

“The duration of the day and inclination on its axis of a planet is equivalent to duration of day and inclination of Earth.” This statement is correct about which planet?

- (a) About Uranus (b) About Neptune  
(c) About Saturn (d) About Mars

Who discovered the principle of inertia?

- (a) Galileo (b) Newton  
(c) Tycho Brahe (d) Kepler

A projectile is thrown with a velocity  $u$ . The maximum possible range of the projectile is:

- (a)  $4u^2 / g$  (b)  $u^2 / 2g$   
(c)  $u^2 / g$  (d)  $2u^2 / g$

A cricket player catches a ball of mass 100 g and moving with a velocity of  $25 \text{ ms}^{-1}$ . If the ball is caught in 0.1 s, the force of the blow exerted on the hand of the player is:

- (a) 4 N (b) 25 N  
(c) 40 N (d) 250 N

The work done against gravity in taking 10 kg mass at 1m height in 1 sec will be—

- (a) 49J (b) 98J  
(c) 196J (d) None of these

The angular kinetic energy of a body is independent of:

- (a) Speed (b) Angular momentum  
(c) Moment of inertia (d) None of the above

A man is carrying a load equal to his own weight ( $W$ ) on his head. If he jumps from roof of a building, during his fall, the weight experienced by the man will be:

- (a) Zero (b)  $W$   
(c)  $2W$  (d) None of these

Given that  $Y$  represents Young's modulus and  $\sigma$  represents the strain. Which of the following gives the energy stored per unit volume of a strained wire?

- (a)  $\frac{1}{2} Y \sigma$  (b)  $\frac{1}{2} Y \sigma^2$

(c)  $\frac{1}{2} Y^2 \sigma$

(d)  $\frac{1}{2} Y^2 \sigma^2$

1 kcal kg<sup>-1</sup> K<sup>-1</sup> =

(a) 1 cal g<sup>-1</sup> K<sup>-1</sup>

(b) 10 cal g<sup>-1</sup> K<sup>-1</sup>

(c) 100 cal g<sup>-1</sup> K<sup>-1</sup>

(d) 1000 cal g<sup>-1</sup> K<sup>-1</sup>

The dimensions of mass ÷ force constant of SHM are same as that of:

(a) Time

(b) Time<sup>2</sup>

(c) Acceleration

(d)  $\frac{1}{\text{acceleration}}$

The magnitude of the two charges is doubled and the distance of their separation is also doubled. The electrostatic force between them will:

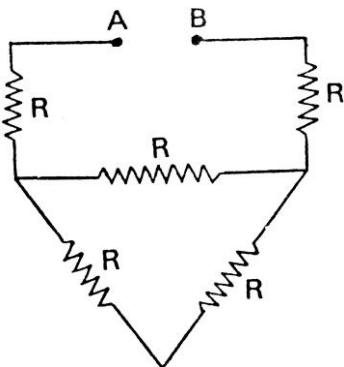
(a) Be halved

(b) Be doubled

(c) Become four times

(d) Remain unchanged

What is the equivalent resistance across A and B in the figure. If R = 3Ω?



(a) 9Ω

(b) 12Ω

(c) 15Ω

(d) None of the above

An electric bulb marked as 40 W, 200 volt is used in a circuit of supply voltage 100 volt. Its power now is?

(a) 100 Watt

(b) 40 Watt

(c) 10 Watt

(d) 20 Watt

No force acts on a current carrying conductor in magnetic field, when angle between current and magnetic field is:

(a) Zero

(b)  $\pi/4$

(c)  $\pi/2$

(d)  $3\pi/4$

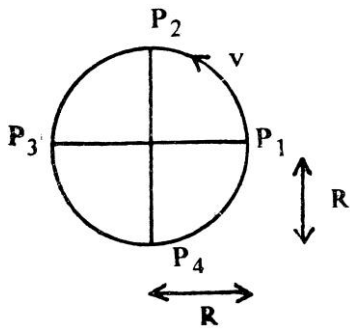
How are the numerical value (N) and unit (U) of a physical quantity related?

