

SECTION – I PHYSICS

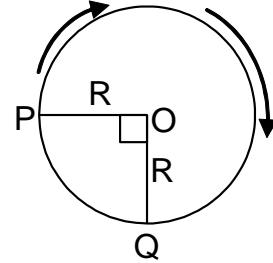
1. Land breeze blows during
 (A) winter (B) day
 (C) night (D) summer
1. C
 Sol. Land breeze blows during night.
2. A body starts from rest and moves with a constant acceleration of 2 m/s^2 for 5 second. Then the velocity after 5 second is.
 (A) $5/4 \text{ m/s}$ (B) 16 m/s
 (C) 10 m/s (D) none of these
2. C
 Sol. $v = u + at$
 $v = 0 + 2 \times 5 = 10 \text{ m/s}$.
3. 1° rise on the Fahrenheit scale is:
 (A) Same as 1° rise on celsius scale (B) Greater than 1° rise on celsius scale
 (C) Less than 1° rise on celsius scale (D) Is same as 1° rise on Kelvin scale
3. C
 Sol. 1°C change in temperature on celsius scale is equivalent to 1.8°F scale.
4. Two bodies are said to be in thermal equilibrium, if they have
 (A) Same amount of heat energy (B) Same temperatures
 (C) Same amount of total energy (D) None of these
4. B
 Sol. Two bodies are said to be in thermal equilibrium, if they have same temperatures.
5. A body covered a distance of 5 m along a semicircular path. The ratio of distance to displacement is
 (A) 11 : 7 (B) 12 : 5
 (C) 5 : 12 (D) 7 : 11
5. A
 Sol. $\frac{\text{distance}}{\text{displacement}} = \frac{\pi r}{2r} = \frac{11}{7}$
 Where r is radius.
6. A person travelling on a straight line moves with a uniform velocity v_1 for some time and with uniform velocity v_2 for the next equal time. The average velocity v is given by
 (A) $v = \frac{v_1 + v_2}{2}$ (B) $v = \sqrt{v_1 v_2}$
 (C) $\frac{2}{v} = \frac{1}{v_1} + \frac{1}{v_2}$ (D) $\frac{1}{v} = \frac{1}{v_1} + \frac{1}{v_2}$
6. A

Sol. $x_1 = v_1 \times t$; $x_2 = v_2 \times t$
 Average velocity = $\frac{\text{Total distance}}{\text{Total time}}$

$$= \frac{x_1 + x_2}{2t} = \left(\frac{v_1 + v_2}{2} \right)$$

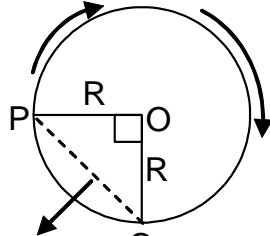
7. A body moves along the circumference of circular track of radius R. What is displacement of the body when it covers 3/4th of its circumference?

- (A) 3R
 (B) $\frac{3}{4}\pi R$
 (C) $\frac{3}{2}\pi R$
 (D) $\sqrt{2}R$



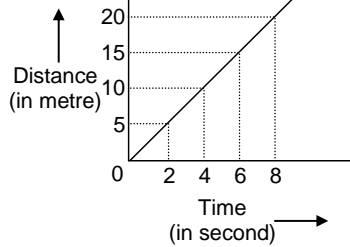
7. D

Sol. Displacement = $\sqrt{R^2 + R^2} = \sqrt{2}R$



Displacement Q

8. Find the speed of moving particle from given distance-time graph



- (A) 5 m/s
 (B) 10 m/s
 (C) 2.5 m/s
 (D) 4 m/s

8. C

Sol. From graph, speed = $\frac{5}{2} \text{ m/s} = 2.5 \text{ m/s}$

9. The numerical ratio of displacement to distance covered by an object is
 (A) always less than one
 (B) always equal to one
 (C) always more than one
 (D) equal to or less than one

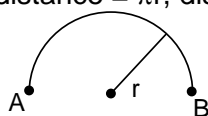
9. D

Sol. Displacement \leq distance. So, $\frac{\text{Displacement}}{\text{Distance}} \leq 1$.

