

If we add all the 7 colours of rainbow (red, yellow, blue, green, orange, violet and indigo), the resultant colour would be?

- A. White
- B. Black
- C. Maroon
- D. Dark Blue

ANSWER: A

When white light passes through a prism, it splits into \_\_\_\_\_ colours.

- A. 5
- B. 6
- C. 7
- D. 8

ANSWER: B

A camera uses a \_\_\_\_\_ to form an image on a piece of film at the back.

- A. convex lens
- B. concave lens
- C. diverging lens
- D. none of these

ANSWER: A

Short-sight defect could be corrected by a \_\_\_\_\_.

- A. convex lens
- B. concave lens
- C. converging lens
- D. none of these

ANSWER: B

Red + Green + Blue = ?

- A. White
- B. Black
- C. Maroon
- D. Dark Blue

ANSWER: A

Ozone layer protects the Earth from \_\_\_\_\_ radiations from the Sun.

- A. microwaves
- B. infrared
- C. X-rays

D. ultraviolet

ANSWER: D

The distance of Moon from the Earth is \_\_\_\_\_ km.

- A. 364,000
- B. 384,000
- C. 464,000
- D. 484,000

ANSWER: B

There are \_\_\_\_\_ planets in orbit around the Sun.

- A. 6
- B. 7
- C. 8
- D. 9

ANSWER: C

Planets are kept in orbit by the?

- A. Attraction among the Planets
- B. Attraction among the Planets and the Sun
- C. Radiations from the Sun
- D. Gravitational pull of the Sun

ANSWER: D

Which from the following is NOT a Renewable Energy?

- A. Geothermal
- B. Solar
- C. Nuclear
- D. Biofuels

ANSWER: C

Radiocarbon is produced in the atmosphere as a result of

- A. collision between fast neutrons and nitrogen nuclei present in the atmosphere
- B. action of ultraviolet light from the sun on atmospheric oxygen
- C. action of solar radiations particularly cosmic rays on carbon dioxide present in the atmosphere
- D. lightning discharge in atmosphere

ANSWER: A

It is easier to roll a stone up a sloping road than to lift it vertical upwards because

- A. work done in rolling is more than in lifting
  - B. work done in lifting the stone is equal to rolling it
  - C. work done in both is same but the rate of doing work is less in rolling
  - D. work done in rolling a stone is less than in lifting it
- ANSWER: D

The absorption of ink by blotting paper involves

- A. viscosity of ink
- B. capillary action phenomenon
- C. diffusion of ink through the blotting
- D. siphon action

ANSWER: B

Siphon will fail to work if

- A. the densities of the liquid in the two vessels are equal
- B. the level of the liquid in the two vessels are at the same height
- C. both its limbs are of unequal length
- D. the temperature of the liquids in the two vessels are the same

ANSWER: B

Large transformers, when used for some time, become very hot and are cooled by circulating oil. The heating of the transformer is due to

- A. the heating effect of current alone
- B. hysteresis loss alone
- C. both the heating effect of current and hysteresis loss
- D. intense sunlight at noon

ANSWER: C

Nuclear sizes are expressed in a unit named

- A. Fermi
- B. angstrom
- C. newton
- D. tesla

ANSWER: A

Mirage is due to

- A. unequal heating of different parts of the atmosphere
- B. magnetic disturbances in the atmosphere
- C. depletion of ozone layer in the atmosphere
- D. equal heating of different parts of the atmosphere

ANSWER: A

Light year is a unit of

- A. time
- B. distance
- C. light
- D. intensity of light

ANSWER: B

Light from the Sun reaches us in nearly

- A. 2 minutes
- B. 4 minutes
- C. 8 minutes
- D. 16 minutes

ANSWER: C

Stars appears to move from east to west because

- A. all stars move from east to west
- B. the earth rotates from west to east
- C. the earth rotates from east to west
- D. the background of the stars moves from west to east