- (a)  $N \propto U$  (b)  $N \propto \sqrt{U}$   
(c)  $N \propto \frac{1}{U}$  (d)  $N \propto \frac{1}{\sqrt{U}}$

What is the value of  $[(5.0 \times 10^{-6})(5.0 \times 10^{-8})]$  with due regards to significant digits?

- (a)  $25 \times 10^{-14}$  (b)  $25.0 \times 10^{-14}$   
(c)  $2.50 \times 10^{-13}$  (d)  $250 \times 10^{-15}$

Figure shows a body of mass M moving with uniform speed v along a circle of Radius R.



What is the average velocity in going from P<sub>1</sub> to P<sub>2</sub>?

- (a)  $v/\pi$  (b)  $2v/\pi$   
(c)  $\sqrt{2}v/\pi$  (d)  $2\sqrt{2}/\pi$

A body slides down the inclined plane of inclination  $\theta$ . The coefficient of friction ( $\mu$ ) varies in direct proportion to the distance covered on the inclined plane. What happens to the downward acceleration of the body?

- (a) It is equal to  $g \sin \theta - \mu \cos \theta g \sin$  (b) It is equal to  $\mu g \sin \theta - g \cos \theta$   
(c) It increases with time (d) It decreases to zero with time and then its direction is reversed

Linear momentum of a particle increases by 50%. The increase in its kinetic energy will be?

- (a) 50% (b) 100%  
(c) 200% (d) None of these

A body is under the action of two equal and oppositely directed forces and the body is rotating with constant acceleration. Which of the following **cannot** be the separation between the lines of action of the forces?

- (a) 1 m (b) 0.4 m  
(c) 0.25 m (d) Zero

The synchronous satellite of the earth orbits from:

- (a) North to south in the polar plane (b) South to north in the polar plane  
(c) East to west in equatorial plane (d) West to east in equatorial plane

A wooden block is floating in a trough of water. If the trough falls freely, the upward thrust on the wooden block will be:

- (a) Same as before (b) More than earlier  
(c) Zero (d) Equal to the weight of the block in air

Half of the slab of ice is covered with white cloth and the other half is covered with black cloth. Which of the following statement is correct?

- (a) No ice will melt under white cloth (b) No ice will melt under the black cloth  
(c) More ice will melt under black cloth than under white cloth (d) More ice will melt under the white cloth than under the black cloth.

The oscillations which can be described in terms of sine or cosine functions are called:

- (a) Free (b) Natural  
(c) Simple harmonic (d) Sympathetic

**Statement I :** Water is a high boiling point liquid.

**Statement II :** Hydrogen bonding in water is responsible for high boiling point of water.

- (a) Both the statements are individually true and Statement II is the correct explanation of Statement I. (b) Both the statements are individually true but Statement II is **not** the correct explanation of Statement I.  
(c) Statement I is true but Statement II is false. (d) Statement I is false but Statement II is true.

The symbol of the element 'Tungsten' is:

- (a) Ta (b) W  
(c) Tl (d) Tc

Washing Soda is the common name for:

- (a) Calcium Carbonate (b) Magnesium Carbonate  
(c) Sodium Carbonate (d) Potassium Carbonate

Metalloids are:

- (a) alloys of alkali metals with other metals. (b) colloids of metals.  
(c) elements having some properties of both metals and non-metals. (d) metals heavier than lead.

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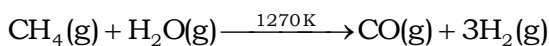
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To weld metals together, high temperature is required. Such a high temperature is obtained by burning:

- (a) Acetylene in oxygen      (b) LPG in oxygen
- (c) Methane in oxygen      (d) Acetylene in nitrogen

Consider the following reaction:



In the reaction given above, the mixture of CO and H<sub>2</sub> is

- (a) natural gas      (b) water gas
- (c) producer gas      (d) industrial gas

The most important raw materials used in the manufacture of cement are:

- (a) Potassium nitrate, charcoal and sulphur      (b) Limestone, clay and gypsum
- (c) Transition metal oxides, sodium hydroxide or potassium hydroxide      (d) Limestone, sodium carbonate and silica

A mixture of sodium chloride and naphthalene can be separated by:

- (a) extraction with hot water      (b) extraction with cold water
- (c) sublimation      (d) steam distillation

Combination of one volume of nitrogen with three volumes of hydrogen produces:

- (a) one volume of ammonia      (b) two volumes of ammonia
- (c) one and a half volumes of ammonia      (d) three volumes of ammonia

There are six electrons, six protons and six neutrons in an atom of an element. What is the atomic number of the element?

