What is the process by which a zygote develops into a blastula?

a. Cleavage
b. Gastrulation
c. Organogenesis
d. Morphogenesis

What is the primary mechanism by which cells regulate their internal environment despite changes in the external environment?

a. Homeostasis
b. Osmosis
c. Diffusion
d. Active transport

What is the term for the process by which a new species emerges from an existing one?

a. Evolution
b. Adaptation
c. Speciation
d. Natural selection

In female fertilization of ovum takes place in?

a. Vagina
b. Ovary
c. Uterus
d. Fallopian Tube

Which of the following is the example of genetic variation?

a. One person has a scar but it's friend doesn't
b. One person is older than other
c. Two children have different eye colour
d. None of the above

What is the term for the process by which genetic information is passed from one generation to the next through the transmission of DNA?

a. Heredity
b. Evolution
c. Genetic drift
d. Gene flow

Which process involves the breakdown of glucose to produce energy in the form of ATP?

a. Photosynthesis
b. Respiration
c. Fermentation
d. Glycolysis

What is the term for the study of the structure, behaviour, and evolution of populations?

a. Molecular biology
b. Evolutionary biology
c. Ecology
d. Population genetics

Which scientist proposed the theory of evolution through natural selection?

a. Jean-Baptiste Lamarck
b. Gregor Mendel
c. Charles Darwin
d. Alfred Russel Wallace

What is the term for the process by which genetic variation arises through the shuffling of genes during meiosis?

a. Genetic drift
b. Gene flow
c. Mutation
d. Recombination

Which process involves the movement of genes from one population to another through the migration of individuals?

a. Gene flow
b. Genetic drift
c. Mutation
d. Natural selection

What is the term for the study of the relationship between the structure and function of biomolecules?

a. Molecular biology
b. Biochemistry
c. Genetics
d. Evolutionary biology

What is the molar mass of CO_2 ?

a. 28 g/mol
b. 44 g/mol
c. 32 g/mol
d. 12 g/mol

What is the coefficient of O_2 when the following reaction is balanced ?

$$C_4H_{10} + O_2 \rightarrow CO_2 + H_2O$$

a. 6
b. 8
c. 13
d. 15

Which property distinguishes alkali metals from alkaline earth metals ?

a. Alkali metals form covalent oxides.
b. Alkali metals have higher melting points than alkaline earth metals.
c. Alkali metals react more vigorously with water than alkaline earth metals.
d. Alkali metals are less dense than alkaline earth metals.

Which of the following statements about diamond and graphite is incorrect?

a. Diamond is an electrical insulator, while graphite is a good conductor of electricity.
b. Both diamond and graphite are allotropes of carbon.
c. Graphite has a higher density than diamond.
d. Diamond has a tetrahedral structure, while graphite has a hexagonal planar structure.

The IUPAC name of the compound with the molecular formula

$C_6H_5CH_2CH(CH_3)CH_3$ is:

a. 1-Methyl-2-phenylpropane
b. 2-Methyl-1-phenylpropane
c. 1-Phenyl-2-methylpropane
d. 2-Phenyl-2-methylpropane

Identify the incorrect statement about the compound ethanoic acid:

a. It reacts with ethanol to form an ester.
b. It contains a carbonyl group.
c. Its IUPAC name is methanoic acid.
d. It belongs to the carboxylic acid functional group.