ANSWER: B

Pa(Pascal) is the unit for

- A. thrust
- B. pressure
- C. frequency
- D. conductivity

ANSWER: B

Planets do not twinkle because

- A. they emit light of a constant intensity
- B. their distance from the earth does not change with time
- C. they are very far away from the earth resulting in decrease in intensity of light
- D. they are nearer to earth and hence we receive a greater amount of light and, therefore minor variations in the intensity are not noticeable

ANSWER: D

Metals are good conductors of electricity because

- A. they contain free electrons

- B. the atoms are lightly packed
- C. they have high melting point
- D. All of the above

ANSWER: A

Let a thin capillary tube be replaced with another tube of insufficient length then, we find water

- A. will overflow
- B. will not rise
- C. depressed
- D. change its meniscus

ANSWER: B

Out of the following pairs, choose the pair in which the physical quantities do not have identical dimension?

- A. Pressure and Young's modulus
- B. Planck's constant and Angular momentum
- C. Impulse and moment of force
- D. Force and rate of change of linear momentum

ANSWER: C

If two bodies of different masses, initially at rest, are acted upon by the same force for the same time, then the both bodies acquire the same

- A. velocity
- B. momentum
- C. acceleration
- D. kinetic energy

ANSWER: B

Pick out the scalar quantity

- A. force
- B. pressure
- C. velocity
- D. acceleration

ANSWER: B

Rectifiers are used to convert

- A. Direct current to Alternating current
- B. Alternating current to Direct current
- C. high voltage to low voltage
- D. low voltage to high voltage

ANSWER: B

The surface of Planet Earth loses energy to outer space mostly due to

- A. conduction
- B. Convection
- D. radiation
- D. radioactivity

ANSWER: C

Two bodies of mass 100 kg and 10 kg respectively falling from same height. The acceleration due to gravity produced in the bodies

- A. Equal in both A and B
- B. A will have greater acceleration
- C. B will have greater acceleration
- D. None of the above

ANSWER: A

The Moon is most responsible for Earth's tides. Which pulls more strongly on the Earth and its oceans

- A. Moon
- B. Sun
- C. Both about equally
- D. Neither sun nor moon

ANSWER: B

When a spring is stretched 2cm, its potential energy is V. If it is stretched 20cm, its potential energy will be

- A. 1 V
- B. 10 V
- C. 100 V
- D. 20 V

ANSWER: C

22 Two masses of 1kg and 4kg are moving with equal momentum. The ratio of their kinetic energies

- A. 4:1
- B. 2:1
- C. 1:2
- D. 1:16

ANSWER: A

Which of the following pair are vector quantities?

- A. time and space
  - B. velocity and momentum
  - C. force and energy
  - D. force and work
- ANSWER: B

Newton's first law of motion is often referred as

- A. Basic law
  - B. Law of moment
  - C. Law of inertia
  - D. Law of force
- ANSWER: C

A boy and a girl of equal weight are riding on a merry-go-rounds that is turning. If boy is twice as far as the girl from centre, moment of inertia of boy

- A. Same as that of girl
  - B. Twice as that of girl
  - C. Four times that of girl
  - D. Less than girl
- ANSWER: C

When a spinning system contracts in the absence of an external torque, its rotational speed increases and its angular momentum

- A. Decreases
  - B. Increases
  - C. Remains unchanged
  - D. May increase or decrease
- ANSWER: C

Consider a ball rolling in a horizontal circular path on the inside surface of a cone. The normal force on the ball

- A. is  $mg$
  - B. is greater than  $mg$ , always
  - C. may be greater or less than  $mg$
  - D. is less than  $mg$ , always
- ANSWER: B

Sound is an example for

- A. Non mechanical wave
- B. Transverse wave
- C. Longitudinal wave

- D. Inelastic wave
- ANSWER: C

Sound of the following frequency is audible to us

- A. 5 Hz
  - B. 1 kHz
  - C. 25 kHz
  - D. 1 MHz
- ANSWER: B

Relativistic equations for time dilation, length contraction, and relativistic momentum and energy hold true at

- A. Speeds near that of light
  - B. Everyday low speeds
  - C. All speeds
  - D. Only approximately
- ANSWER: C

The power dissipated across resistor of  $2\ \Omega$  when applied with constant p.d. of 20 V.