- (a) 6      (b) 12
- (c) 18      (d) 24

### Equivalent Weight

The number of aluminium ions present in 54 g of aluminium (atomic weight 27) is:

- (a) 2      (b) 18
- (c)  $1.1 \times 10^{24}$       (d)  $1.2 \times 10^{24}$

**Statement I:** Growth of plants is smooth with a complete fertilizer.

**Statement II :** A complete fertilizer always contains N, P, K.

- (a) Both the statements are individually true and Statement II is the correct explanation of Statement I. (b) Both the statements are individually true but Statement II is **not** the correct explanation of Statement I.
- (c) Statement I is true but Statement II is false. (d) Statement I is false but Statement II is true.

**Statement I :** Zinc is used for galvanization to protect iron from rusting.

**Statement II :** Zinc is more reactive towards oxygen than iron.

- (a) Both the statements are individually true and Statement II is the correct explanation of Statement I. (b) Both the statements are individually true but Statement II is **not** the correct explanation of Statement I.
- (c) Statement I is true but Statement II is false. (d) Statement I is false but Statement II is true.

**Statement I :** Colour of nitrogen dioxide changes to colourless at low temperature.

**Statement II :** At low temperature Nitrogen tetroxide ( $N_2O_4$ ) is formed which is colourless.

- (a) Both the statements are individually true and Statement II is the correct explanation of Statement I. (b) Both the statements are individually true but Statement II is **not** correct explanation of Statement I.
- (c) Statement I is true but Statement II is false. (d) Statement I is false but Statement II is true.

Which one of the following species is **not** capable of showing disproportionation reaction?

- (a)  $ClO^-$  (b)  $ClO_2^-$
- (c)  $ClO_3^-$  (d)  $ClO_4^-$

Given below is an approximate composition of a substance?

CaO	60-70%
SiO <sub>2</sub>	20-25%
Al <sub>2</sub> O <sub>3</sub>	5-10%
Fe <sub>2</sub> O <sub>3</sub>	2-3%

The substance is:

- (a) Plaster of Paris (b) Cement
- (c) Marble stone (d) Quartz

Which of the following substances are harmful for health if present in food items?

1. Pesticide residues                      2. Lead
3. Metanil yellow                         4. Mercury

Select the correct answer using the code given below :

- (a) 1 and 2 only (b) 1, 2 and 4 only

- (c) 3 and 4 only (d) 1, 2, 3 and 4

If the reaction of 1.0 mol  $\text{NH}_3(\text{g})$  and 1.0 mol  $\text{O}_2(\text{g})$

$4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \rightarrow 4\text{NO}(\text{g}) + 6\text{H}_2\text{O}(\text{l})$  is carried to completion, then:

- (a) All the  $\text{O}_2(\text{g})$  is consumed (b) 4.0 mol  $\text{NO}(\text{g})$  is produced  
(c) 1.5 mol  $\text{H}_2\text{O}(\text{l})$  is produced (d) All the  $\text{NH}_3(\text{g})$  is consumed

How many moles of hydrogen atom are present in one mole of Aluminium hydroxide?

- (a) One mole (b) Two moles  
(c) Three moles (d) Four moles

Which of the following statements regarding the property of hard water is/are correct?

1. Temporary hardness of water is due to the presence of soluble magnesium and calcium hydrogen carbonate.
2. Temporary hardness of water can be removed by boiling.
3. Calgon's method is applied to remove temporary hardness of water.
4. Permanent hardness of water is removed by Clark's method.

Select the correct answer using the code given below:

- (a) 1 and 2 only (b) 1, 2 and 3  
(c) 3 and 4 (d) 2 only

What is the oxidizing agent in the following equation?



