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KHOJ 2021

SAMPLE PAPER

ANSWER KEY WITH SOLUTION

Class 9

PART – I : MENTAL ABILITY

1. Which one figure is related to figure III in the same way as figure I is related to figure II?

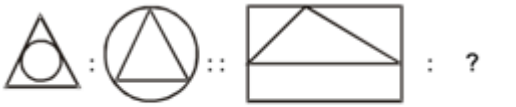
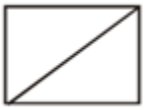


Fig : I Fig : II Fig : III Fig : IV

(a)  (b)  (c)  (d) 

Sol. (a) Reverse of figure (c)

2. Which one number can be placed at the sign of interrogation (?) in figure III so that it follows the operations of numbers in figure I and figures II?

Figure I Figure II Figure III

(a) 33 (b) 10 (c) 8 (d) 12

Sol. (b) $(14+8)-(12+6)=4,(3+7)-(5+4)=1,(15+9)-(11+3)=10$

3. On January 12, 1980, it was Saturday. The day of the week on January 12, 1979 was-

(a) Saturday (b) Friday (c) Sunday (d) Thursday

Sol. (b) The year 1979 being an ordinary year, it has 1 odd day.

So, the day on 12th January 1980 is one day beyond on the day on 12th January, 1979. But, January 12, 1980 being Saturday.

∴ January 12, 1979 was Friday.

4. If the word TRAIN is coded as WUDLQ, how the word BUS will be coded?

(a) EXU (b) DWU (c) EXV (d) VXE

Sol. (c)

$$T \xrightarrow{2} W, R \xrightarrow{2} U, A \xrightarrow{2} D, I \xrightarrow{2} L, N \xrightarrow{2} Q$$

$$\Rightarrow B \xrightarrow{2} E, U \xrightarrow{2} X, S \xrightarrow{2} V$$

5. If train is called bus, bus is called tractor, tractor is called car, car is called scooter, scooter is called bicycle and bicycle is called aeroplane then which is used to plough a field?

(a) Train (b) Bus (c) Car (d) Tractor

Sol. (c) Tractor is used to plough a field but here is code tractor is called car.

Directions (Qs. 6 and 7) Study the information given below and answer the questions that follow:

One a playground, Dinesh, Kunal, Nitin, Atul and Prashant are standing as described below facing the North.

(i) Kunal is 40 metre to the right of Atul

(ii) Dinesh is 60 metre to the South of Kunal

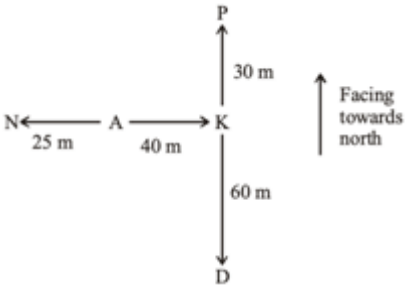
(iii) Nitin is 25 metre to the West of Atul

(iv) Prashant is 90 metre to the North of Dinesh

6. Who is to the North-East of the person who is to the left of Kunal?

(a) Dinesh (b) Nitin (c) Atul (d) Prashant

Sol. (d) Clearly Arrangement of boys is as shown:

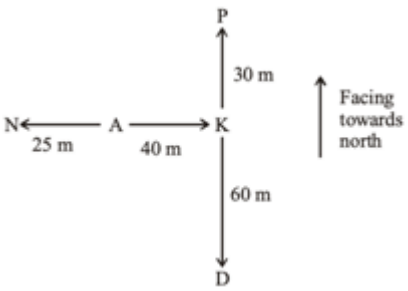


Clearly, Atul is to the left of Kinal and Prashant is to the north-east of Atul.

7. If a boy walks from Nitin, meets Atul followed by Kunal, Dinesh and then Prashant, how many metres has he walked if he has travelled the straight distance all through?