10. A particle covers one half of a circle of radius r . Then the distance and displacement of the particle are:

- (A) $2\pi r, r$ (B) $\pi r, 2r$
 (C) $\pi r, r$ (D) $\frac{1}{2}\pi r, r$

10. B
 Sol. distance = πr , displacement = $2r$



11. A student goes from his house to his school with speed V_1 finding the school closed, return back to his house with speed V_2 . Then average speed of the student is,

- (A) $\frac{V_1 + V_2}{2}$ (B) $\sqrt{V_1 V_2}$
 (C) $\frac{2V_1 V_2}{V_1 + V_2}$ (D) $V_1 \cdot V_2$

11. C
 Sol. average speed = $\frac{\text{Total distance}}{\text{Total time}}$

$$\Rightarrow \frac{2x}{\frac{x}{V_1} + \frac{x}{V_2}} \Rightarrow \frac{2V_1 V_2}{V_1 + V_2}$$

12. _____ is used to measure distance.
 (A) Odometer (B) Lactometer
 (C) Barometer (D) All of these

12. A
 Sol. Odometer is used to measure distance.

13. Which of the following relations is correct?
 (A) Speed = Distance \times Time (B) Speed = Distance \div Time
 (C) Speed = Time \div Distance (D) Speed = $1/(\text{Distance} \times \text{Time})$

13. B
 Sol. Speed = Distance \div Time.

14. S.I. Unit of time is
 (A) Second (B) Hour
 (C) Day (D) Minute

14. A
 Sol. S.I. Unit of time is second.

15. Which one of the following equations is incorrectly written?

(A) $v = u + at$

(B) $s = u + \frac{1}{2}at^2$

(C) $v^2 = u^2 + 2as$

(D) $ut = s - \frac{1}{2}at^2$

15. B

Sol. $s = ut + \frac{1}{2}at^2$

SECTION – II CHEMISTRY

1. Diffusion is
 (A) fastest in gases (B) slowest in solids
 (C) A and B both (D) equal in gases and solids

1. C

2. Solid to liquid change is called
 (A) solidification (B) melting
 (C) boiling (D) vapourization

2. B

3. Solids that do not dissolve in water are said to be ____
 (A) miscible (B) immiscible
 (C) insoluble (D) soluble

3. C

4. Factors affecting evaporation are
 (A) temperature (B) surface area
 (C) humidity (D) all of them

4. D

5. A substance has neither a fixed shape nor a fixed volume. It is a
 (A) solid (B) liquid
 (C) gas (D) none of these

5. C

6. The change of state directly from solid to gas without charging into liquid state is called
 (A) evaporation (B) boiling
 (C) sublimation (D) liquification

6. C

7. Washing soda is
 (A) Hydrated sodium carbonate (B) Anhydrous sodium carbonate
 (C) Hydrated magnesium sulphate (D) Anhydrous magnesium sulphate

7. B

8. A beautiful and expensive golden coloured wild silk is called
 (A) merino (B) muga
 (C) both A & B (D) None of these

8. B

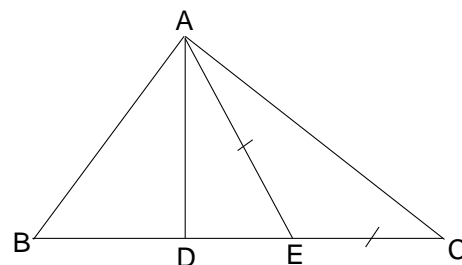
9. Which acid is responsible for the 'fizz' in soft drink?
 (A) Carbonic acid (B) Acetic acid
 (C) Citric acid (D) Oxalic acid
9. A
10. Two drops of dilute sulphuric acid were added to 1 gram of copper sulphate powder and then small amount of hot water was added to dissolve it (step-i). On cooling, beautiful blue coloured crystal got separated (step-ii). step i and step ii are:
 (A) Physical and chemical changes respectively
 (C) Chemical and physical changes respectively
 (C) Both physical change
 (D) Both chemical change
10. C
11. Which of the following sentences is/ are Incorrect?
 (A) Photosynthesis is a chemical change.
 (B) Digestion of food is a chemical change.
 (C) Formation of manure from leaves is a chemical change.
 (D) Iron and rust are the same substances.
11. D
12. Which of the following sentences is/are Incorrect for physical & chemical changes?
 (A) A change in which only the physical properties of any substances get changed and no new substances is formed.
 (B) A change in which the composition and chemical properties of the substances get changes.
 (C) Microbes produces enzymes which break down complex organic compounds into simpler substance.
 (D) None of the above.
12. D
13. An element X on exposure to moist air turns reddish-brown and a new compound Y is formed. The substances X and Y are
 (A) X = Fe, Y = $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$ (B) X = Ag, Y = Ag_2S
 (C) X = Cu, Y = CuO (D) X = Al, Y = Al_2O_3
13. A
14. When ice is heated, it changes to water and water on further heating gets converted to steam. What happens when steam is condensed?
 (A) A new substance is formed
 (B) No new substance is formed
 (C) Gaseous phase changes to liquid phase
 (D) Both (B) and (C) are correct
14. D
15. A change is a chemical change when it is accompanied by
 (A) energy change (B) formation of new substances
 (C) change in chemical properties (D) all of the above
15. D