- A. 40 w
  - B. 200 w
  - C. 20 w
  - D. 400 w
- ANSWER: B

Two identical resistors are connected in series, which of the following statement is true

- A. potential drop across both is same
  - B. current through both is same
  - C. Both (a) and (b)
  - D. None of the above
- ANSWER: C

In a mixture of hydrogen, oxygen, and nitrogen gases at a given temperature, the molecules having the greatest average speed are those of

- A. hydrogen
  - B. oxygen
  - C. nitrogen
  - D. all have the same speed on average
- ANSWER: A

A charge is fired through a magnetic field. The force acting on the charge is maximum when the angle between the direction of motion of charge and the magnetic field is

- A. Zero
- B.  $\pi/4$
- C.  $\pi$
- D.  $\pi/2$

ANSWER: D

out of the following, which is not emitted by radioactive substance?

- A. Electrons
- B. Electromagnetic radiations
- C. Alpha particles
- D. Neutrons

ANSWER: D

Sound waves in air are

- A. transverse
- B. longitudinal
- C. electromagnetic
- D. polarised

ANSWER: B

Magnetism at the centre of a bar magnet is

- A. minimum
- B. maximum
- C. zero
- D. minimum or maximum

ANSWER: C

It is more difficult to walk on a sandy road than on a concrete road because

- A. sand is soft and concrete is hard
- B. the friction between sand and feet is less than that between concrete and feet
- C. the friction between sand and feet is more than that between concrete and feet
- D. the sand is grainy but concrete is smooth

ANSWER: B

Find the maximum velocity for the overturn of a car moving on a circular track of radius 100 m. The coefficient of friction between the road and tyre is 0.2

- A. 0.14 m/s
- B. 140 m/s
- C. 1.4 km/s
- D. 14 m/s

ANSWER: D

Of the following properties of a wave, the one that is independent of the other is its

- A. amplitude
- B. velocity
- C. wavelength
- D. frequency

ANSWER: A

Lux is the SI unit of

- A. intensity of illumination
- B. luminous efficiency
- C. luminous flux
- D. luminous intensity

ANSWER: A

On a rainy day, small oil films on water show brilliant colours. This is due to

- A. dispersion
- B. interference
- C. diffraction
- D. polarization

ANSWER: B

Point A is at a lower electrical potential than point B. An electron between them on the line joining them will

- A. move towards A
- B. move towards B
- C. move at right angles to the line joining A and B
- D. remain at rest

ANSWER: B

Materials for rain-proof coats and tents owe their water-proof properties to

- A. surface tension

- B. viscosity
- C. specific gravity
- D. elasticity

ANSWER: A

RADAR is used for

- A. locating submerged submarines
- B. receiving a signals in a radio receiver
- C. locating geostationary satellites
- D. detecting and locating the position of objects such as aeroplanes

ANSWER: D

Sound of frequency below 20 Hz is called

- A. audio sounds
- B. infrasonic
- C. ultrasonic
- D. supersonics

ANSWER: B

On a clean glass plate a drop of water spreads to form a thin layer whereas a drop of mercury remains almost spherical because

- A. mercury is a metal
- B. density of mercury is greater than that of water
- C. cohesion of mercury is greater than its adhesion with glass
- D. cohesion of water is greater than its adhesion with glass

ANSWER: C

Suitable impurities are added to a semiconductor depending on its use. This is done in order to

- A. increase its life
- B. enable it to withstand higher voltages
- C. increase its electrical conductivity
- D. increase its electrical resistivity

ANSWER: C

Stars twinkle because

- A. the intensity of light emitted by them changes with time
- B. the distance of the stars from the earth changes with time