- (a)  $\text{HAsO}_2(\text{aq})$  (b)  $\text{Sn}^{2+}(\text{aq})$   
(c)  $\text{H}^+(\text{aq})$  (d)  $\text{Sn}^{4+}(\text{aq})$

Within an animal cell, the most abundant inorganic constituent of protoplasm is:

- (a) Sodium and Potassium salt (b) Water  
(c) Iron (d) Phosphate

Guttation is

- (a) movement of soluble organic materials through plants. (b) movement of water through the apoplast  
(c) evidence of root pressure (d) negative pressure created by transpiration

Pressure of blood is high in

- (a) arteries (b) veins  
(c) capillaries (d) nerves

Fish respire through the

- (a) nose (b) lungs  
(c) gills (d) fins

In human beings the eggs are

- (a) Microlecithal (b) Macrolecithal  
(c) Mesolecithal (d) Alecithal

The gap between two communicating neurons is termed.

- (a) Node of Ranvier (b) Synaptic cleft  
(c) Effectors (d) Cell body

The toxicity of leads to liver cirrhosis.

- (a) Iron (b) Mercury  
(c) Copper (d) Lead

The rough ER is so named because it has an abundance of ..... on it.

- (a) mitochondria (b) lysosomes  
(c) Golgi bodies (d) ribosomes

A common adaptation of plants to an aquatic existence is the formation of

- (a) chlorenchyma (b) sclerenchyma  
(c) colenchyma (d) hydrenchyma

Valve which prevents blood backflow to right atrium from right ventricle is classified as.

- (a) bicuspid atria (b) tricuspid valve  
(c) bicuspid valve (d) tricuspid atria

Which of the following creatures has no blood but respire?

- (a) cockroach (b) earthworm  
(c) fish (d) hydra

Fertilization of ova in human take place in

- (a) ovary (b) Vagina  
(c) Fallopian tube (d) Uterus

Which part of human brain is concerned with the regulation of body temperature and urge for eating are



contained in?

- (a) cerebellum (b) cerebrum  
(c) medulla oblongata (d) hypothalamus

Which of the following is not an insect born disease.

- (a) Malaria (b) Beriberi  
(c) Yellow fever (d) Dengue fever

Consider the following statements regarding osmosis in animal cells:

1. If the water potential of the solution surrounding the cell is too high, the cell shrinks.
2. If the water potential of the solution surrounding the cell is too low, the cell swells and bursts
3. It is important to maintain constant water potential inside the animal body.
4. In animal cells, water potential far exceeds the solute potential.

Which of the statements given above is/are correct?

- (a) 1 and 2 (b) 3 only  
(c) 4 only (d) 2 and 3

Removal of amino groups from amino acids is called:

- (a) assimilation (b) Emulsification  
(c) Ingestion (d) de-amination

Oxygenated blood is brought to left atrium from lungs through

- (a) pulmonary vein (b) pericardial veins  
(c) pericardium vein (d) semilunar veins

Gastric secretion is stopped by hormone

- (a) gastrin (b) enterogastrone  
(c) cholecystokinin (d) pancreaticozym

The central fluid filled cavity of the blastula is known as

- (a) archenteron (b) blastocoel  
(c) blastocyst (d) marula

Consider the following statements in relation to plant tissue 'chlorenchyma':

1. It is formed by the palisade and spongy mesophyll.
2. It is a form of parenchyma which contains chloroplasts.

3. It serves to transport organic solutes made by photosynthesis.

4. It is a thin transparent layer which has chiefly a protective function.

Select the correct answer using the code given below:

- (a) 1 and 3 only (b) 1 and 2 only  
(c) 2 and 4 (d) 1 Only

Plant macronutrients carbon, oxygen and hydrogen constitute about how much percentage of a plant's dry weight.

- (a) 12 (b) 46  
(c) 63 (d) 84

Select the correct option of a hormone its source and function.

- (a) Vassopressin Posterior pituitary Increase loss of water through urine (b) Nor Epinephrine Adrenal Medulla Increases heart beat rate of respiration and alertness  
(c) Prolactin Posterior Pituitary Regulates growth of mammary glands and milk formation in females (d) Glucagon Beta of Islets of Langerhans Stimulates glycogenolysis

Setolic cells are found in

- (a) Liver (b) Seminiferous tubules  
(c) Heart (d) Germinal epithelium

The food grain used by human being at earliest

- (a) Wheat (b) Rice  
(c) Barely (d) Millet

Where should the place of vadic river kubha be determined?

