplification by stimulated emission of radiation

View All Answers

Question - 29:

Which of the following is the emission source for microwaves in a typical microwave oven:

Ans:

1. small cyclotron
   2. cadmium disk bombarded with a soft x-ray source
   3. magnetron
   4. laser lamp
Answer: C

View All Answers

Question - 30:

The fundamental forces of nature are most correctly given as:

Ans:

1. gravitational, electromagnetic, strong interactive, weak interactive
   2. chemical, mechanical, friction and atomic
   3. gravitational, electromotive, magnetic, atomic
   4. graviton, photon, lepton, hadron
Answer: A

View All Answers

Question - 31:

Which of the following particles has not yet been observed but is generally theorized to exist:

Ans:

1. mesons
   2. gluons
   3. fermionic hadrons
   4. gravitons
Answer: D

View All Answers

Question - 32:

What large machine, which came on line in the summer of 2000 at the Department of Energys Brookhaven National Lab, is the world's highest energy ion collider:

Ans:

1. Advanced Photon Source
   2. CERN supercollider
   3. Relativistic Heavy Ion Collider
   4. Phoenix
Answer: C

View All Answers

Question - 33:

Which of the following colors of light has the greatest angle of refraction in normal glass:

Ans:

1. yellow
   2. green
   3. violet
   4. red
Answer: C

View All Answers

Question - 34:

Which of the following is measured in Hertz?

Ans:

1. speed
   2. frequency
   3. wavelength
   4. amplitude
Answer: B

View All Answers

Question - 35:

When a person whirls a rock on the end of a string and maintains it in uniform circular motion, the force exerted on the rock is most accurately referred to as:

Ans:

1. centrifugal
   2. centripetal
   3. rotational
   4. center fleeing
Answer: B

View All Answers

Question - 36:

Scientists at Brookhaven National Laboratory invented the forerunner of the PET, which was subsequently found to be well- suited for wide use in institutions around the world for which of the following:

Ans:

1. metabolic studies and clinical tests
   2. deep sea drilling
   3. nuclear spallation
   4. deep space studies
Answer: A

View All Answers

Question - 37:

Which of the following units is a measure of potential difference:

Ans:

1. erg
   2. ohm
   3. joule
   4. volt
Answer: D

View All Answers

Question - 38:

Which of the following exhibits the least resistivity at $0°C$:

Ans:

1. mercury
   2. tungsten
   3. gold
   4. silver
Answer: D

View All Answers

Question - 39:

ASTRONOMY Multiple Choice A parsec is equal to which of the following:

Ans:

1. 100 Astronomical Units
   2. 3.26 light years
   3. 100 light years
   4. 140 million kilometers
Answer: B

View All Answers

Question - 40:

How is the index of refraction computed:

Ans:

1. the speed of light in a vacuum is divided by the speed of light in the material
   2. the speed of light in the material is divided by the speed of light in a vacuum
   3. the speed of light in water is divided by the speed of light in a vacuum
   4. the speed of light in a vacuum is divided by the speed of light in water
Answer: A

View All Answers

Question - 41:

According to the standard model of particle physics, which of the following is a force-carrying particle:

Ans:

1. proton
   2. neutron
   3. quark

4. photon
Answer: D
View All Answers

Question - 42:

What is the following statement most commonly known as:

Ans:

"A body immersed in a fluid is supported by a force equal to the weight of the fluid it displaces."
Answer: Archimedes' Principle

View All Answers

Question - 43:

By passing current through a wire wrapped around an iron rod, William Sturgeon invented the:

Ans:

Electromagnet
View All Answers

Question - 44:

If F equals electric force, and q and q (read as: q-prime) are the charges on two particles, the expression F is proportional to q times q prime divided by distance squared is what law?

Ans:

Coulomb's Law
View All Answers

Question - 45:

What cycle most directly describes the working cycle of a heat engine operating as an ideal engine of maximum thermal efficiency?

Ans:

Carnot Cycle
View All Answers

Question - 46:

On an electric schematic, what does the symbol of a horizontal line interrupted by a saw tooth shaped line represent?

Ans:

resistor
View All Answers

Question - 47:

Order the following categories of electromagnetic radiation from the LOWEST frequency to the HIGHEST:

Ans:

FM radio, UHF TV, AM radio, microwaves
Answer: am radio; fm radio; uhf tv; microwaves
View All Answers

Question - 48:

Which element has the simplest absorption spectrum?

Ans:

Hydrogens
View All Answers

Question - 49:

How many neutrons and how many protons are present in a single deuterium nucleus?

Ans:

one proton and one neutron
View All Answers

Question - 50:

The throbbing caused by sounds of slightly different frequencies that results because of periodic constructive and destructive interference is called:

Ans:

beats
View All Answers

Question - 51:

Assuming friction is negligible, if a lever has a mechanical advantage of 5, how much effort in newtons is needed to lift a 10 newton load?

Ans:

2 Newtons

View All Answers

Question - 52:

While at Berkeley, Melvin Calvin used this radioisotope to decipher many of the complex processes of photosynthesis:

Ans:

Carbon 14

View All Answers

Question - 53:

What is the general term for the kind of material usually placed between the conducting plates of a capacitor?

Ans:

Dielectric

View All Answers

Question - 54:

How many more times louder is 70 decibels than 10 decibels?

Ans:

One Million

View All Answers

Question - 55:

When a green colored object is illuminated by a green light it will appear as what color to the human eye?

Ans:

Green

View All Answers

Question - 56:

When Thomas Edison was promoting the wide use of direct current, this personal enemy of Edisons was the chief proponent and expert in alternating current:

Ans:

Nikola Tesla

View All Answers

Question - 57:

In the 19th century, this Scottish scientist showed that all magnetic and all electric phenomena could be described by four equations that often bear his name. What is his name?

Ans:

James Clerk Maxwell

View All Answers

Question - 58:

A bullet of mass m travelling at velocity v has a kinetic energy of $\frac{1}{2}mv^2$ when it strikes a ballistic pendulum of mass 1000 grams. The kinetic energy of the two masses moving together just after the moment of impact is about a thousand times smaller than $\frac{1}{2}mv^2$. What has most of the bullets initial kinetic energy been converted to?

Ans:

heat

View All Answers

Question - 59:

Order the following from the WORST electrical conductor to the BEST electrical conductor: glass, rubber, iron, dry wood:

Ans:

rubber,
glass,
dry wood,
iron

View All Answers

Question - 60:

The lowest frequency that determines the pitch of a musical note is most commonly called the:

Ans:

fundamental

View All Answers

Question - 61:

According to Coulombs Law, if two charged particles are repelled with a given force at a distance d, by what multiple will the force decrease by if d is increased by 4 times?