(a) 155m (b) 185m (c) 215m (d) 245m

Sol. (c) Clearly Arrangement of boys is as shown:



Required distance = NA + AK + KD + DP = (25 + 40 + 60 + 90)m = 215m

8. If the word CLERK is coded as EOIWQ, how would you code the word TABLE?

(a) VCDNG (b) VCDGIN (c) VDFQK (d) VDFOK

Sol. (c)

$$C \xrightarrow{1} E, L \xrightarrow{2} O, E \xrightarrow{3} I, R \xrightarrow{4} W, K \xrightarrow{5} Q$$

$$\Rightarrow \quad T \xrightarrow{1} V, A \xrightarrow{2} D, B \xrightarrow{3} F, I \xrightarrow{4} Q, E \xrightarrow{5} K$$

9. Find the missing number :

1	4	?
64	9	16
49	36	25

(a) 5 (b) 40 (c) 41 (d) 81

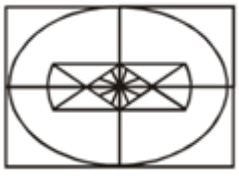
Sol. (d) Zn cell all numbers are perfect squares.

$1^2 = 1, 2^2 = 4, 3^2 = 9, 4^2 = 16, 5^2 = 25, 6^2 = 36, 7^2 = 49, 8^2 = 64$ and $9^2 = 81$.

10. In the following question, complete the missing portion of the given pattern by selecting from the given alternatives (1), (2), (3) and (4).

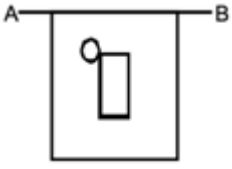
(a)  (b)  (c)  (d) 

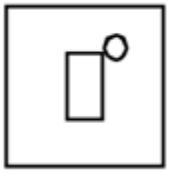
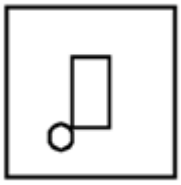
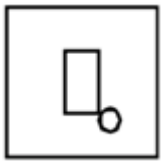
Sol. (d)



11. Which of the answer figure is exactly the mirror image of the given figure when the mirror is held at AB?

Given figure



(a)  (b)  (c)  (d) 

Sol. (c)

Although 'Mirror' is kept at AB, but actually will gave 'water' image.

12. If 'ROSE' is coded as 6821, 'CHAIR' is coded as 73456 and 'PREACH' is coded as 961473, then what will be the code for 'SEARCH'?

(a) 246173 (b) 214673 (c) 214763 (d) 216473

Sol. (b)

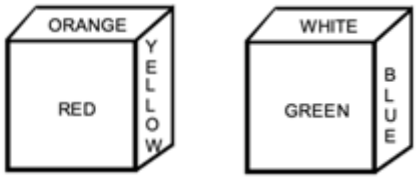
ROSE	CHAIR	PREACH	SEARCH
6821	73456	961473	214673

13. In a certain code 'TRAIN' is written as GIZRM, how will FIGURE be written in that code?

(a) LSTGKV (b) VIYXTC (c) URIMV (d) VKGISV

Sol. (c) T + G = 27. Total of all pairs is 27.

14. Six sides of a cuboid block are coloured Green, Blue, Red, Yellow, Orange and White in the following manner:



When Blue is on the top, which colour will be at the bottom?

(a) Orange (b) Red (c) White (d) Yellow

Sol. (d) In a cuboid opposite sides have same dimensions.

PART – II : MATHEMATICS

1. If $a^p = b^q = c^r = abc$, then pqr = _____.

(a) $p^2q + q^2r$ V (b) $pq + qr + pr$ (c) $(pq + qr + rp)$ (d) $pq(qr + rp)$

Sol. (b)

(i) Assume each of the power as k then find pqr.
(ii) Using, $a^p = b^q = c^r = abc$, find the values of a, b and c in terms of (abc).
(iii) Multiply the obtained a, b and c values and compare the exponents.

2. If $\gamma = 3^{1/3} + 3$, then $\gamma^3 - 9\gamma^2 + 27\gamma$ = _____.

(a) 27 (b) - 27 (c) - 30 (d) 30

Sol. (d)

Given, $\gamma = 3^{1/3} + 3$

$\Rightarrow \gamma - 3 = 3^{1/3}$

Taking the cubes on both sides

$\Rightarrow (\gamma - 3)^3 = (3^{1/3})^3$

$\Rightarrow \gamma^3 - 9\gamma^2 + 27\gamma - 27 = 3$

$\Rightarrow \gamma^3 - 9\gamma^2 + 27\gamma = 30.$

3. If $\sqrt{4x^4 + 12x^3 + 25x^2 + 24x + 16} = ax^2 + bx + c$, then which of the following is true?

(a) $2b = a - c$ (b) 2a = b + c (c) 2b = a + c (d) 2b = c − a

Sol. (c)

(i) Find the square root and equate it to $ax^2 + bx + c$.
(ii) Square on both sides and obtain the value of a, b and c.
(iii) Verify the relation between a, b and c.

