

MATHEMATICS

1. Assertion (A): If $\sqrt{3 \times 3 \times a \times b \times 7 \times 7 \times 11 \times 11} = 1155$ is a perfect square, then $a = b = 6$.

Reason (R): In a perfect square the factors occur in pairs.

- a) Both A and R are true and R is correct explanation of A
- b) Both A and R are true but R is not the correct explanation of A
- c) A is correct, R is incorrect
- d) A is incorrect, R is correct

2. If $A = \left(-\sqrt{\frac{4}{9}}\right)\left(-\sqrt{\frac{81}{100}}\right)$; $B = \sqrt{400} + \sqrt{0.04} + \sqrt{0.000004}$, then $A + B = \dots\dots\dots$

- a) 20.802
- b) 208.02
- c) 2.0802
- d) 0.20802

3. Statement - I: If $\frac{2^x}{1+2^x} = \frac{1}{4}$, then the value of $\frac{8^x}{1+8^x} = \frac{1}{28}$

Statement - II: $\frac{x^m}{x^n} = \frac{1}{x^{n-m}}$, where $m > n$ ($x \neq 0$)

- a) Both I and II are correct
- b) Both I and II are in correct
- c) Only I is correct
- d) Only II is correct

4. If $a = 6$ cm, $b = 5$ cm and $c = 5$ cm, then the length of the median m_a is _____

- a) 5cm
- b) 16cm
- c) 4cm
- d) 24cm

5. X % of a number p is equal to y % of a number q. Find what percent of p is q?

- a) $q = \left(\frac{x}{y} \times 100\right) p\%$
- b) $q = \left(\frac{y}{x} \times 100\right) p\%$
- c) $p = \left(\frac{x}{y} \times 100\right) q\%$
- d) $p = \left(\frac{y}{x} \times 100\right) q\%$

6. The area of a rectangular park is 2160m^2 . The length and breadth of the park are in the ratio 5:3.

Find the cost for fencing the park at Rs.5 per metre.

- a) Rs. 120
- b) Rs. 240
- c) Rs. 320
- d) Rs.960

7. If the circumference of a circle is 132 cm, then the side of the square inscribed in the circle is

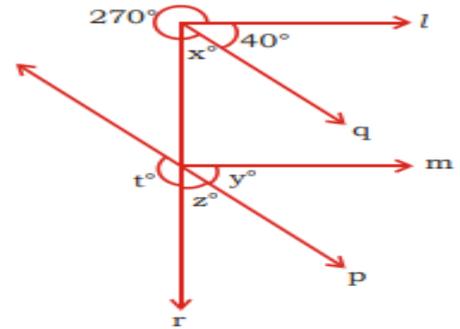
- a) $14\sqrt{2}$ cm
- b) $8\sqrt{2}$ cm
- c) $21\sqrt{2}$ cm
- d) none

8. At what rate of interest per annum will a sum double itself in 5 years?

- a) 40%
- b) 30%
- c) 20%
- d) 10%

9. Matrix Matching:

In the given figure: if $p \parallel q$ and $l \parallel m$, then the correct option is



GROUP - A

- a) $t = \dots\dots\dots$
- b) $x^2 - y^2 = \dots\dots\dots$
- c) $t + y = \dots\dots\dots$
- d) $y = \dots\dots\dots$

GROUP - B

- i) 170°
- ii) 40°
- iii) 900
- iv) 130°
- v) $(30)^2$

a) a - (iv), b - (iii), c - (i), d - (ii)

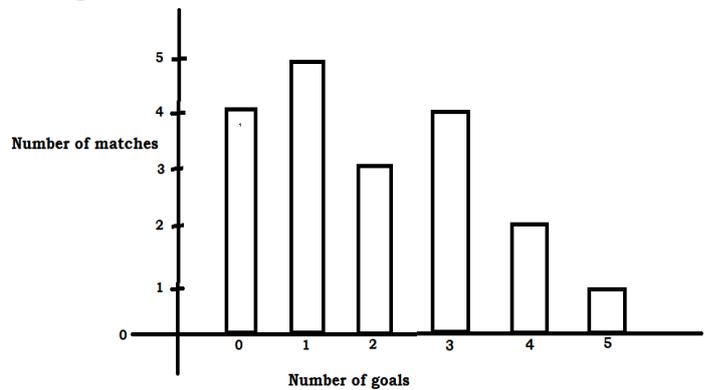
b) a - (iv), b - (iii, iv), c - (i), d - (ii)

c) a - (iv), b - (iii, v), c - (i), d - (ii)

d) a - (ii), b - (iii, v), c - (i), d - (iv)

10. Read the following graph and answer the question given below:

The bar graph shows the number of goals scored by a team in 19 matches. Find the total number of goals scored.