Ans:

16 times

View All Answers

Question - 62:

Which of the following is the most accurate reason why a light bulb dropped on a rug does not break, but when dropped on a tile floor it does break:

Ans:

1. the time it takes to stop moving is less for the tile
   2. the change in momentum is greater for the tile
   3. the light bulb weighs more when it hits the tile
   4. the change in momentum is greater for the rug
Answer: A

View All Answers

Question - 63:

Certain products have been designed so that people wearing headphones do not hear the objectionably loud sound from certain machinery with which they are working. These headphones most likely work based on which one of the following principles:

Ans:

1. doppler effect
   2. destructive interference
   3. constructive interference
   4. audiopolarization
Answer: B

View All Answers

Question - 64:

For particles that have mass, such as electrons, quantum theory gives the relationship of wavelength to momentum by which of the following formulas, where c is the speed of light, v is the particles speed, h is Plancks constant, m is the particles mass, and f is frequency:

Ans:

1. wavelength = mc^2
   2. wavelength = c / Æ'
   3. wavelength = h /mv
   4. wavelength = hf
Answer: C

View All Answers

Question - 65:

The Department of Energys B-Factory at the Stanford Linear Accelerator Lab is designed to collide electron and positron beams of unequal energies and produce millions of these particles, which are commonly called:

Ans:

1. B mesons
   2. B leptons
   3. B muons
   4. B neutrons
Answer: A

View All Answers

Question - 66:

Which of the following is NOT an example of a transverse wave:

Ans:

1. ocean wave
   2. light wave
   3. microwave
   4. sound wave
Answer: D

View All Answers

Question - 67:

Which of the following is NOT true of Guglielmo Marconis experiments on wireless transmission:

Ans:

1. in 1901 he transmitted a signal from Newfoundland to England
   2. he defied current belief on line-of-sight transmission
   3. his work was a practical application of the work of James Clerk Maxwell
   4. his success was a vindication of his belief in the reflective properties of the ionosphere
Answer: D

View All Answers

Question - 68:

The atoms nucleus is held together by which of the following:

Ans:

1. strong interactions of the quark and gluon constituents of the atom's nucleus
   2. strong interactions of the quark and lepton constituents of the atom's nucleus
   3. weak interactions of the quark and lepton constituents of the atom's nucleus
   4. strong interactions of the lepton and gluon constituents of the atom's nucleus
Answer: A

View All Answers

Question - 69:

A figure skater who, while spinning in place, pulls her arms in to increase her rotational speed, is most closely exhibiting which of the following:

Ans:

1. conservation of angular momentum
   2. centrifugal force
   3. satellite motion
   4. centripetal acceleration
Answer: A

View All Answers

Question - 70:

Physicists most commonly call a mass moving in a straight line path as having:

Ans:

1. angular or rotational momentum
   2. straight momentum
   3. translational momentum
   4. second order momentum
Answer: C

View All Answers

Question - 71:

In beta minus emission, the number of nucleons in the atom:

Ans:

1. increases by one
   2. decreases by one
   3. increases by four
   4. remains the same
Answer: D

View All Answers

Question - 72:

What is a thermal transformation?

Ans:

A chemical or physical change not requiring a change in the temperature of the substance, as in the formation of marten site.

View All Answers

Question - 73:

When are intermolecular forces the strongest?

Ans:

Intermolecular forces (dipole-dipole, dispersion and hydrogen bonds). These forces are weaker than chemical (covalent) bonds. Therefore molecular solids are soft, and have a generally low melting temperature.

View All Answers

Question - 74:

Can a vector have a component equal to zero and still have a nonzero magnitude?

Ans:

Yes. For instance, the 2-dimensional vector (1,0) has length sqrt(1+0) = 1
A vector only has zero magnitude when all its components are 0.

View All Answers

Question - 75:

If a plane is in the air and there is a fly flying inside the plane does the plane get heavier when the fly lands?

Ans:

yes. A fly puts weight on a plane gosh!!!! It's like asking does a normal person put weight on a bike!? But yes fly do put weight on a plane that is flying if it lands, but it doesn't put a lot of weight on because they are so small. There is your answer...

View All Answers

Question - 76:

What is the cause of Brownian motion?

Ans:

Molecules in a gas move constantly, freely, randomly, in all directions and at high speeds. They are able to do so because the intermolecular force of attraction between the molecules is negligible when in a gaseous state. This constant motion of the molecules causes them to collide with anything in their path. For example, dust particles will be bombarded by the molecules moving at high speeds, causing them to have a zigzag motion.
Brownian motion also takes place in molecules in a liquid, but to a less obvious extent than in a gas.

View All Answers

Question - 77:

How do you separate Hydrogen and Oxygen gases in industrial electrolysis of water process?

Ans:

In electrolysis, oxygen and hydrogen gas are produced at different electrodes (oxygen at the anode and hydrogen at the cathode). Since these electrodes do not have to be in close proximity, the hydrogen and oxygen will bubble upwards into separate collection vessels.
If you needed to separate hydrogen and oxygen once mixed, the easiest way I can think of would be to cool the mixture to ~60K. At this point the oxygen would condense and leave hydrogen gas.

View All Answers

Question - 78:

What is the universal law of universal gravitation?

Ans:

statement that any particle of matter in the universe attracts any other with a force varying directly as the product of the masses and inversely as the square of the distance between them. In symbols, the magnitude of the attractive force F is equal to G (the gravitational constant, a number the size of which depends on the system of units used and which is a universal...

View All Answers

Question - 79:

What is Centrifugal Force?

Ans:

Centrifugal force is the force that is equal in magnitude but opposite in direction to the centripetal force, which is the force directed toward the center of a rotating or revolving mass.
Think of it this way. Let's say you have a yo-yo and let it unwind. Then you start swinging it around your head in a circle parallel to the ground. The force that keeps the yo-yo in its circular path is the centripetal force. Without it, the yo-yo would not continue in its circular path but would fly off in a straight line, which it is inclined to do. The tension in the string, the force that makes the string taut, is the centrifugal force.

View All Answers

Question - 80:

What is a galvanometer and its use?

Ans:

It's an ammeter. It's used to detect and measure electric current.

View All Answers

Question - 81:

How much does two pints of water weigh when frozen?

Ans:

The same it weighed when it was liquid---but it has a greater volume because ice is "fluffier" than water.

View All Answers

Question - 82:

Does gas have density?

Ans:

Gas, as well as everything in the universe has density, though some densities are either too high or too low to be detected, observed or measured by the human eye nor the technological gadgetry designed and used by scientists for that specific purpose

Question - 83:

Which is heavier the land mass or the sea?

Ans:

The land mass is heavier even tough the sea covers 2/3 of the earth's surface it still has land under the sea hence it is heavier...

Question - 84:

What is the difference between dynamic strain aging and strain aging?

Ans:

Strain aging could be described as " normal wear and tear " or the fatigue that is experienced under normal conditions, whereas Dynamic strain would be an out of the normal range stress condition like a one time over stress condition where the sum of much strain aging is experienced in one " dynamic" occurrence.

Question - 85:

What is a crest?

Ans:

In electromagnetic waves -- or ocean waves, for that matter -- a crest is the peak, or maximum height, of the waveforms. A trough is the lowest point. The wavelength of a wave is measured from one crest (peak) to the next or from one trough to the next.

Question - 86:

Why does a tea kettle sing?

Ans:

There is a small attachment with a hole in it which acts as a whistle. It is inserted into the spout of the kettle and when the water starts to boil, the steam makes a sound as it escapes.

Question - 87:

What is the difference between a lens and a mirror?

Ans:

A mirror is a reflective surface. Light passes through the glass and hits the silver backing, reflecting off of it. (The angle of incidence equals the angle of reflection.) A lens, on the other hand, does not reflect light; it refracts it. After entering the glass, light refracts differently depending on the shape of the lens and also creates a focal point where the refracting light comes to a point. This differs for different lenses -- convex or concave -- which is why there are different lenses for different types of eyeglasses.

Question - 88:

Which way do twin screw props on a boat rotate when propelling the boat forward?

Ans:

In opposite direction, but they are designed to propel the boat forward even if they rotate in opposite directions.

Question - 89:

What is ion pair energy?

Ans:

ION ENERGY CONSISTS OF ELECTRIC CHARGES CALLED PROTONS (+), NUTRONS (0) AND ELECTRONS (-) CHARGES.ITS PRESENT IN AN ATOMIC SHELL.CHARGES +- CANCEL EACH OTHER TO KEEP BALANCE....