Which hydrocarbon is saturated ?

a. Ethene
b. Ethyne
c. Propane
d. Benzene

The compound that exhibits both geometrical and optical isomerism is:

a. But-2-ene
b. 2-Chlorobutane
c. 2,3-Dichlorobutane
d. 2-Pentene

What is the volume occupied by 1 mole of any gas at standard temperature and pressure (STP) ?

a. 22.4 L
b. 24 L
c. 20.1 L
d. 12.2 L

How many moles of H_2SO_4 are required to completely react with 5 moles of NaOH?

$$H_2SO_4 + 2NaOH \longrightarrow Na_2SO_4 + 2H_2O$$

a. 2.5 moles
b. 5 moles
c. 10 moles
d. 1.25 moles

How many atoms are present in 1 mole of H_2O ?

a. 6.022×10^{23}

b. 1.806×10^{24}

c. 3×10^{23}

d. 9.033×10^{23}

What is the most likely reason for the difference in conductivity between pure metals and alloys ?

a. Alloying increases atomic mass.
b. Alloying disturbs the regular arrangement of atoms.
c. Alloying decreases the density of the material.
d. Alloying enhances thermal conductivity.

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Forecast : Future :: Regret : ?

A. Present B. Alone C. Past D. Sins

Oxygen : Burn :: Carbon dioxide : ?

A. Isolate B. Foam C. Extinguish D. Explode

Mirror is related to reflection in the same way as Water is related to ____?

A. Conduction B. Dispersion C. Immersion D. Refraction

Find the odd one out :

A. Ear B. Lung C. Heart D. Kidney

0.5, 1.5, 4.5, 13.5, ?

A. 45.5 B. 39.5 C. 30.5 D. 40.5

If VICTORY is coded as YLFWRUB, how can SUCCESS be coded ?

A. VXEEIVV B. VYEFIVV C. VXFFHVV D. None of these

If TABLE is coded as GZYOV, how is JUICE coded ?

A. QFRXV B. OZLFJ C. QZHMT D. None of these

If - means x, x means +, + means ÷ and ÷ means -, then 40 x 12 + 3 - 6 ÷ 60 = ?

A. 7.95 B. 16 C. 44 D. 4

Arrange the given words in a meaningful sequence
1. Site 2. Plan 3. Rent 4. Money 5. Building

A. 4,1,2,5,3 B. 3,4,2,5,1 C. 2,3,5,1,4 D. 1,2,3,5,4

Arrange the given words in a meaningful sequence
1. Table 2. Tree 3. Wood 4. Seed 5. Plant

A. 4,5,3,2,1 B. 4,5,2,3,1 C. 1,3,2,4,5 D. 1,2,3,4,5

A group of 1200 persons consisting of captains and soldiers is travelling in a train. For every 15 soldiers there is one captain. The number of captains in the group is?

A. 85 B. 80 C. 75 D. 70

At the end of a business conference the ten people present all shake hands with each other once. How many handshakes will there be altogether?

A. 20 B. 45 C. 55 D. 90

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A ball is thrown from the top of the table,
time taken by the ball & it's height from the ground is given by below equation

height = $-5t^2 + 15t + 20$

After how much time it will reach the ground?

(a) 1
(b) -1
(c) 3
(d) 4

If $2x^2 - 3x + 1 = 0$, find the sum and product of its roots

(a) 0.5, 1
(b) 1.5, 2
(c) $\frac{3}{2}$, 0.5
(d) 1, 0.5

For what value of k does the quadratic equation x^2+ 4x + k = 0 *have real and equal roots?*

(a) 4
(b) -2
(c) 1
(d) 0

Sum of two numbers is 15 and their difference is 1. Find the product of two numbers:

(a) 1
(b) 8
(c) 64
(d) 56

In Δ ABC , if $\angle C = 50°$ and $\angle A$ exceeds $\angle B$ by $50°$, then $\angle A$

(a) $40°$
(b) $50°$
(c) $90°$
(d) $45°$

Which of the following is possible ?

(a) $\sin\theta = \frac{7}{5}$

(b) $\cos\theta = 2$

(c) $\tan\theta = 41$

(d) $\cos\theta = \frac{3}{2}$

A cone of height 7cm is placed on a hemisphere of radius 7cm.
What is the total volume of the solid? (Use π=$\frac{22}{7}$).