4. An examination consists of 160 questions. One mark is given for every correct option. If one-fourth mark is deducted for every wrong option and half mark is deducted for every question left, then one person scores 79. And if half mark is deducted for every wrong option and one-fourth mark is deducted for every left question, the person scores 76, then find the number of questions he attempted correctly.

(a) 80 (b) 100 (c) 120 (d) 140

Sol. (b)

Frame equations according to the data.

Frame the equations according to the data and then solve.

5. The mean of a set of 20 observations is 8 and another set of 30 observations is 10. The mean of combined set is _____.

(a) 9.2 (b) 10.8 (c) 11.2 (d) 9.8

Sol. (a)

The mean of set of 20 observations is 8.
Sum of the observations = $20 \times 8 = 160$
The mean of another set of 30 observations is 10
Sum of the observations = $30 \times 10 = 300$
Total number of observations = $20 + 30 = 50$
Total sum of observations = 460
Combined mean = $= \frac{460}{50} = 9.2$.

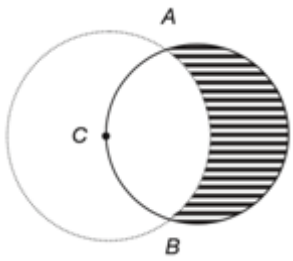
6. x = ABCDEFGHIJ…Z.. Find the probability of a letter selected from those in odd positions of x being a vowel.

(a) $\frac{5}{13}$ (b) $\frac{6}{13}$ (c) $\frac{7}{13}$ (d) $\frac{8}{13}$

Sol. (a)

The vowels are A, E, I, O and U. In x, the positions of A, E, I, O and U are 1, 5, 9, 15 and 21 respectively. A total of 13 odd positions are present in x, of which 5 are occupied by vowels.
$\therefore$ Required probability $= \frac{5}{13}$.

7. In the given figure, $\overline{AB}$ is the diameter of the circle with area π sq. units. Another circle is drawn with C as centre, which is on the given circle and passing through A and B. Find the area of the shaded region.

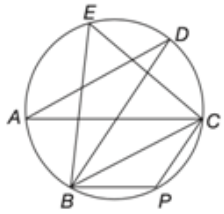


(a) $\frac{\pi}{3}$ sq. units (b) $\frac{2\pi}{3}$ sq. units (c) 1 sq. units (d) 1.2 sq. units

Sol. (c)

(i) Find the diameter of the smaller circle.
(ii) Join AB, AC and BC.
(iii) $\angle ACB = 90°$ and $AC = BC$.

8. In the given figure (not to scale), AC is the diameter of the circle and $\angle ADB = 20^0$, then find $\angle BPC$.



(a) 50^0 (b) 70^0 (c) 90^0 (d) 110^0

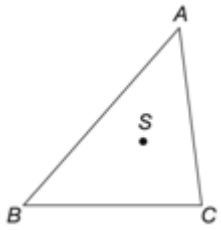
Sol. (d)

(i) Join DC and use properties of cyclic quadrilateral

(ii) Use $\angle ADC = 90°$ and find $\angle BDC$.

(iii) $BDCP$ is cyclic.

9. In ΔABC, AC = BC, S is the circum-centre and $\angle ASB = 150^0$, Find $\angle CAB$.



(a) $55\frac{1}{2}^0$ (b) $52\frac{1}{2}^0$ (c) $62\frac{1}{2}^0$ (d) $35\frac{1}{2}^0$

Sol. (b)

Since, SA = SB = SC, S is the circum-centre $\angle ASB = 150^0$ (given) $\angle ACB = 75^0$.