- a) 32
- b) 33
- c) 37
- d) 36

PHYSICS

1. If a simple pendulum takes 72s to complete 20 oscillations, then the time period of this pendulum is

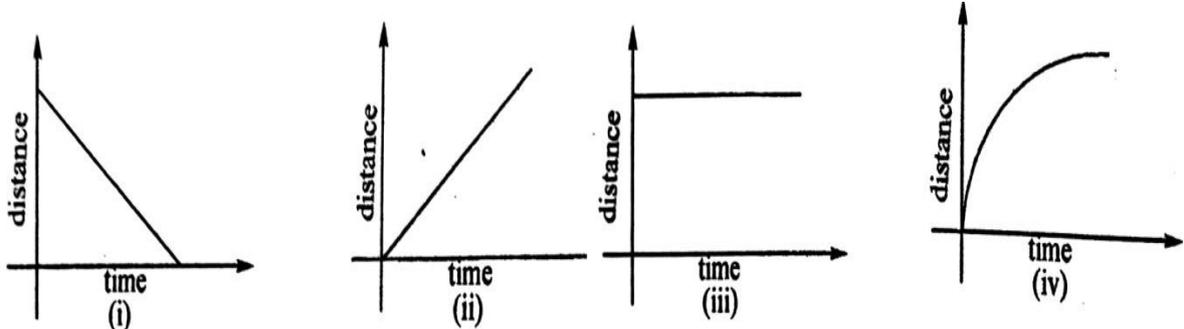
- a) 3.6 s
- b) 7.2 s
- c) 1.2 s
- d) 4.5 s

2. Statement I: The cold air blowing from land towards sea is called land breeze

Statement II: Land radiates heat faster than sea

- a) Both statement I and II are true
- b) Both statement I and II are false
- c) Statement I is true but II is false
- d) Statement I is false but II is true

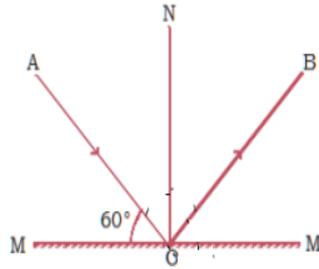
3. Which of the following graphs represents constant speed for a moving body?



- a) (i) only
- b) (ii) only
- c) (ii) and (iii) only
- d) (i),(ii) and (iii) only

4. The figure shows a ray of light reflected at a plane mirror. Which pair of the angle of incidence and angle of reflection is correct?

- a) $30^\circ, 30^\circ$
- b) $30^\circ, 60^\circ$
- c) $60^\circ, 30^\circ$
- d) $60^\circ, 45^\circ$



5. Match the following

Column I	Column II
A. voltage of a single dry cell	i. complete path for the flow of electricity
B. battery	ii. 6 V
C. cell	iii. conductor
D. circuit	iv. generates electricity
E. four dry cells in series	v. a collection of cells
F. conducts electricity	vi. 1.5 V

- a) A-iv; B-ii; C-v; D-i; E-vi; F-iii
- b) A-ii; B-iv; C-iii; D-i; E-v; F-vi
- c) **A-vi; B-v; C-iv; D-i; E-ii; F-iii**
- d) A-iv; B-iii; C-vi; D-i; E-v; F-ii

Read the passage given below and answer the question that follows:

A clinical thermometer is used to measure the body temperature of human beings. It consists of a long, narrow, uniform glass tube. It has a bulb at one end. The bulb contains mercury. This thermometer read temperatures from 35°C to 42°C .

6. What for is a clinical thermometer provided with a kink?

- a) To keep the mercury within the range of 35°C to 42°C .
- b) **To allow the temperature reading to remain unchanged after the use of temperature until a jerk is given.**
- c) To make the thermometer size smaller
- d) All of the above are correct.