(a) 789 m^3

(b) $719m^3$

(c) $359m^3$

(d) 1078 cm^3

From the top of a building, an observer looks at a car parked at some distance away and makes an angle of depression of 45. If the height of the building is 50m,
find how far the car is from the building?

(a) 45m
(b) 50m
(c) 30m
(d) 60cm

How many solid cylinders of radius 10 cm and height 4 cm can be made by melting a solid sphere of radius 30 cm ?

(a) 60
(b) 50
(c) 40
(d) 90

Find the value of y when $x = 3$ for the equation $2x + 3y = 12$

(a) 2
(b) 3
(c) 4
(d) -2

If $\tan\theta = \frac{3}{4}$, find the value of $\cos\theta$

(a) $\frac{3}{5}$

(b) $\frac{5}{3}$

(c) $\frac{5}{4}$

(d) $\frac{4}{5}$

Consider the quadratic equation $x^2 - 5x + 6 = 0$. Match the following statements:

1: The roots are integers.

2: The product of roots is 6.

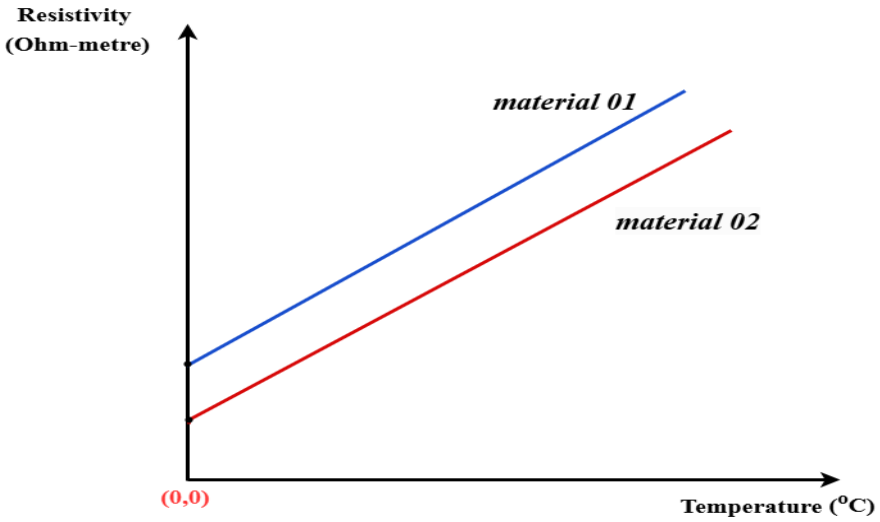
3: The roots are −3 and 2.

4: The sum of roots is −5.

Correct answers:

(a) 1 & 2 only
(b) 1 & 4 only
(c) 2 & 3 only
(d) 1 & 3 only

A current of 10mA is passed through both materials as shown in graph, for a fixed duration of time. The heat energy produced will be low in



a. Material 01.
b. Material 02.
c. Heat energy produced does not depend on material.
d. Needs more information such as voltage.

A magnetic force is created when a current flows through a conductor kept in a magnetic field. This force is outcome of interaction of

a. Electric field of conductor and magnetic field of magnet.
b. Magnetic field of conductor and electric field of magnet.
c. Magnetic field of conductor and magnetic field of magnet.
d. Electric field of conductor and electric field of magnet.

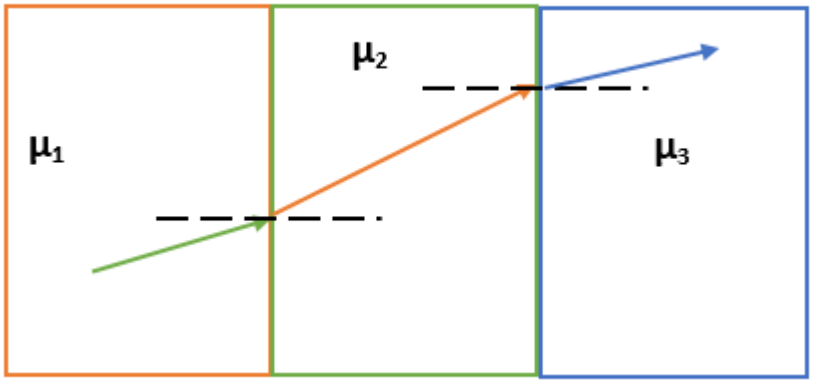
A student is using "Fleming left hand rule" to find the "direction of induced current" in "electric generator", his friend suggest him to use "right hand thumb rule" to find "direction of magnetic field first" and then use it to find direction of current. The correct method to find direction of induced current is:

a. Fleming left hand rule + Right hand thumb rule.
b. Ohms Law + Fleming right hand rule.
c. Right hand thumb rule + Fleming right hand rule.
d. Fleming right hand rule only.

A ray of light passing through water strucks on an object of thickness 1 mm, but the refractive index of this object cannot be defined, what will be the final velocity out going ray?

a. Same as initial velocity but in opposite direction.
b. Zero.
c. Same as initial velocity but in perpendicular direction.
d. Light rays cannot travel in water.

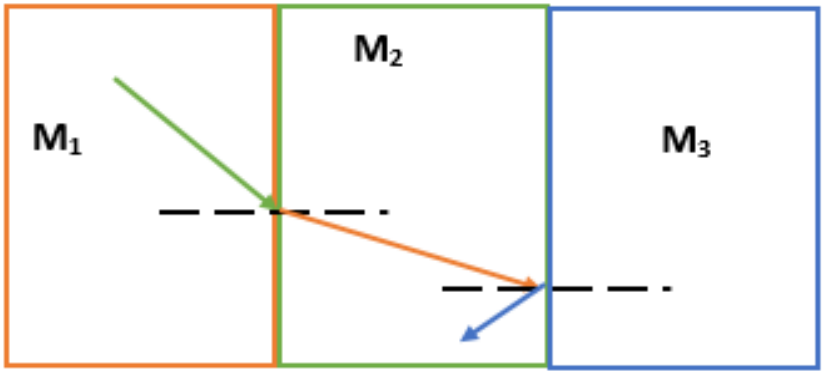
In the following diagram, there are three materials of different refractive index (μ) and headed arrows indicates path travelled by ray of light.



Find the correct relation for the refractive index (μ):

a. $\mu_1 < \mu_2 > \mu_3$
b. $\mu_1 < \mu_2 < \mu_3$
c. $\mu_1 > \mu_2 < \mu_3$
d. $\mu_1 > \mu_2 > \mu_3$

In the following diagram, there are three mediums and headed arrows indicates path travelled by ray of light.



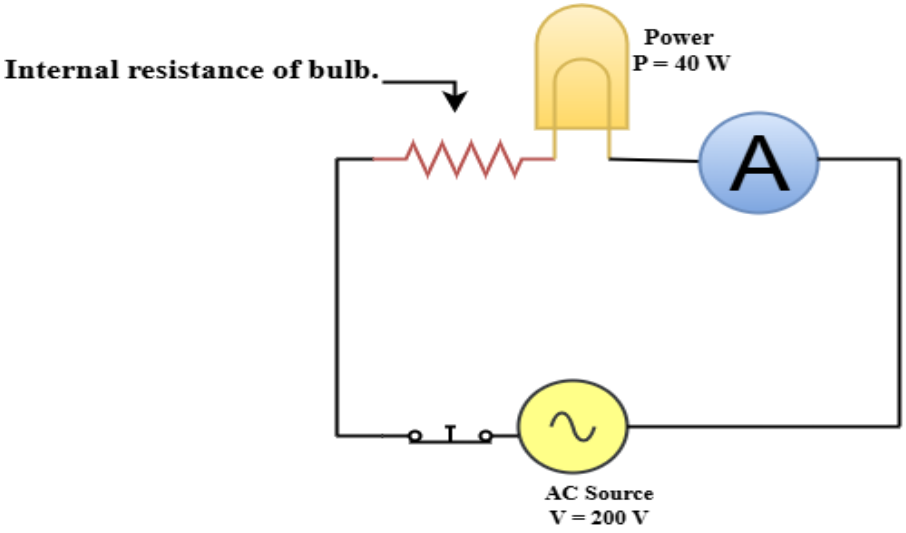
Find the correct pair of mediums (M)