Question - 90:

What is astrophysics?

Ans:

The study of stars, galaxies, and the creation of the universe, including predictions about how it will proceed from here.

Question - 91:

What is radium used for?

Ans:

Radium was formerly used in self-luminous paints for watches, nuclear panels, aircraft switches, clocks, and instrument dials. More than 100 former watch dial painters who used their lips to shape the paintbrush died from the radiation from the radium that had become stored in their bones. Soon afterward, the adverse effects

of radioactivity became widely known. Radium was still used in dials as late as the 1950s. Although tritium's beta radiation is potentially dangerous if ingested, it has replaced radium in these applications.

Question - 92:

What is pascal s principle?

Ans:

Pascal's Principle states that the pressure is transmitted evenly through a liquid. That's why when you inflate a balloon with air it expands evenly in all directions.

Question - 93:

How does the arrangement of atoms in most solids differ from the arrangement of atoms in a liquid?

Ans:

The arrangement of atoms in solids are different from those in liquids in that they are unable to move from their location in the solid, where they can move in the liquid. A solid's atoms are vibrating very rapidly, but the molecules are all locked into place, whereas in a liquid the molecules are free to move around. Also in general the atoms of a solid are closer together than those of a liquid with the exception of water, whose solid form is less dense.

Question - 94:

When an object moves with constant velocity does its average velocity during any time interval differ from its instantaneous velocity at any instant?

Ans:

No. Its velocity, average velocity and instantaneous velocity will all be the same at any (or every) time an investigator makes an observation.

Question - 95:

When gravity is the only force acting on an object the object is in what?

Ans:

One answer is that it is in free-fall in a vacuum (to eliminate atmospheric drag).
Another answer is that it is in orbit around another body.
The object could be in inter-stellar space, essentially experiencing the balanced gravitational force of "everything".
If you eliminate the "middle of space" solution, the object would have to be in a state of acceleration.

Question - 96:

What is cardiac output?

Ans:

Cardiac output is the volume of blood the heart pumps within one minute. Cardiac output (CO) is equal to the stroke volume (SV) of the heart multiplied by the heart rate (HR). Thus, cardiac output is given by the equation: CO=HR X SV.

Question - 97:

What is the longest lasting synthetic periodic element?

Ans:

A good candidate would be curium 247 (247Cm), which has a half-life of 1.56 Ã— 107 years. That's 15,600,000 years (15.6 million years).

Question - 98:

What happens when you travel across the dateline?

Ans:

If westbound, the day changes to the next day. If eastbound, the day is the day before. Seems strange, but it all works out.
Let's imagine we're on the beach in the early evening west of the dateline at 4:59 PM Tuesday. If we swim eastward across the dateline and continue east seven time zones, it will be 11:59 PM Monday. We rest from all this exercise and ponder the strangeness of turning back a day. Whew! One more minute and it will be Tuesday anyway. Continue 17 more time zones (24 totals) eastward and it will be 4:59 PM Tuesday. Just like we left it. It works just fine in the reverse going the other way.

Question - 99:

What is the direction of null vector?

Ans:

There are two possible answers to this;
a) It has no direction
b) It points in all directions
Answer a) is really truer, as the notion of a null vector precludes any notion of a direction.

Question - 100:

If a dog rolled around on a carpet and gets statically and a flea jumps on it will the flea get electrocuted?

Ans:

it will, but probably, not and such experiment would be interesting one. Electrostatic electricity has a big potential - thousands volts - but small power when it gets discharged, that meaning the potential will subsides momentarily to null volts with the current caused very negligible. This current will make little harm to the flea which, besides. consist of very resistive substance. The current might knock over the insect, but won't kill it, I believe.

View All Answers

Question - 101:

What are the applications of nmr spectroscopy?

Ans:

The main applications of NMR stereoscopy are the elucidation of the carbon-hydrogen backbone of organic compounds and the determination of the relative stereochemistry of the same molecule. See the link below for more details.

View All Answers

Question - 102:

What are the weights in pounds of liquid gallons?

Ans:

First, you must know the specific gravity of the liquid then you can calculate the weight by multiplying the specific gravity by 8.34 lbs. 8.34 lbs is the weight of a gallon of water that has a specific gravity of 1.

View All Answers

Question - 103:

How do you calculate tensile strength?

Ans:

Tensile strength isn't really calculated; it's measured. It is defined as the point at which a sample of material fails when subjected to tensile stress. The unit of measure of tensile strength (and stress) is the Newton per square meter (N/m2), also known as the Pascal (Pa). Tensile strengths of various building materials, such as steel, are measure in millions of Pa.
when asking how it is measured, a description of how it is measured would be helpful.

View All Answers

Question - 104:

Why is it important not to expose a patient to X-rays for too long?

Ans:

Someone who is exposed to x-rays too long can develop cancer, skin burns, anemia, or other serious conditions.

View All Answers

Question - 105:

Why does the pilot tilt the outer wing of the airplane inward while taking a turn?

Ans:

Airplanes have two control surfaces involved when turning, the ailerons are on the trailing edge of the wings. By moving them in opposite directions, one up one down, the plane tilts, the lift the wings are generating now causes the plane to turn instead of going up. The rudder which is vertical at the back turns the plane to the left and right, but the rudder alone can turn the plane but not change its direction (side slipping) so in order to turn correctly you must use both the rudder and the ailerons.

View All Answers

Question - 106:

What is ntu in thermodynamics?

Ans:

ntu is nothing but number of transfer units it is one of the method used to find the heat transfer of hot and cold body it is applicable to both parallel and counter flow

View All Answers

Question - 107:

Why have the electron and the proton the same charge whereas the proton is 1836 times heavier?

Ans:

Because the electric charge depends on the mass times the radius of a particle and whereas the mass of the proton is 1836 heavier than the mass of the electron, the radius of the proton is 1836 times smaller. Thus, the product of mass time's radius is in both particles the same and therefore they have the same charge.

View All Answers

Question - 108:

How do you convert from Pascal to torr?

Ans:

Converting Pascal to torr

The pascal is a smaller unit of pressure than the torr. There are 133.32 Pascal per torr. Hence, divide your pressure measurement in pascal by 133.32 to convert to torr.
If your measurement is in torr to begin with, multiply it by 133.32 to convert to pascal.

View All Answers

Question - 109:

Which atomic model did Erwin Schrodinger create?

Ans:

Schrödinger's wave equation was based on the Heisenberg uncertainty principal that the position and velocity of a electron cannot be determined accurately (accuracy in one will sacrifice accuracy in another). Schrödinger's wave equation gave a wave function, which squared gave the probability cloud of electrons. Therefore, Schrödinger's contribution resulted in the electron cloud model of the atom.

View All Answers

Question - 110:

Is a sewing needle magnetic or non magnetic?

Ans:

When you buy it in the store it is not magnetized, but if you rub it with a magnet it becomes magnetic.

View All Answers

Question - 111:

What does hull speed mean?

Ans:

Hull speed is the theoretical limit of a sail craft's speed. It can be approximated by the following formula:
1.34 * SQRT (LWL), where LWL is the length of the waterline, in feet.
As a small vessel approaches its hull speed, the hull begins to climb its own bow wave. The faster the vessel tries to go, the more difficult climbing the bow wave becomes. Eventually, should the hull type permit it, the hull will begin to hydroplane (skimming across the water.

View All Answers

Question - 112:

What is meant by 4th dimension?

Ans:

When a reference is used to four-dimensional co-ordinates, it is likely that what is referred to, is the three spatial dimensions plus a time-line.