- C. the refractive index of the different layers of the earth's atmosphere changes continuously, consequently the position of the image of a star changes with time
- D. the light from the star is scattered by the dust particles and air molecules in the earth's atmosphere

ANSWER: C

It takes much longer to cook food in the hills than in the plains, because

- A. in the hills the atmospheric pressure is lower than that in the plains and therefore water boils at a temperature lower than 100°C causing an increase in cooking time
- B. due to low atmospheric pressure on the hills, the water boils at a temperature higher than 100°C and therefore water takes longer to boil
- C. in the hills the atmospheric density is low and therefore a lot of heat is lost to the atmosphere
- D. in the hills the humidity is high and therefore a lot of heat is absorbed by the atmosphere leaving very little heat for cooking

ANSWER: A

Moment of inertia is

- A. vector
- B. scalar
- C. phasor
- D. tensor

ANSWER: D

Of the following natural phenomena, tell which one known in Sanskrit as 'deer's thirst'?

- A. Rainbow
- B. Earthshine
- C. Halo
- D. Mirage

ANSWER: D

Inside an aeroplane, flying at a high altitude,

- A. the pressure is the same as that outside
- B. normal atmospheric pressure is maintained by the use of air pumps
- C. the pressure inside is less than the pressure outside
- D. normal humidity and partial vacuum are maintained

ANSWER: B

Sound travels with a different speed in media. In what order does the velocity of sound increase in these media?

- A. Water, iron and air
- B. Iron, air and water
- C. Air, water and iron
- D. Iron, water and air

ANSWER: C

One thousand microns is equal to

- A. 10-3m
- B. 10-6m
- C. 10-9m
- D. 10-12m

ANSWER: A

Sound travels at the fastest speed in

- A. steel
- B. water
- C. air
- D. vacuum

ANSWER: A

oil raise up the wick in a lamp. The principle involves

- A. the diffusion of oil through the wick
- B. the liquid state of oil
- C. capillary action phenomenon
- D. volatility of oil

ANSWER: C

Superconductors are substances which

- A. conduct electricity at low temperature
- B. offer high resistance to the flow of current
- C. offer no resistance to the flow of electricity
- D. conduct electricity at high temperatures

ANSWER: C

Light travels at the fastest speed in

- A. glass
- B. water
- C. hydrogen
- D. vacuum

ANSWER: D

Railway tracks are banked on curves

- A. necessary centrifugal force may be obtained from the horizontal component weight of the train
- B. to avoid frictional force between the tracks and wheels
- C. necessary centripetal force may be obtained from the horizontal component of the weight of the train
- D. the train may not fly off in the opposite direction

ANSWER: C

On a cold day when a room temperature is 15oC, the metallic cap of a pen becomes much colder than its plastic body, though both are at the same temperature of 15oC, because

- A. metals have higher thermal capacity than plastics
- B. plastics have a lower density than metals
- C. metals are good conductor of heat
- D. plastics have a higher thermal conductivity than metals

ANSWER: C

Sound produced at a point is heard by a person after 5 second, while the same sound is heard by another person after 6 seconds. If the speed of sound is 300 m/s, what could be the maximum and minimum distances between the two persons?

- A. 1.8 km, 0.15 km
- B. 2.2 km, 0.20 km
- C. 2.8 km, 0.25 km
- D. 3.3 km, 0.30 km

ANSWER: D

Intensity of sound at a point is \_\_\_\_ its distance from the source.

- A. directly proportional to
- B. inversely proportional to
- C. directly proportional to square of
- D. inversely proportional to square of

ANSWER: D

Of the four locations mentioned below the highest inside temperature will be attained in the pressure cooker operated with the pressure valve open

- A. at sea level
- B. at the top of Mt. Everest
- C. at a place in a valley below sea level
- D. in an aeroplane flying at a height of 10,000 m with inside pressure maintained at the sea level

ANSWER: C

Radio telescopes are better than optical telescopes because

- A. they can detect faint galaxies which no optical telescope can
- B. they can work even in cloudy conditions
- C. they can work during the day and night
- D. All of the above

ANSWER: D

Light Emitting Diodes (LED) is used in fancy electronic devices such as toys emit

- A. X-rays
- B. ultraviolet light
- C. visible light
- D. radio waves

ANSWER: C

Out of the following pairs, which one does not have identical dimension?