Since, AC = BC, $\angle CAB = \angle CBA = \left(\frac{180^0 - 75^0}{2}\right) = 52\frac{1}{2}^0$

10. In a triangle, the sum of any two sides exceed the third side by 6 cm. Find its area (in sq. cm).

(a) $12\sqrt{3}$ (b) $9\sqrt{3}$ (c) $15\sqrt{3}$ (d) $18\sqrt{3}$

Sol. (b)

Let the sides of the triangle be a cm b cm and c cm

$a + b - c = a + c - b = b + c - a = 6$

$\Rightarrow a + b - c + a + c - b + b + c - a = 18$

$a + b + = 18$

Area of the triangle = $\sqrt{\left(\frac{a+b+c}{2}\right)\left(\frac{a+b+c}{2}-a\right)\left(\frac{a+b+c}{2}-b\right)\left(\frac{a+b+c}{2}-c\right)}$

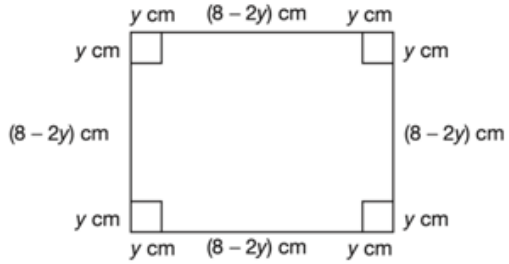
$= \sqrt{\left(\frac{a+b+c}{2}\right)\left(\frac{b+c+a}{2}\right)\left(\frac{a+c+b}{2}\right)\left(\frac{a+b-c}{2}\right)}$

$= \frac{1}{4}\sqrt{(18)(6)(6)(6)} = 9\sqrt{3}cm^2$

11. From each corner of a square sheet of side 8 cm, a square of side y cm is cut. The remaining sheet is folded into a cuboid. The minimum possible volume of the cuboid formed is M cubic cm. If y is an integer, then find M.

(a) 32 (b) 18 (c) 36 (d) 12

Sol. (d)



Length = Breadth = (8 – 2y) cm and height = y cm.

Its volume = (8 – 2y) (8 – 2y)y

= $(8 – 2y)^2$ y cubic cm.

8 – 2y > 0, i.e., y < 4 and y is an integer.

∴ y = 1 or 2 or 3.

Among these values of y, volume is minimum when y = 3. When y = 3, volume = 12 cm^3.

∴ M = 12

12. The lengths of the diagonals of a rhombus are 9 cm and 12 cm. Find the distance between any two parallel sides of the rhombus.

(a) 7.2 cm (b) 8 cm (c) 7.5 cm (d) 6.9 cm

Sol. (a)

In Δ BOC, $BD^2 + OC^2 = BC^2$

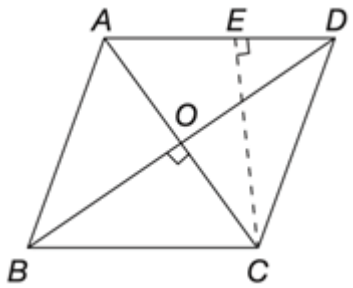
$\Rightarrow 6^2 + (4.5)^2 = BC^2$ BC = 7.5 cm.

Let CE be the required distance.

Area of rhombus = $\frac{12\times 9}{2}$ = 54 sq. cm

$\Rightarrow \frac{CE}{2}$ (AB + CD) = 54 (Area of parallelogram)

$\Rightarrow$ CE = $\frac{108}{15}$ = 7.2 cm.



13. The equation of one of the diagonals of a square is 3x – 8y + 4 = 0. Find the equation of the other diagonal passing through the vertex (4, –6).

(a) 8x + 3y – 15 = 0 (b) 3x – 8y – 11 = 0

(c) 8x + 3y – 14 = 0 (d) 8x + 3y + 15 = 0

Sol. (c)

(i) In a square, the diagonals are perpendicular to each other.

(ii) Find the slope of the second diagonal and use the slope-point form.

14. P can complete a job in 60 days while Q can complete it in 90 days. With the help of R, they completed it in 20 days. If they earned a total of `3600, then find R's share. (in `)

(a) 1360 (b) 1600 (c) 1480 (d) 1540

Sol. (b)

Parts of the job completed by P and Q each day are $\frac{1}{60}$ and $\frac{1}{90}$ respectively.