View All Answers

Question - 113:

What are the three particles that make up an atom?

Ans:

Atoms are made up of protons, neutrons, and electrons. The protons and neutrons are found together in the core of the atom, called the nucleus, which is in the center.
The electrons are found moving around the nucleus (at different energy levels) in what is called the electron cloud.
Note that in hydrogen most all of it is made up of just a lone proton and an electron. There are no neutrons in the most common isotope of hydrogen (1H).
Protons and neutrons, which are called nucleons when they're found in an atomic nucleus, are further made of still smaller subatomic particles called quarks.

View All Answers

Question - 114:

Advantage of fixed pulley?

Ans:

Fixed pulleys are used to change the direction of a force.

View All Answers

Question - 115:

What is balanced field takeoff?

Ans:

A "balanced field" with respect to aircraft takeoff performance refers to the minimum length of runway that will allow for an aircraft to accelerate to V-1 (decision speed), experience failure of the critical engine, and then either stop in the remaining runway or continue to a successful takeoff meeting all applicable takeoff performance criteria.

View All Answers

Question - 116:

What is the difference between isolation transformers and step up or step down transformer?

Ans:

Actually an isolation transformer may be physically the same as a Step up/Step Down transformer. The main difference is in the way they are used.
Another difference is that in a normal transformer there will be capacitance between the 2 windings, between the windings and core, between the core and shell, etc.
These capacitances bring in high frequency noise from outside, which will be transmitted in the secondary circuit. So [in an isolation transformer] wires are connected between each component, (not direct contact, but with insulation present). This permits a leakage current and eliminates unnecessary capacitance.

Question - 117:

How do you calculate shaft power?

Ans:

Shaft power P = (2(pi) * (angular Speed in rpm) * (Torque at shaft))/ 60
Torque of a solid shaft is given by (pi/16)* (Shear stress of material of shaft) * (Dia of shÃ¢ft3)

Question - 118:

What is free fall acceleration?

Ans:

On earth free fall acceleration is 9.81 meters per second per second or 32.2 feet per second per second, not including air resistance.
Around these parts, free fall acceleration is the acceleration due to earth gravity on a body that is not acted on by an outside force (like air resistance or a bungee tether). The actual value is cited in the earlier part answer.

Question - 119:

What path does an asteroid take?

Ans:

The asteroid will always take the path minimizing its Lagrangian, known as the least action principle in Lagrangian mechanics. With conservative forces, there are four basic shapes for two different cases. Either the asteroid is trapped in the gravitational pull of an object, or it is not trapped. If the asteroid's energy is low enough to be trapped, then it can have either a circular or elliptical orbit. If it is not trapped, then this 'free asteroid' (much like a free electron) can have either an parabolic or a hyperbolic path. Much of this information came from "Classical Mechanics" by kibble and Berkshire (although there are much better books).

Question - 120:

How are amps and watts related?

Ans:

In a nutshell, the power (measured in watts) dissipated by a resistance is directly proportional to the square of the current (measured in amperes or amps) flowing through that resistance.
It is given by the formula P = I2R, where P is the power in watts, I is the current in amps, and R is the resistance in ohms. For example, if two amps are flowing through a 10-ohm resistor, then the power dissipated by the resistor is 22 * 10 = 40 watts.
See also the Web Links to the left of this answer for more information.

Question - 121:

What does the MeV in MeV photon mean?

Ans:

The MeV means million electron volts. It's a measure of the energy the energy in the photon, which is a quantum (or specific quantity) of electromagnetic energy.
This 1 mega electron volt = 1.60217646 Ã— 10-13 joules of energy.

Question - 122:

What is larger the force the earth exerts on you or the force you exert on the earth?

Ans:

A non-scientist's initial stab at this: If you are talking about gravity, they are equal. I don't see how they can be anything BUT equal. Gravity is an attractive force between two bodies. Every particle of my body attracts every particle of the earth. It wouldn't be stated any differently from the earth's point of view. [Actually, there is a flaw in the way you are framing the question, since the 2 "forces" you refer to can never be separated and studied independently]. The earth has much more inertia, so I move toward the earth.
The attractive force between the earth and moon is much greater than the attractive force between the earth and me. If I were in the moon's orbital path (but nowhere close to the moon) and traveling at the same velocity as the moon, I'd fly off into space, or maybe enter a wildly eccentric orbit that would eventually bring me crashing into the earth.

Question - 123:

What is a positron?

Ans:

A positron is a positively charged electron. It's an anti-electron - antimatter! The positron has a charge of +1 (just the opposite of the -1 of the electron), and a spin of 1/2 as an electron does. The mass of this elementary particle is about 9.103826 x 10-31 kg.
It was Paul Dirac who first theorized that it may exist back in 1928, and in 1932, Carl D. Anderson discovered and named the positron. How was it done? By allowing cosmic rays to pass through a cloud chamber shielded with lead and set up in a magnetic field, the electron-positron pairs that were sometimes created could be observed. Simple and clever!
A more detailed description and some of the other characteristics of the positron can be found in the Wikipedia article on that subject. A link is provided below.
The same in magnitude, but opposed in sign, than the electron. So +1.6E-19 C

Question - 124:

When is fluorescence strong?

Ans:

Fluorescence is strong in systems in which emission occurs from the state with the lowest energy.

View All Answers

Question - 125:

Does water drain counterclockwise in the northern hemisphere and clockwise in the southern hemisphere?

Ans:

This is not a myth. It drains counter clockwise in the southern hemisphere and water drains clockwise in the northern hemisphere. It also drains straight down at the equator, it doesn't spin.

View All Answers

Question - 126:

Why does a tilted gyroscope not fall?

Ans:

Picture a spinning gyroscope that has its axis of rotation tilted with respect to gravity. As the gyroscope spins, the direction its axis is pointing is moving. It is describing a circle. That's called precession. Gravity is pulling down (applying a torque) on the gyroscope and trying to pull the top over. Gravity is trying to change the alignment of the axis of rotation. But because the gyro is spinning, because it has what is called angular momentum, gravity can't pull the top straight down. Instead, the force acts 90 degrees later in the direction of rotation. The "down" force is combined with the "spinning" force to create a "sideways" force. The result is that the axis of rotation moves a little bit to the side. In the next instant, gravity, which is still pulling, tries to bring it down, but the spin, that angular momentum, again combines with the gravitational force and another bit of "sideways" force shifts the axis again. In each instant of time, the force of gravity and the gyroscope's spin result in a dynamic that constantly shifts the axis or rotation a bit more to the side. Momentum is conserved in this phenomenon. In an experiment, a top spinning in one direction and tilted as it spins will exhibit precession in a given direction. If the top is spinning in the other direction, precession will be the opposite that it was with the first top. The Wikipedia article on precession has a picture of a gyroscope that has a bit of animation to (hopefully) make it clearer

View All Answers

Question - 127:

If the moons orbit is inclined slightly relative to the Earths orbit what effect does this have on eclipses?

Ans:

This makes eclipses rarer. If the moon's orbit were co-planar with earths, eclipses would happen every month, at the New Moon.

View All Answers

Question - 128:

Can a solid and liquid together be possible?

Ans:

Actually, substances can exist in all three states of matter simultaneously if the conditions are right. The triple point of a substance is the temperature and pressure at which all three states occur in equilibrium. Water can exist in natural environments in all three states of matter -- solid (ice), liquid, and gas (steam or water vapor). By the way, when you put ice in a glass of water to create "ice water," the ice and water coexist awhile; that is, the ice stops melting. Water in both liquid and solid forms exists in the glass. The temperature of the ice and water is just slightly above zero degrees Celsius.