a. Opaque (M1): Transparent (M2, M3)
b. Opaque (M2) : Transparent (M1,M3)
c. Opaque (M3) : Transparent (M1,M2)
d. None of the above.

A reflected ray was found to be scattered at multiple different angles and were not same as angle of incidence. The root cause for this scenario is

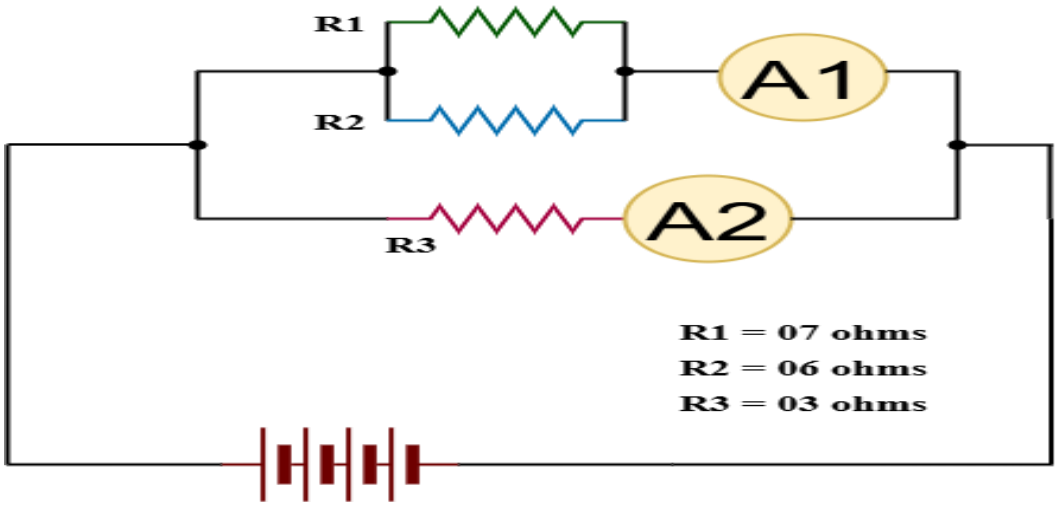
a. Physical property of material.
b. Chemical property of material.
c. Source of light.
d. Such events are not possible.

Find the internal resistance of the bulb as shown in the circuit diagram.



a. 800 Ω.
b. 440 Ω
c. 1000 Ω
d. 2200 Ω

The amount of current recorded through ammeter A2 in the given circuit diagram will be



a. Same as A1.
b. More than A1.
c. Less than A1.
d. More information is required.

A ray of light passes through a glass slab with parallel faces and emerges on the other side. What happens to the ray's direction?

a. It is displaced laterally but remains parallel to the original direction.
b. It bends towards the normal on emergence.
c. It bends away from the normal on emergence.
d. It converges to a single point after emerging.

You have a voltmeter with high resistance and an ammeter with low resistance. What happens if you accidentally connect the voltmeter in series and the ammeter in parallel in a circuit?

a. Both instruments will function normally.
b. The voltmeter will read zero, and the ammeter may be damaged.
c. The voltmeter will be damaged, and the ammeter will read zero.
d. The circuit will stop working altogether.

The needle of a magnetic compass placed near a current-carrying conductor deflects. What does this indicate?

a. The magnetic field around the conductor is uniform.
b. The compass is malfunctioning.
c. The current in the conductor is alternating.
d. The conductor is producing a magnetic field around it.