- A. Moment of inertia and moment of a force
- B. Work and Torque
- C. Angular momentum and Planck's constant
- D. Impulse and Momentum

ANSWER: A

Mercury is commonly used as a thermometric fluid rather than water because

- A. specific heat of mercury is less than water
- B. specific heat of mercury is more than water
- C. mercury has greater visibility than water
- D. density of mercury is more than the water

ANSWER: C

Optical fibre works on the

- A. principle of refraction
- B. total internal reflection
- C. scattering
- D. interference

ANSWER: B

Light from the star, Alpha Centauri, which is nearest to the earth after the sun, reaches the earth in

- A. 4.2 seconds
- B. 42 seconds
- C. 4.2 years
- D. 42 years

ANSWER: C

If a force is applied to a mass and the mass does not move:

- A. Work is done even though there is movement of the mass
- B. Work is done only if the mass moves a long way
- C. Work is exerted, but no work is done
- D. No work is done

ANSWER: D

If a force 50 Newton's is applied to a 10kg mass moves 10 metres and a force of 50 Newton's is applied to a 100kg mass 10 metres:

- A. The work done is the same in both the cases
- B. Less work is done to the 10 kg mass
- C. More work is done to the 10 kg mass
- D. More work is done to the 100 kg mass

ANSWER: A

If a force of 500 Newton's moves a mass 1000 metres in 2 mins, the power used is:

- A. 4167 Watts
- B. 250 Kilowatts
- C. 1 Megawatt
- D. 4 Watts

ANSWER: A

The property of inertia is said to be:

- A. The energy possessed by a body because of its motion

- B. The opposition which a body offers to a change in motion  
 C. That every action has an equal and opposite reaction  
 D. The quantity of motion possessed by a body  
 ANSWER: B

The definition of momentum is:

- A. The quantity of mass possessed by a body  
 B. The quantity of inertia possessed by a body  
 C. The quantity of motion possessed by a body  
 D. The opposition which a body offers to a change in velocity  
 ANSWER: C

The reverse Carnot cycle is used to design

- A. Jet Engine  
 B. Carburetor  
 C. Refrigerator  
 D. Diesel Engine  
 ANSWER: B

Which of the following has the highest specific heat?

- A. Sand  
 B. Water  
 C. Steel  
 D. Copper  
 ANSWER: B

The magnetic field inside a long straight solenoid-carrying current

- A. is zero  
 B. decreases as we move towards its end  
 C. increases as we move towards its end  
 D. is the same at all points  
 ANSWER: D

No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be

- A. plane  
 B. concave  
 C. convex  
 D. either plane or convex  
 ANSWER: D

A battery is connected first across one bulb and then across two bulbs in series. If all the bulbs are identical then the battery delivers

- A. less current to the series combination  
 B. more current to the series combination  
 C. a lower potential difference across the series combination  
 D. the same current in the two situations  
 ANSWER: A

What energy transformation takes place in the case of an internal combustion engine?

- A. Chemical energy- potential energy  
 B. Chemical-Heat energy- mechanical energy  
 C. Potential energy- kinetic energy  
 D. None of the above  
 ANSWER: B

Speed of sound varies in the atmosphere it

- A. increases with increase in height because pressure decreases  
 B. decreases with height because temperature decreases  
 C. decreases with increase in height because pressure decreases  
 D. increases with height because temperature decreases  
 ANSWER: B

Supersonic plane fly with the speed

- A. less than the speed of sound  
 B. of sound  
 C. greater than the speed of sound  
 D. of light  
 ANSWER: C

Mach number is used in connection with the speed of

- A. sound  
 B. aircraft  
 C. spacecraft  
 D. ships  
 ANSWER: B