View All Answers

Question - 129:

How do fireworks turn into shapes like hearts and stars?

Ans:

The fireworks creators have worked many decades to figure these things out. There are several factors. The individual little bursts are wrapped separately. They are then arranged around a core in the shape desired and the propellant charge is placed in the middle. When it goes off it lights the individual bursts and propels them out in the shape desired. In additions to the hearts and stars, a maple leaf is popular in Canada.

View All Answers

Question - 130:

What does gravitational force depend on?

Ans:

Gravitational force depends on distance and mass. Thus, the formula for calculating gravitational force between 2 objects with a given distance: G [(mass 1) (mass 2)]/distance squared. G is universal gravitational constant: 6.67x10 raised to -11 power. Sorry if it's a little confusing to read...since I can't do basic math operations here.

View All Answers

Question - 131:

Why is there more friction when you push an object than when you pull it?

Ans:

Friction does NOT vary depending upon whether an object is pushed or pulled. The frictional force (static or dynamic) is proportional to the normal force, the force that counteracts and exactly matches the weight of an object that is at rest (or moving at constant velocity). The frictional force will oppose the direction of the force applied to an object to move it. It matters not whether the object is pulled (using a tensile force) or pushed (using a compressive force).

Question - 132:

How do you find your body volume using a tape measure?

Ans:

ACCURATELY measure a container into which your body will fit comfortably. Once you know the volume, fill the container with water.

Lower yourself into the water, allowing excess to spill over the top then climb out. By measuring the amount of water that has spilled over you are effectively measuring your body volume. You can get a pretty accurate measurement by using the tape measure to see how much the water volume has dropped after you get out of the water.

depends what you mean by accuracy and to what degree. the theory of fractals says that with one measuring instrument you would read x units. with a second smaller measuring instrument to achieve greater accuracy you would read y units (y bigger than x). Moving to a third yet small measuring instrument you would read z units (z > y >x) and so forth. You can never get a truly accurate answer.

Question - 133:

What are the characteristics of dead stars?

Ans:

Dead stars are usually cold balls of material in empty space. A teaspoonful of white dwarf matter would weigh as much as an Elephant on Earth, as white dwarfs are actually the compressed remains of a star like our sun, shrunk down to the size of Manhattan.

Question - 134:

What is the force needed to accelerate a mass of one kilogram one meter per second per second?

Ans:

Basically, you have defined the Newton.

Force is the vector product of mass and acceleration. For the purposes of this discussion, we'll just say that $F = ma$.

In the SI system, the unit of mass, m is the kilogram. Acceleration, a, is defined as the rate of change of velocity, and is expressed in meters per second squared, or m/s2.

Since $F = ma$, the unit of force, F, is the kilogram-meter per second squared, or kg-m/s2, which is known as a Newton, in honor of the great English scientist, Sir Isaac Newton.

So, it will take one Newton (of force) to accelerate a one-kilogram mass one meter per second squared.

Question - 135:

What is curvilinear motion?

Ans:

Basically, it's any motion that's formed or bounded by curved -- as opposed to straight -- lines.

In high school, curvilinear motion is usually confined to parabolic paths traveled by objects, such as a thrown ball or a bullet fired from a gun, that are moving through space in a uniform gravitational field.

Question - 136:

Why does sun appear flat during sunrise and sunset?

Ans:

The sun rays have to travel through a larger atmospheric distance. Most of the blue light and shorter wave lengths are removed by scattering. Only red color, which is least scattered is received by our eyes and appear to come from sun .Hence the appearance of sun at sunset or sunrise looks almost flat.

Question - 137:

What is an electron?

Ans:

An electron is a subatomic particle that has a negative charge.

Question - 138:

How do you find the refractive index of a liquid by using total internal reflection?

Ans:

Using Snell's law, n (1) = (n (2) x sin angle (2)) / sin angle (1).

n (1) = The refractive index of the more optically dense medium.

n (2) = The refractive index of the less optically dense medium.

angle (1) = The critical angle of the two mediums.

angle (2) = 90 degrees since when light is at the critical angle it undergoes total internal reflection.

Since sin 90= 1, this can be ignored, resulting in n (1) = n (2) / sin angle (1)

Question - 139:

What is entropy?

Ans:

Entropy is a measure of a system's energy that is unavailable for work, or of the degree of a system's disorder.

View All Answers

Question - 140:

Difference between intrinsic and extrinsic semiconductors?

Ans:

semiconductors allow only a little amount of light to pass through them. they are of two n-types n type and p type

View All Answers

Question - 141:

How is nuclear fission different from nuclear fusion?

Ans:

Nuclear fusion is taking two different atoms and combining them in to one atom, while nuclear fission takes one atom and separates it into two atoms.

View All Answers

Question - 142:

What is the difference between diffraction and interference?

Ans:

Diffraction is the bending of waves around an obstacle, while interference is the meeting of two waves. For instance, diffraction is what results from a pinhole blocking a wave source; the wave spreads out from that one point. This effect is what creates shadows, regions where the light source is blocked but it is not completely dark. Interference, however, results from two waves colliding with one another undergoing constructive and destructive interference, as in two chords being played. I think the confusion concerning these two different phenomena is the fact that two pinholes, two diffraction sources, results in interference of two sources, which is what the diffraction grating is, which creates the characteristic bands of light and dark interference patterns.

View All Answers

Question - 143:

What is different between secondary electron image and back scattered electron image?

Ans:

Secondary electron images show topography of a sample. Back scattered electron images show difference in composition - or more exactly, difference in atomic number over a sample.

View All Answers

Question - 144:

Is negative mass antimatter?

Ans:

No. There is really no such thing as negative mass. Even antimatter has mass, which is always a positive (that is, greater-than-zero) quantity.
There is, however, the concept of effective mass or apparent mass, which can be negative. When an object is submerged in water, its apparent weight is reduced by an amount equivalent to the weight of water it displaces. For example, if a 10-pound rock is dropped into a bucket of water and displaces one pound of water, the effective weight of the rock under water is nine pounds.
But what if you submerge something much less dense than a rock -- say, your little brother's head -- in the bucket? Okay, forget that. Let's says a big ball of Styrofoam, instead. (Not as eco-friendly but less violent.)
In that case, the weight of the water displaced by the ball will be far greater than the actual weight of the ball, so when you subtract the weight of the water from the weight of the ball, you'll get a negative number. In other words, the effective weight of the ball under water will be negative, and the ball will tend to rise. It will fight your efforts to submerge it, much as your brother would if you submerged his head (but for reasons other than mere buoyancy).

View All Answers

Question - 145:

What seven colors appear to be white when mixed together?

Ans:

Red, orange, yellow, green, blue, indigo and violet. Though with the human eye, only red, green and blue are needed for light to appear white.

View All Answers

Question - 146:

Does a soccer ball go faster in the air on a cold or hot day?

Ans:

On a hot day, the air molecules have more kinetic energy - they move around more freely. They will move out of the way of the soccer ball that is moving through them more easily when the air is warm. In physics we might say that the warmer air is more susceptible to shear force than cooler air. The warmer air will "part" more easily to let the ball pass through.

View All Answers

Question - 147:

Why does it take longer to heat a bucket of water than a cup of water?

Ans:

Because there is more water in a bucket than in a cup, and more energy has to be put into the bucket of water than the little cup of water to bring them to the same temperature.

View All Answers

Question - 148:

What two properties of electromagnetic waves are used to attach info to radio signals?