SECTION – III MATHEMATICS

1. If AB is the greatest side of a $\triangle ABC$ then $\angle C$ is
 (A) Less than 60° (B) greater than 60°
 (C) equal to 60° (D) None of these
1. B
2. In a triangle PQR, OQ and OR are the bisector of $\angle PQR$ and $\angle PRQ$ respectively such the $5\angle QOR = 7\angle QPR$ then $\angle QPR$ is
 (A) 100° (B) 50°
 (C) 70° (D) 120°

2. A

3. In $\triangle ABC$, $AD \perp BC$, and AE is the bisector of $\angle BAC$, if $AE = EC$ and $\angle ABC = 66^\circ$, then $\angle DAE$ is
 (A) 11°
 (B) 15°
 (C) 25°
 (D) 14°



3. D

4. Angle between the north and east, and south and west are
 (A) vertical opposite angles (B) adjacent angles
 (C) form a linear pair (D) None of these

4. A

5. The whole number 0 is
 (A) positive integer (B) negative integer
 (C) either positive or negative (D) neither positive nor negative

5. D

6. Descending order of the fractions $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$ is

(A) $\frac{7}{10} > \frac{3}{7} > \frac{1}{5}$

(B) $\frac{1}{5} > \frac{7}{10} > \frac{3}{7}$

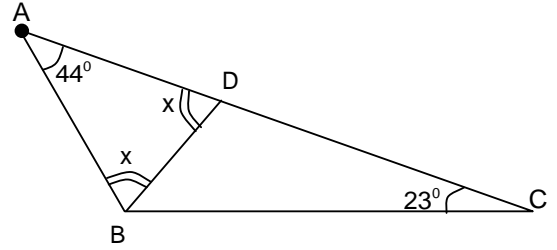
(C) $\frac{1}{5} > \frac{3}{7} > \frac{7}{10}$

(D) $\frac{7}{10} > \frac{1}{5} > \frac{3}{7}$

6. A

7. In the adjoining diagram, $AB = AD$. $\angle DCB = 23^\circ$.
The measure of $\angle DBC$ is

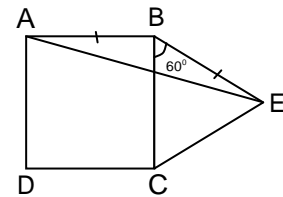
- (A) 55°
(B) 58°
(C) 56°
(D) 45°



7. D

8. ABCD is a square. BCE is an equilateral triangle. The measure of $\angle BEA$ is

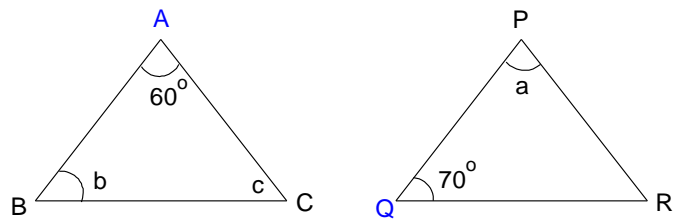
- (A) 15°
(B) 20°
(C) 18°
(D) 16°



8. A

9. In the given figures $\triangle ABC \cong \triangle PQR$.
Find the value of $(b + c - a)$.

- (A) 60°
(B) 70°
(C) 90°
(D) None of these



9. A

10. If the cost of a notebook is Rs $8\frac{3}{4}$, then number of notebooks can be purchased for

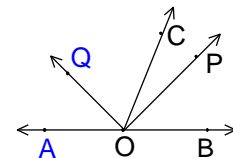
Rs $131\frac{1}{4}$ is

- (A) 15
(B) 10
(C) 14
(D) None

10. A

11. In the given figure OP bisects $\angle BOC$ and OQ bisects $\angle AOC$ then $\angle POQ$ is equal to

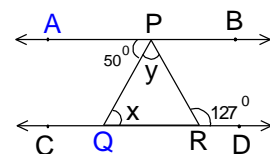
- (A) 90°
(B) 60°
(C) 65°
(D) None



11. A

12. In the given figure if $AB \parallel CD$, $\angle APQ = 50^\circ$ and $\angle PRD = 127^\circ$ then the values of x and y are