7. Assertion (A): An alloy is preferred to be used in a heating appliance.

Reason(R): Alloys have larger cross-section area and thus lower resistance.

- a) Both assertion and reason are true and reason is the correct explanation of assertion
- b) Both assertion and reason are true but reason is not the correct explanation of assertion
- c) **Assertion is true but reason is false**
- d) Assertion is false but reason is true

CHEMISTRY

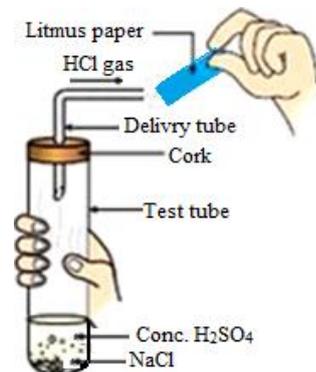
1. Name a gas which is used in refrigeration and fire extinguishers?

- a) Nitrogen b) Carbon dioxide c) Hydrogen d) Methane

2. The figure given below represents the experiment carried out between conc. sulphuric acid and sodium chloride, which react with each other to form HCl gas.

Blue litmus paper is brought near the mouth of the delivery tube to check the presence of HCl but no change is observed in the colour of litmus paper because:

- a) The litmus paper used is dry
b) The litmus paper used is moist
c) Blue litmus paper does not change its colour with an acid
d) The litmus paper is kept very close to the mouth of the delivery tube



COMPREHENSION TYPE

Water is an inorganic, transparent, tasteless, odourless and nearly colourless chemical substance, which is the main constituent of Earth's hydrosphere and the fluids of all knowing living organisms. Its chemical formula is H_2O , meaning that each of its molecules contains one oxygen and two hydrogen atoms, connected by covalent bonds.

Water is the name of the liquid state of H_2O at standard ambient temperature and pressure. It forms precipitation in the form of rain and aerosols in the form of fog. Clouds are formed from suspended droplets of water and ice, its solid state. When finely divided crystalline ice may precipitate in the form of snow. The gaseous state of water is steam or water vapour. Water moves continually through the water cycle of evaporation, transpiration, condensation and precipitation.

Water covers 71% of the Earth's surface, mostly in seas and oceans. Small portions of water occur as ground water (1.7%), in the glaciers and the ice caps of Antarctica and Greenland (1.7%), and in the air as vapour, clouds and precipitation. Water plays an important role in the world economy. Approximately 70% of the freshwater used by humans goes to agriculture.

3. The total number of atoms present in water molecule?

- a) 1 b) 2 c) 3 d) 4

4. In the process of water cycle, which of the following process need heat energy?

- a) Evaporation b) Condensation c) Precipitation d) Infiltration

5. STATEMENT-I: Water vapour present in air supports the water cycle

STATEMENT-II: Birds, insects can fly because of the air

- a) Statement I is correct, II is incorrect b) Statement II is correct, I is incorrect
c) Both I and II are correct d) Both I and II are incorrect

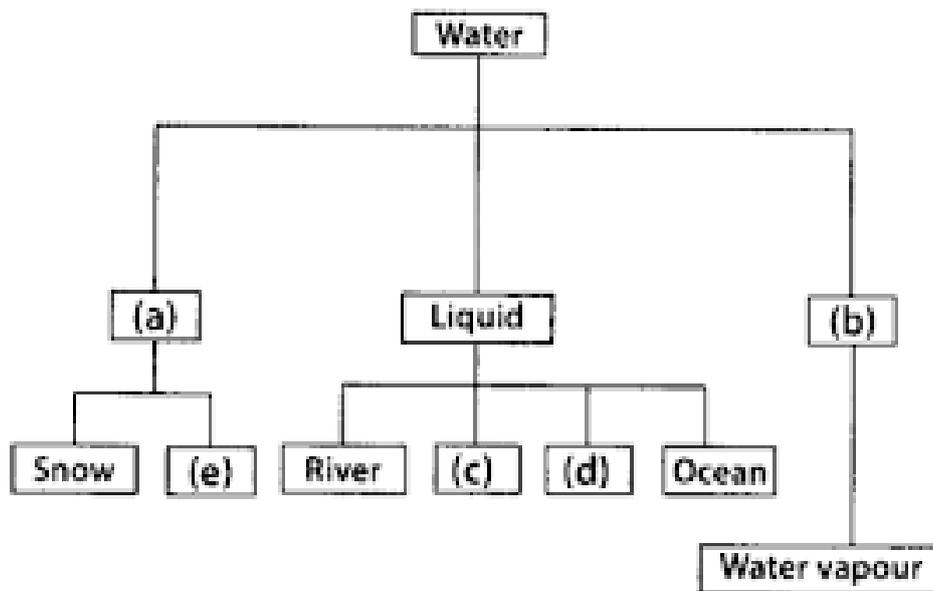
6. The sample of soil from a particular place was tested for its nature. It came out to be an acid. Then which one of the following should be added to the soil to make it suitable for the plant growth?