Ans:

By varying the amplitude of a radio wave, you can encode information. That is how AM -radio works. By varying the frequency (and hence its wavelength) of a radio wave, you can also encode information. That is how FM radio works.

View All Answers

Question - 149:

What is moment of inertia?

Ans:

Moment of inertia is the term used to measure or quantify the amount of mass located at an object's extremities. For example if all the mass of an object was located in a small compact size (like a lead ball) its moment of inertia would be small compared to the same amount of mass shaped into a dumbbell. Because a dumbbell has most of its mass located farther from its center. But there is a "qualification" here. Moment of inertia is calculated relative to a hypothetical spin axis. Once you choose the spin axis then you calculate the moment of inertia by multiplying the mass times its distance to the spin axis squared; $I = MR^2$
So in the example between the sphere and the dumbbell the moment of inertia of the dumbbell would be significantly larger relative to a spin axis perpendicular to the dumbbell length. If you instead choose your spin axis to lie thru the dumbbell parallel to its length then its moment of inertia, relative to this axis, would be much smaller because the mass would be located closer to that axis. And, in fact, it might even be smaller then the moment of inertia of a sphere about an axis thru its center.

View All Answers

Question - 150:

Why does heated air expand?

Ans:

Temperature is often defined as the average thermal energy of the substance at hand. Thus the hotter a substance is the more thermal energy it has. For most substances the statistical mechanics formula, (3/2) kT works fine. In the preceding formula, k is the Boltzmann constant and T is the absolute temperature.
As thermal energy increases, the molecules of a substance move faster. These molecules hit other molecules faster and harder and bounce away from collisions faster and harder. Without a container to limit its shape, a gas will simply expand. Were a container present, the pressure of the gas in the container would increase.

View All Answers

Question - 151:

Does solar radiation contain a complete spectrum of all forms of electromagnetic radiation?

Ans:

Yes it does. It contains all the forms of radiation, but 99% of its energy is carried by radiation with wavelengths between 278 and 4600 nm, with the maximum at 472 nm.

View All Answers

Question - 152:

What is geocentric?

Ans:

It is a science where the earth is the center of the solar system and the other planets and the sun revolve around the earth. However, most scientists say that we have the Heliocentric Model which (Helios) which means sun says that the sun is the center of the solar system and the planets revolve around the sun.

View All Answers

Question - 153:

Why does a glass filled with water shatter when you run your finger along the rim of the glass?

Ans:

A piece of crystal stemware has a natural or resonant frequency that can be excited by rubbing a moistened finger along its rim. Filling the glass with water merely changes the pitch of the tone. The tone you hear is created when the crystal vibrates at frequencies in the audible range for humans. Although it's difficult to see, the glass actually flexes during the vibrations. If the glass deforms sufficiently, it can break, since crystal is brittle and not very elastic. It is not likely that a flawless glass could be made to break merely by rubbing its rim.
The Myth Busters demonstrated the resonance of a crystal glass and shattered several by exciting the glasses with a human voice. One professional singer broke a glass without the use of amplification. See the video.

View All Answers

Question - 154:

What evidence is there supporting the Big Bang theory?

Ans:

In short, the universe is expanding. All of the galaxies we have observed that are farthest away are moving away from us. And the farther away they are, the faster they are moving away. It took little imagination to "rewind" that picture and see a time when all of the matter and energy of the universe was basically "in one place"

and there was no universe. With all the energy (matter could not have existed as we know it in an energy field so intense) in that one place after arriving or being created, a huge explosion, the Big Bang, created space-time.

The energy dispersed and, as things cooled down, matter began to form. It's the expanding universe that is the evidence for the Big Bang. That and the microwave background radiation that was discovered in the 1960's (and found to be everywhere) that is convincing. Here's an analogy (though not necessarily the best one) for the microwave background radiation. Imagine a cannon shell exploding in the air. After a few seconds, the blast is "all gone" but there is a cloud of smoke everywhere. The microwave background radiation is like the "leftover smoke" of the high (very, very, very high) energy event that was the blast of the Big Bang.

View All Answers

Question - 155:

What are the branches of physics?

Ans:

The fundamental branches of physics are classical mechanics, electromagnetism (including optics), relativity, thermodynamics, and quantum mechanics.
How was the length of a standard meter redefined in the year 1983?
Since 1983 the meter has been defined as the distance light travels in a vacuum in exactly 1â•„299,792,458th of a second

View All Answers

Question - 156:

What is the difference between the Atomic Theory and the Kinetic Theory?

Ans:

Atomic theory is about structure of an atom, i.e., its composition. Like an atom in general is made up of number of protons, neutrons residing in nucleus and electrons orbiting around the nucleus. However, kinetic theory deals with the manifestations of gases as molecules assuming that the volume occupied by molecules is negligible compared to the domain and the intermolecular force between molecules is also insignificant. Also assuming that there is a perfectly elastic collision between molecules and between molecules and wall, various macroscopic properties like pressure, temperature, enthalpy etc are derived. For example pressure exerted by gas on chamber walls can be derived by computing the momentum exchange of molecules with the wall. Thus apparently there is no similarity between the two above-mentioned theories.

View All Answers

Question - 157:

What is parallel force?

Ans:

Parallel forces are two or more forces which act in parallel. The forces do not have to be in the same direction however.

View All Answers

Question - 158:

How does laser printer works?

Ans:

When a text or image is entered into the CPU, it produces a series of varying voltages. This controls a LED (light emitting diode) in the printer. This emits flashes of laser, when it falls on a charged photo conducting drum. The area corresponds the text or image will either be neutralized or oppositely charged. A toner which has the same charge as the background is sprayed onto it. It only sticks to the text or image and is repelled by the background. A fresh paper is now pressed onto the toner and is slightly heated so that it sticks firmly on the paper....

View All Answers

Question - 159:

Why does heat cause matter to expand?

Ans:

Water contracts as it cools, like all other liquids, until it reaches a temperature of about 4 degrees Celsius, at which point it expands and begins to form into crystals, expanding approximately 9 percent.

View All Answers

Question - 160:

What are isotopes?

Ans:

An atom of an element that has a different number of neutrons in its nucleus to other atoms of the element

View All Answers

Question - 161:

How do you magnetize metal?

Ans:

You can rub a magnet along the metal in one direction for a bunch of times (the more the better), and that will magnetize it to some degree, but it's not permanent and will demagnetize if it is hit hard with something.
Also, to magnetize something like a nail, if you point one end north, and hit the other end with a hammer it should weakly magnetize it. Unfortunately it doesn't work every time.
Links are provided to Wikipedia and a couple of other sources.

View All Answers

Question - 162:

What are Newton s laws of motion?

Ans:

1. A body at rest will remain at rest and one in motion will remain in motion, until and unless acted upon by an external force. (Law of inertia)
2. The rate of change of momentum of a body is proportional to the resultant force acting on the body in the same direction as its motion. (F = ma)
3. For every action there is an equal an opposite reaction.
Note: These laws apply only at speeds not approaching the speed of light and do not apply to sub-atomic particles.

View All Answers

Question - 163:

Will a DC motor actually produce voltage if it is spun in reverse?

Ans:

It'll produce voltage if you spin it forwards, too. The only difference between a DC motor and a DC generator is what you use it for.
A long time ago, cars had DC generators on them instead of AC alternators. When you replaced a generator, you had to "polarize" it so it would make electricity. You hooked it up to your battery and let it run, as a motor, for a few seconds. Don't try that with an alternator because you'll break it.
If you're looking for a neat little elementary-school science project, you can use little Radio Shack electric motors as generators for things like windmills, water wheels, dynamos turned by bicycle tires...