- (A) 20° and 25°
(B) 50° and 77°
(C) 60° and 30°
(D) None

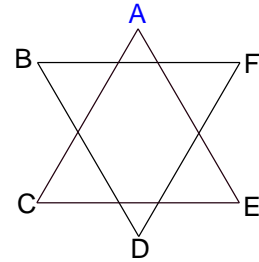


12. B

13. The supplement of an angle is one – third of itself then angle is
 (A) 130° (B) 135°
 (C) 140° (D) 150°

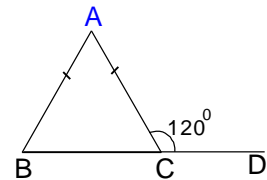
13. B

14. The given figure has been obtained by using two triangles then $\angle A + \angle B + \angle C + \angle D + \angle E + \angle F$ is
 (A) 210° (B) 200°
 (C) 360° (D) None



14. C

15. In the given figure $AB = AC$ and $\angle ACD = 120^\circ$, then $\angle A$ is
 (A) 60° (B) 50°
 (C) 40° (D) None



15. A

SECTION – IV BIOLOGY

1. Which features adapted well by polar bears to live in extremely cold climate?
(A) White body paws for swimming, gills for respiration
(B) Thin skin, large eyes, a white fur
(C) A long tail, strong claws, white large paws
(D) A white fur, fat below skin, keen sense of smell

1. D
Sol. A white fur, fat below skin, keen sense of smell

2. The light reaction of photosynthesis is:
(A) Grana (B) Stroma
(C) Stem (D) Roots

2. A
Sol. The light reaction of photosynthesis is grana.

3. What is another name for the windpipe?
(A) Lungs (B) Larynx
(C) Trachea (D) Oesophagus

3. C
Sol. Another name for the windpipe is trachea.

4. The process of breakdown of food in the cell with the release of energy is called:
(A) Respiration (B) Inhalation
(C) Exhalation (D) Breathing

4. A
Sol. The process of breakdown of food in the cell with the release of energy is called respiration.

5. Taking in air rich in oxygen into the body is called:
(A) Respiration (B) Inhalation
(C) Exhalation (D) Breathing

5. B
Sol. Taking in air rich in oxygen into the body is called inhalation.

6. During exhalation the size of the chest cavity _____.
(A) Decreases (B) Increases
(C) Remains the same (D) Get out of the lungs

6. A
Sol. During exhalation the size of the chest cavity decreases.

7. Name the organism which breathes through its skin.
(A) Cat (B) Human beings
(C) Dog (D) Earthworm

7. D
Sol. Earthworm breathes through its skin.

8. During heavy exercise, we get cramps in the legs due to the accumulation of:
(A) Carbon dioxide (B) Lactic acid
(C) Alcohol (D) Water

8. B
Sol. During heavy exercise, we get cramps in the legs due to the accumulation of lactic acid.

9. The coldest region on earth is the:
(A) Polar region (B) Tropical region
(C) Temperate region (D) Coastal region

9. A
Sol. The coldest region on earth is the polar region.

10. Which option best describes a tropical region?
(A) Hot and humid (B) Moderate temperature, heavy rainfall
(C) Cold and humid (D) Hot and dry

10. B
Sol. A tropical region is best described by moderate temperature, heavy rainfall.

11. A carnivore with stripes on its body moves very while catching its prey. It is likely to be found in:
(A) Polar regions (B) Deserts
(C) Oceans (D) Tropical rainforests

11. D
Sol. A carnivore with stripes on its body moves very while catching its prey. It is likely to be found in tropical rainforests.

12. At what time do you feel comparatively comfortable in a day during summer seasons?
(A) Early in the morning (B) In the afternoon
(C) In the evening (D) At mid night

12. A
Sol. During summer seasons we feel comparatively comfortable early in the morning.

13. The average weather pattern taken over a long time is called the _____.
(A) Climate of the place (B) Temperature of the place
(C) Humidity of the place (D) Rainfall of the place

13. A
Sol. The average weather pattern taken over a long time is called the climate of the place.

14. The department which prepares weather report is:
(A) Telecom department (B) Electrical department
(C) Meteorological department (D) Civil department

14. C
Sol. The department which prepares weather report is meteorological department.

15. The amount of humidity in the atmosphere is a measure of _____ in air.
(A) Barometer (B) Rain Gauge
(C) Thermometer (D) Maximum minimum thermometer

15. B

Sol. The amount of humidity in the atmosphere is a measure of rain gauge in air.