- i. Calcium chloride ii. Calcium hydroxide iii. Calcium oxide iv. Organic matter

Choose the correct answer:

- a) i, ii and iii b) Both i and iv c) Only iv d) Both ii and iii

7. The given diagram shows the different forms and sources of water. Identify a, b, c, d, e.



a	b	c	d	e
a) Solid	Gaseous	Well	ice	Lake
b) Gaseous	Solid	lake	Well	ice
c) Gaseous	Solid	ice	Lake	Lake
d) Solid	Gaseous	well	Lake	ice

8. X is a gas present in air help in the burning of the fuels leads to carry out activities like cooking food, running industries, etc.... it is one of the main life sustaining gas. Identify 'X'.

- a) Carbon dioxide **b) Oxygen** c) Nitrogen d) Hydrogen

9. **ASSERTION: Hardening of cement is the example for irreversible change.**

REASON: Changes that cannot be reversed are called irreversible changes.

- a) Both Assertion and Reason are correct and reason is the correct explanation for assertion
 b) Both Assertion and Reason are correct but reason is not correct explanation for assertion
 c) Assertion is correct, reason is incorrect
 d) Assertion is incorrect, reason is correct

10. MATRIX MATCHING

COLUMN-I

COLUMN-II

- | | |
|------------------------------|-------------------------|
| A) Rusting of iron | i) Reversible change |
| B) Ripening of fruit | ii) Irreversible change |
| C) Stretching of rubber band | iii) Fast change |
| D) Crackers burst | iv) Slow change |

A	B	C	D
a) i, iv	ii	iii, ii	i
b) ii, iv	i, iv	i, iii	ii, iii
c) ii, iv	ii, iv	i, iii	ii, iii
d) i, iv	ii, iv	i, iii	ii, iii

BIOLOGY

1. Match the Column I with Column II and Choose the correct option

Column I

- a) Saprotroph
- b) Chlorophyll
- c) Rhizobium Bacteria
- d) Cuscuta
- e) Insects
- f) Mango tree
- g) Leaf
- h) Tiny pores present on leaf
- i) CO₂ and water
- j) Mushroom

Column II

- (i) Pitcher Plant
- (ii) Food Factory of plants
- (iii) Green Plant leaf
- (iv) Fungi
- (v) N₂ – fixing
- (vi) Stomata
- (vii) Parasite
- (viii) Raw Material
- (ix) Saprophyte
- (x) Autotroph