View All Answers

Question - 164:

Why do you not collapse under the pressure created by the atmosphere?

Ans:

If the outward pressure inside your body were not equal to the pressure pressing in on you, you would be crushed faster than an empty aluminum beer can at a frat party.
Find an old empty gallon can, a squarish one that paint thinner or turpentine comes in. Make sure its empty! Put an ounce or two of water in it. Put the can on the stove and heat it up until the water boils. Do this with the cap off!!! When the water boils, it will produce steam. When you see the steam coming out the top, screw the cap on. Don't burn yourself; use mitts. Let it cook for a few more seconds, not too long, though. Then, using oven mitts grab the can by the handle and quickly place it in the sink and run cold water over it. Watch what happens. Keep your hands away from it, though. You don't want to get pinched.
What happened? Well, when you quenched the can in the sink, the steam that had been filling the volume inside the can condensed, creating a vacuum -- an empty space -- inside the can. That created a low pressure in there. In other words, the pressure inside the can was much less then the pressure outside the can, creating a large pressure differential, causing the can to implode.
well this is simple i may be young and not know a lot but the fluids inside your body exert an equal amount of force all around you, thus acting on the atmospheric pressure and neutralizing the effect (some of this may not be correct)

View All Answers

Question - 165:

What is the difference between Free Electron Theory and Band Theory of solids?

Ans:

Free Electron Theory:
This theory tells that, metals conduct electricity because of the presence of free electrons in it. The outermost shells of metal atoms will be loosely bound with their nucleus. So the electrons in it are free to move anywhere in the solid. These electrons are called free electrons and they are responsible for the conduction of electricity.

View All Answers

Question - 166:

What is an alloy?

Ans:

An alloy is a homogeneous hybrid of two or more elements, at least one of which is a metal, and where the resulting material has metallic properties. The resulting metallic substance often have unexpected characteristics.
Classification of Alloys
Alloys can be classified by the number of their constituents. An alloy with two components is called a binary alloy; one with three is a ternary alloy, and so forth. Alloys can be further classified as either substitution alloys or interstitial alloys, depending on their method of formation. In substitution alloys, the atoms of the components are approximately the same size and the various atoms are simply substituted for one another in the crystal structure. An example of a (binary) substitution alloy is brass, made up of copper and zinc. Interstitial alloys occur when the atoms of one component are substantially smaller than the other and the smaller atoms fit into the spaces (interstices) between the larger atoms.
An alloy is a metal mixed with another metal to make it stronger.

View All Answers

Question - 167:

What is density?

Ans:

Density is a physical characteristic, and is a measure of mass per unit of volume of a material or substance. It is a measurement of the amount of matter in a given volume of something.
The higher an object's density, the higher it's mass per unit of volume. The average density of an object equals its total mass divided by its total volume. A denser object (such as iron) will have less volume than an equal mass of some less dense substance (such as water).

View All Answers

Question - 168:

What is the Law of Machines?

Ans:

Machines which are used to lift a load are governed by the "Law of machines", which states that the effort to be applied on the machine (p) is related to the weight (w) which it can lift as -
p = mw + c
Where m and c are positive constants which are characteristics of the machine.

View All Answers

Question - 169:

What would happen if a disk one light second in circumference were to spin at 60 RPM?

Ans:

60 revolutions per minute is one revolution per second.
1 light second is the distance light travels in one second.
What this means is that points on this hypothetical disk's perimeter would need to travel at the speed of light to satisfy your conditions. This cannot happen for anything that has mass.
Bottom line: a disk this size could not spin at this speed.

View All Answers

Question - 170:

Is air travel time the same whether or not the plane is flying with or against the rotation of the Earth?

Ans:

All air travel takes the earth's rotation into account. Flights from east to west take less time in absolute terms, having nothing to do with time zones. The reverse is true with west to east flights, and even north-south flights must calculate the amount of rotational deviance while the aircraft is in flight. Long range naval cannons have been computing the earth's rotation under the projectile in aiming calculations for more than a century. Satellites in synchronous orbit that appear stationary are actually traveling at the earth's rate of rotation.

View All Answers

Question - 171:

Does weight affect how far you jump?

Ans:

For the same leg strength / jumping technique, weight affects how far one can jump.
Acceleration = Force / Mass
With more mass, you cannot accelerate yourself as much when you jump with the same force. Imagine trying to jump with a small backpack full of sand strapped to your back. Your strength hasn't changed. That is, the amount of force you can deliver hasn't changed, but your mass has. You can't jump as high.

View All Answers

Question - 172:

How can light be defined in simplest form?

Ans:

The common definition of 'light' (visible) is electromagnetic radiation visible to the human eye. It is only a small part of what is known as the 'electromagnetic spectrum' - which is the range of wavelengths of all possible electromagnetic radiation.

View All Answers

Question - 173:

How much does sea salt weigh per cubic foot?

Ans:

Sodium chloride, NaCl, weighs 72 lb/ft3.

View All Answers

Question - 174:

What is a neutron?

Ans:

A neutron is a subatomic particle; it is one of the building blocks of the atom. It has a mass of about 1.675×10-27 kg. Its spin is + 1/2 and that makes it a fermions. Additionally, it has no electric charge, which is a distinctive feature. It is unstable when free in nature, and has a half life of about 886 seconds.
The neutron could be said to be only "alive" to be part of an atomic nucleus as it ceases to exist after a while if left alone. When it wanders around loose, like after its release following decay event or a fission event, it may bump into another atomic nucleus and become captured by it. This process is called - no surprise - neutron capture. It is, after all, a nucleon, as is a proton, both of which make up an atomic nucleus. The neutron is made up of two down quarks and an up quark. When a neutron decays, it releases a proton (or, if you prefer, a hydrogen nucleus), an electron, and an antineutrino.

View All Answers

Question - 175:

How is Specific Gravity defined?

Ans:

Specific Gravity, SG, is a unit less quantity that gives the scientist or engineers an idea of how dense a substance is compared to water. The density of water, which is one kilogram per liter (at 4 degrees C), is assigned a SG of 1.000. If a substance is denser than water, it will have a SG greater than 1.000; if it is less dense than

water, its S.G. will be a value less than 1.000 (but greater than zero). Let's say a substance has a density of 2.5 kilograms per liter. That means that its SG is 2.5 (2.5 divided by 1.000).

Question - 176:

Give one advantage of a scanning electron microscope over a transmission electron microscope?

Ans:

The SEM has become more popular than the TEM as it can produce images of high resolution, greater clarity and three dimensional qualities and requires less sample preparation.

Question - 177:

What are the steps to the scientific notation?

Ans:

To write in scientific notation, you should first move the decimal point of the number to where the number is between 1 and 9. For example, change 567 to 5.67. Then count the number of places you moved the decimal. If you moved it left then the number is positive. If you moved it right then the number is negative. Finally times the number with the decimal point by 10 to the power of the number the decimal moved.
Example: 500000 --> 5.00000 --> over 5 --> 5×10^5

Question - 178:

How is radiation emitted from the body?

Ans:

The body radiates energy through thermal conduction through the skin to the air, clothes, etc, around the body. A small amount of energy would also be radiated as electromagnetic radiation with a peak wavelength directly related to the Kelvin temperature of the skin.
Also very small amounts of other radiation are emitted due to naturally occurring radioactive isotopes in the body (i.e. Carbon-14).
Please drop by the discussion board and help resolve a problem with this answer.

Question - 179:

Does sunlight reflected off a mirror increase the temperature of the sun-rays?