- (a) Afghanistan (b) Chinese Turkistan  
(c) Kashmir (d) Punjab

The ruler of Mewar who was defeated in the battle of Khanwa by Babar in 1527 was:

- (a) Rana Pratap (b) Man Singh  
(c) Sawai Uday Singh (d) Rana Sanga

Why did Dutch East India Company fail to maintain its influence in India?

- (a) Portuguese did not allow them to trade in India (b) There was a growing interference of Dutch Government in the company's internal affairs
- (c) Dutch indulged in forcible religious conversion of the people and thus were expelled by local kings (d) The English forces made them to leave India

Extremist group of Congress had established 'Independence for India league' which main leader was Jawahar Lal Nehru. The league was created against whom?

- (a) Gandhi Irwin Pact (b) Home rule movement
- (c) Nehru Report (d) Montford reforms

Who among the following was the critic of Swadeshi movement and also a supporter of a better relation between east & West?

- (a) W.C. Banerji (b) S.N. Banerji
- (c) R.N. Tagore (d) B.G. Tilak

Who among the following had told, "It was the will of god that I would equally treat with all the religions so that he took away my second eye"

- (a) Maharaja Ranjeet Singh (b) Maharaja Shersingh
- (c) Maharaja Dilip Singh (d) None of the above

Who was the composer of Kirti pillar (sthambha) eulogy ?

- (a) Somdev (b) Jaita
- (c) Natha (d) Abhikavi

In the federation under the Act of 1935, residuary powers were given to the:

- (a) Federal legislature (b) Provincial legislature
- (c) Governor-General (d) Provincial Governor

The Preamble of our Constitution reads India as:

- (a) Sovereign, Socialist, Secular, Democratic Republic (b) Sovereign, Democratic, Socialist, Secular Republic
- (c) Socialist, Sovereign, Democratic, Secular Republic (d) Democratic, Sovereign, Secular, Socialist Republic

A person who has held office of the President:

- (a) is eligible for re-election to that office (b) is eligible for re-election to that office subject to the other provisions of the Constitution
- (c) is not eligible for re-election if he is impeached from his office (d) None of the above

The ordinance of the Governor:

- (a) is much narrower than a law made by the State Legislature (b) is more extensive than the law made by the State Legislature
- (c) has the same force as the law made by the State Legislature (d) has little value than the law made by State Legislature

Who among the following are directly elected by the people?

1. Pradhan
2. Block Pramukh
3. Zila Panchayat Adhyaksh
4. Sarpanch
5. Panch

Which of the statements given above are correct?

- (a) 1, 2 and 3 (b) 1, 2 and 5
- (c) 1, 4 and 5 (d) 1 and 5

Which of the following will be the consequences of the proclamation of Financial Emergency by the President?

1. The President can give directions to the states to observe the principles of financial property.
2. The President can reduce the salaries and allowances of government employees excluding the judges of Supreme Court and High Courts.
3. All money bills and other financial bills passed by a state legislature can be reserved for the consideration of the President.
4. The Parliament can authorise the President to sanction expenditure from the Consolidated Fund of the State.

Select the correct answer using the code given below:

- (a) 1, 2 and 3 (b) 1, 2, 3 and 4
- (c) 1 and 3 (d) 1, 3 and 4

**Statement I:** The Finance Commission facilitates the maintenance of financial balance between the Union and the States in the Indian Federal System.

**Statement II:** The Constitution of India has given more financial powers to the Union Government.

- (a) Both the statements are individually true and Statement II is the correct explanation of Statement I. (b) Both the statements are individually true but Statement II is **not** the correct explanation of Statement I.
- (c) Statement I is true but Statement II is false. (d) Statement I is false but Statement II is true.

Which of the following are the methods of Parliamentary control over Public Finance in India?