a) a-iii, b-v, c-viii, d-ii, e-iv, f-i, g-vi, h-vii, i-ix, j-x

b) a-iv, b-iii, c-v, d-vii, e-i, f-x, g-ii, h-vi, i-viii, j-ix

c) a-iv, b-x, c-v, d-i, e-vi, f-iii, g-vii, h-ii, i-ix, j-viii

d) a-iii, b-i, c-vi, d-v, e-ii, f-x, g-iv, h-viii, i-ix, j-vii

2. Which of the following statement is/are not true about photosynthesis?

P. Carbondioxide is essential for photosynthesis to take place

Q. The products of photosynthesis are simple sugars

R. Photosynthesis occurs in the green leaves of plants

S. Sunlight is not used as an energy source by plants to make food during photosynthesis

a) P and S only

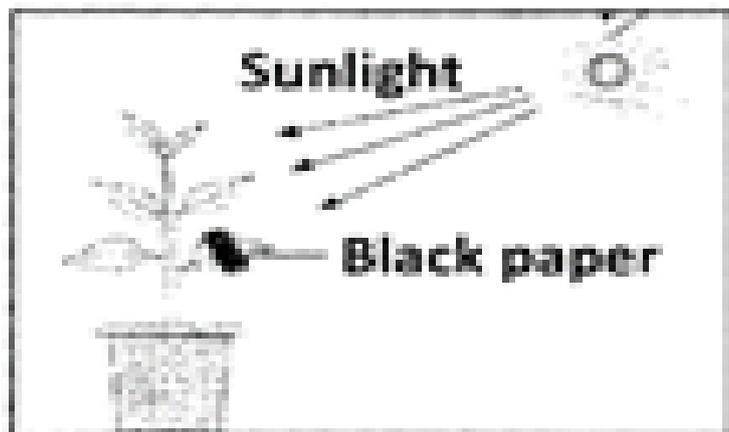
b) Q,R and S only

c) P,Q and R only

d) P,Q,R and S

3. What is the aim of the given experiment?

- a) To show that air is a basic need of plants
- b) To show that food is a basic need of plants
- c) To show that water is a basic need of plants
- d) To show that sunlight is a basic need of plants**



4. Which of the following organs does not manufacture digestive juices?

a) Liver

b) Kidneys

c) Stomach

d) Pancreas

5. Which of the following completes the given sequence? Shearing → ? → Sorting

a) Separating

b) Weaving

c) Knitting

d) Scouring

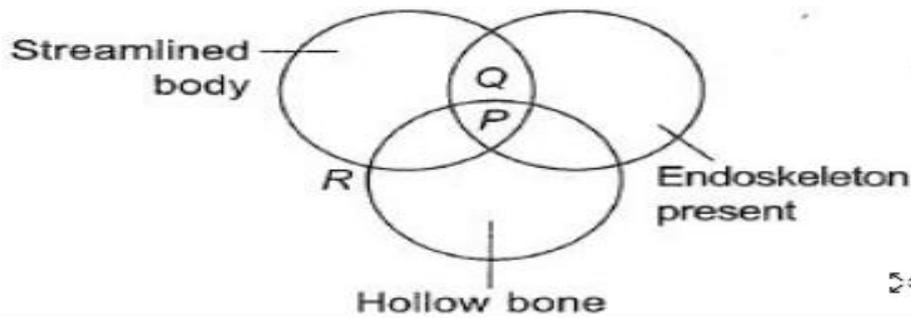
6. Bleaching and dyeing of silk fibres are usually done during which of the following situations?

- a) Just before the fabrics are made
- b) After the fabrics are made
- c) Before the yarns are made into fibres
- d) After the yarns are made

7. Arjun is doing his homework which is given by his teacher. Would you help him to choose the correct sentences?

- a) The hard and strong skull protects a delicate organ of our body called brain
- b) There is a fixed joint between the skull and the upper jaw
- c) When the muscles attached to a bone contracts, it pulls the bone due to which the bone move at the joint
- d) All the above

8. Refer to the given Venn diagram and select the incorrect statement regarding P, Q and R



- a) R has three pairs of jointed legs which help if to walk, run and climb
- b) Q has paired and unpaired fins that help in movement in water
- c) P has special air sacs connected to the lungs which aid in respirations process
- d) Q is a shelled animal that processes a muscular structure called foot

9. The rotting and conversion of some materials into manure is called

- a) Fertilization
- b) Utilization
- c) Composting
- d) None of these

Read the given Paragraph and answer the following.

Camouflage is a kind of adaptation in which an organism deceives others by merging its colour with that of its surroundings.

10. Which of the following colours will best suit a chameleon to hide from its enemies in a forest when it sits on branch of a tree?

- a) Red
- b) Blue
- c) Green
- d) Brown

MATHEMATICS -KEY

- 1) d
- 2) a
- 3) c
- 4) c
- 5) a
- 6) d
- 7) c
- 8) c
- 9) c
- 10) d

PHYSICS - KEY

- 1) a
- 2) a
- 3) b
- 4) a
- 5) c
- 6) b
- 7) c

CHEMISTRY - KEY

- 1) b
- 2) a
- 3) c
- 4) a
- 5) c
- 6) d
- 7) d
- 8) b
- 9) a
- 10) c

BIOLOGY - KEY

- 1) b
- 2) d
- 3) d
- 4) c
- 5) d
- 6) c
- 7) d
- 8) d
- 9) c
- 10) d