Ans:

A standard planar mirror will not increase the energy contained in the rays that reflect off it. In fact, there will be some loss of energy since the reflective surface is not perfect. There is some reduction in the light's intensity as it passes through the mirror's glass and reflects off the backing surface.
Parabolic mirrors, on the other hand, focus and concentrate the light rays on a single point in front of the mirror, aptly named the focus. Although the energy is not amplified, it will be effectively increased because of the additive effect that will result when the light energy is concentrated.

Question - 180:

When a radar gun says the pitch is 90 miles per hour at what point in the balls travel to home plate is the radar gun measuring the velocity?

Ans:

The measurement is made at the point where the ball is when the trigger is squeezed and the contacts close to activate the unit. The gun responds in a "split second" by sending out a pulse, catching the return, and then comparing the two to discover the difference (the Doppler shift). It is so fast that the ball doesn't travel very far in the time it takes the unit to respond and resolve the speed.

Question - 181:

How many pounds does one gallon of water weigh?

Ans:

One wine measure or US gallon of water weighs 8.34 pounds. An Imperial Gallon is ten pounds of water at 62F and 30 inches of mercury air pressure.
At 60F. The density of water (and any other liquid) is dependent on temperature. So a gallon of boiling water weighs less (8.00 pounds) than a gallon of water at 60F. So fill up your car first thing in the morning when it should be the coolest, you'll get more pounds of gasoline.
Except that most vehicle fuels are stored underground and are at a pretty constant temperature. Fortunately it's pretty cool down there...
Make it easy to remember; an ounce of water weights, about an ounce. can't be easier than that. So an American pint, 16 ounces, weighs about a pound. And an American gallon, 8 pints, about 8 pounds. Whereas an Imperial pint, 20 ounces; and an Imperial gallon, 160 ounces, about ten pounds. Just like it says, up top.

Question - 182:

What are wave fronts?

Ans:

(Physics) A wave front is an imaginary surface joining all points in space that are reached at the same instant by a wave propagating through a medium.
Let's try some examples. When a rock is tossed into a calm lake, a surface disturbance radiates from the point where the rock broke the water. The leading edge of that entire wave forms a circle, and that circle is the wave front for that event. It is moving outward at a constant speed in all directions. Note that it's two-dimensional (2D). Want 3D? You got it.
In a burst of chemical energy, a star shell explodes at a fireworks display. The light moves away from the origin in all directions at the same speed - the speed of light. And the 3D surface of this wave front is a sphere, and it is expands around the origin at the speed of light. Pick an arbitrary distance, say, 1 kilometer. Anyone at a

distance of 1 km from the event in any direction will find that the wave front reaches him at the same instant of time as anyone else in any direction who is that 1 km from the event. Even someone in an airplane that is 1 km away will be on the wave front for an instant - that same instant as any other observers 1 km away. Note that the sound will arrive later - but it, too, radiates forming a spherical wave front. Our observers at 1 km distance from the event all experience the arrival of the sound wave at the same time.

View All Answers

Question - 183:

What is time?

Ans:

1. This is the question that every true scientist dreads to be asked especially in a public setting by extremely inquisitive young students. We have learned to measure and calculate it relative to the natural arrangement of known and visible celestial bodies. This is the ultimate question you ask a theoretical astro physicist if you want to see them shake in their pants.
To this day time can only be described by the measure of elapsed period using the SI unit, Seconds. It is the only SI unit that is freely allowed to shift depending on subject topic. For example in Astro physics, to measure distance between galaxies it would be impractical to use seconds as the measure of time it takes light to travel between the two galaxies
Time transcends everything known to man up to and including the universe, time has no beginning or end. Time is constant and infinite and we just tap in and out of it in reference to occurrence of an event.

View All Answers

Question - 184:

How does the elevation and air pressure affect the boiling point of water?

Ans:

The only factor that determines the boiling point of water at any altitude is the barometric pressure (the altitude itself doesn't actually matter, it's just that at higher elevation, the barometric pressure usually drops). However, water will boil at two different temperatures at the same elevation if you are in a high pressure weather system instead of a low pressure system.

View All Answers

Question - 185:

What instrument is used to measure volume?

Ans:

Liquid volume is measured with beakers, measuring cups, spoons, graduated cylinders, and the like. For regular objects, solid volume can be calculated. For irregular objects, their volumes can be determined by measuring the amount of liquid that is displaced by the object when it is submerged in the liquid. It is also used to measure the amount of pigs that fall from the sky!!!

View All Answers

Question - 186:

What is a Newton meter?

Ans:

A unit of energy also known as a Joule. When a force of 1 Newton is applied on an object for a distance of 1 meter then 1 Joule of energy is used. It is the result of a vector calculation involving the meter (a unit of length in the SI system) and the Newton (the unit of force in the SI system).
A unit of torque. (Turning force.) When a force of 1 Newton is applied at a distance of 1 meter from the pivot at right angle to the radius then a torque of 1 Newton Meter is present. It is the metric equivalent of lb ft
It is the name given to a device that measures force. It is a meter that measures Newtons.

View All Answers

Question - 187:

How much does automotive oil weigh?

Ans:

As a rough guide engine oil usually weighs about 0.87 kg/liter or about 7.2 pounds per US gallon.
Unfortunately a rough answer is the best that can be done as there are hundreds of different types of engine oil with slightly different densities. To get an exact density we would have to know the details of the oil you're using. For a really accurate answer we would also have to state the temperature as the density of oil as with most fluids varies with temperature.
Most oil manufacturers' provide data sheets for their products that should include density. If you search the manufacturer's web site you should be able to get an accurate figure for a particular grade.

View All Answers

Question - 188:

What is the proper formula used to calculate acceleration?

Ans:

There are a few. The most famous is $a = F/m$, where F is the net force applied to a mass, m.
Acceleration is also the change in velocity, Delta-V, divided by the change in time, Delta-t. So, $a = Δv/Δt$. For example, if an object's velocity changes from 10 meters per second to 20 meters per second in five seconds, its acceleration is $(20-10)/5 = 2$ meters per second per second, or 2 meters per second squared (m/s2).

View All Answers

Question - 189:

What affect does electricity have on soil?

Ans:

Electrical current and ions can cause certain molecules (and moisture) to adhere to soil. Large amounts of current, such as a lightning strike, can fuse particles of soil into a crystalline structure, somewhat like glass.

View All Answers

Question - 190:

What is neutral buoyancy?

Ans:

Buoyancy is the net upward force experienced by an object submersed in a fluid. Pascal's principle dictates that fluid pressure on an object increases with depth, so there is greater pressure on the bottom of the object than the top, resulting in a net upward force. When an object's buoyancy is greater than its weight, the object will float.
An object with neutral buoyancy has a density such that when it is fully submerged the upward force due to buoyancy is exactly equal to the downward force due to the weight of the object.
In pure water this is a density of 1000 kg/m3 (1kg/litre)
In seawater, this is a density of about 1025 kg/m3 (1.025kg/litre)

View All Answers

Question - 191:

What is the measure of the force of gravity on an object?

Ans:

Force is the vector product of mass and acceleration: F = ma. Weight is a special case of that formula, where you substitute the acceleration of gravity, g, for a. We can therefore write: W = mg.1
For example, if an object has a mass of 10 slugs2, its weight near the surface of the Earth is 10 x 32.2 (ft/s2) = 322 pounds (pound-force). If an object has a mass of 10 kilograms, its weight near the surface of the Earth is 10 x 9.8 (m/s2) = 98 newtons.
You can measure the force of gravity on an object (i.e., its weight) by putting it on a scale.

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