1. Placing Annual Financial Statement before parliament.
2. Withdrawal of money from Consolidated Fund of India only after passing the Appropriation Bill.
3. Provisions of supplementary grants and vote-on-account.
4. A periodic or at least a mid-year review of programme of the government against macroeconomic forecasts and expenditure by a Parliamentary Budget Office.
5. Introducing Finance Bill in the Parliament.

Select the correct answer using the code given below:

- (a) 1, 2, 3 and 5 (b) 1, 2 and 4  
 (c) 3, 4 and 5 (d) All of these

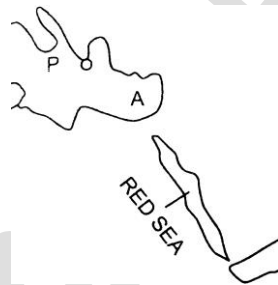
Which one of the following represents the inner planets?

- (a) Planets between the Sun and the Earth (b) Planets between the Sun and the belt of asteroids  
 (c) Planets in gaseous state (d) Planets without satellite(s)

Mist is a result of which one of the following:

- (a) condensation (b) evaporation  
 (c) sublimation (d) saturation

In the given map 'A' refers to:



- (a) Alexandria (b) Port Said  
 (c) Suez (d) Cairo

Which racial group has the largest number of members?

- (a) Negroid (b) Mongoloid  
 (c) Australoid (d) Caucasoid

Match List-I with List-II and select the correct answer using the code given below the Lists:

List-I	List-II
A. Wular	1. Volcanic
B. Lonar	2. Tectonic
C. Rakas	3. Glacial
D. Didwana	4. Aeolian

**Code:**

- (a) A B C D (b) A B C D  
 3 1 2 4 4 1 2 3

- (c) A B C D  
3 1 4 2

- (d) A B C D  
2 1 3 4

Which of the following cyclones formed in the sea between Chennai and the Andaman island in December 2011?

- (a) Cyclone Nisha (b) Cyclone Thane  
(c) Cyclone Yasi (d) Cyclone meena

In the given map four shaded areas are marked as 1, 2, 3 and 4. Which of these areas are known for the production of sugarcane?



- (a) 1 and 2 (b) 2 and 3  
(c) 1, 3, 4 (d) All of these

Which group of steel industries in India was established after independence?

- (a) Jamshedpur, Durgapur, Bhilai (b) Bhilari, Durgapur, Bhadravati  
(c) Bhilai, Durgapur, Raurkela (d) Kulti-Barnapur-Vishkhapatnam-Salem

In which state Greentech Mega Food Park Private ltd was recently inaugurated ?

- (a) Maharastra (b) Rajasthan  
(c) Andhra Pradesh (d) Telangana

Consider the following statement about Rupashree Scheme :

1. Rupashree scheme lauched by state government of Jharkhand.
2. Under this scheme government provides one-time financial support for marriage of poor girls.

Which is/are correct about Rupashree Scheme?

- (a) Only 1 (b) Only 2  
(c) 1 & 2 (d) Neither 1 nor 2

Which sentence is not correct about POSHAN Abhiyan?

- a. POSHAN Abhiyan was launched on International women's day.

- b. POSHAN Abhiyan targets to reduce stunting, under-nutrition, anemia & reduce low birth weight.
- c. POSHAN Abhiyan launched by Raj Nath Singh in Jhunjhunu Rajasthan.
- d. POSHAN stands for Prime Minister's Overarching scheme for Holistic Nutrition.

KHANJAR-V held between which National States?

- (a) India-Irygyzstan
- (b) India-Kayhakhstan
- (c) India-Mangolia
- (d) India-Vietnam

National Maritime Day observed on :

- (a) 5<sup>th</sup> of April
- (b) 9<sup>th</sup> of April
- (c) 10<sup>th</sup> of April
- (d) 14<sup>th</sup> April

Which statement is not correct about Indu Malhotra?

- a. She became first woman Judge to be elevated directly from the Bar.
- b. She will be seventh woman judge in Supreme court.
- c. She is on board of trustees in Save LIFE Foundation.
- d. She was born in Bhopal Madhya Pradesh.

Union of India launched strategic Petroleum Reserve Programme in 2005. Which place is not identified as oil reserve?

- (a) Visakhapatnam
- (b) Mangalore
- (c) Padur
- (d) Tutikorin