Parts of the job completed by P and Q are $20\left(\frac{1}{90}\right)=\frac{1}{3}$ and $20\left(\frac{1}{90}\right)=\frac{2}{9}$ respectively.

Part of the job completed by $R = 1 - \left(\frac{1}{3} + \frac{2}{9}\right) = \frac{4}{9}$

Ratio of the parts of the job completed by P, Q and $R = \frac{1}{3} : \frac{2}{9} : \frac{4}{9} = 3 : 2 : 4$

$\therefore$ R's share $= \frac{4}{3+2+4} \times$ Rs.3600

= ` 1600.

PART – III : PHYSICS/CHEMISTRY

1. Which of the following has the least value of coefficient of friction?

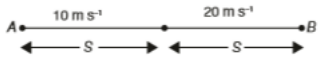
(a) Rolling friction (b) Limiting friction (c) Static friction (d) Sliding friction

Sol. Rolling friction Hence, the correct option is (a).

2. A bus travels the first-half of a distance with a speed of 10 m s^{-1} and the next half of the distance with a speed of 20 m s^{-1}. What is the average speed of the bus?

(a) 13.3 km h^{-1} (b) 13.3 m s^{-1} (c) 0 (d) 13.3 m s^{-1}

Sol . (b)



t1 = S / 10 ; t2 = S= / 20

Average speed = Totaldistance / Totaltime

= 2s / 3s / 20 ,40 / 3 = 13.3 m s^{-1} Hence, the correct option is (b).

3. A body starts moving with an initial velocity of 4 m s–1 and an acceleration of x m s–2. If the distance travelled by it is 30 m in 2nd s, then the value of x is _____.

(a) 4 (b) 30 (c) 10.3 (d) 17.33

Sol. (d)

Sn = $u + \frac{a}{2}(2n - 1)$

30 =4+a / 2 (2*2-1)=(26*2) / 3= 17.33 m s^{-2} Hence, the correct option is (d).

4. What is the work done by a motor to lift 500 kg of a block to 10 m height?

(a) 9800 J (b) 49000 J (c) 4900 J (d) 98000 J

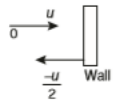
Sol. (b)

m = 500 kg; h = 10 m; g = 9.8 m s–2 W = mgh = 500 × 9.8 × 10 = 98 × 500 = 49000 J Hence, the correct option is (b).

5. A ball of mass 0.5 kg moving with a velocity 5 m s–1 hits a wall normally and rebounds with half of the initial velocity. If the ball is in contact with the wall for 0.5 s, the force exerted by the wall on it is _____. (a) 3.75 mN (b) 3.75 × 10–2 N (c) 7.5 N (d) 0.375 N

Sol . m1 = 0.5 kg; u = 5 m s^{-1}

Wall



V=-u / 2 = – 2.5 m s^{-1}

F = ?

F = $\frac{m_1(v-u)}{t}$ = 0.5 × (–7.5) × 2 = 7.5 N Hence, the correct option is (c).

6. Which among the following is a wrong statement?

(a) Action and reaction act on the same object.

(b) Action and reaction are equal in magnitude.

(c) Action and reaction are opposite in direction.

(d) None of the above

Sol. (a) Action and reaction forces act on two different objects. Hence, the correct option is (a).

7. A person is standing in an elevator. In which of the following situations, does he find that his weight decreases?

(a) When the elevator moves upwards with constant acceleration.

(b) When the elevator moves downwards with constant acceleration.

(c) When the elevator moves upwards with uniform velocity.

(d) When the elevator moves downwards with uniform velocity.

Sol. (b)

When the elevator moves downward with constant acceleration, then the weight of the person is W = m(g – a) so he feels weightlessness. Hence, the correct option is (b).

8. If velocity and mass of a bullet are 20 m s–1 and 10 g, respectively, then the momentum of the gun after firing a bullet is _____.

(a) 200 kg m s–1 (b) 250 kg m s–1 (c) 0.2 kg m s–1 (d) 350 kg m s–1

Sol. (c)

m(mass of bullet) = 10 g = 10 × 10–3 kg Velocity of a bullet = 20 m s–1 P = ? P = 10–2 × 20 = 0.2 kg m s–1. Hence, the correct option is (c).

9. Which of the following is an example of stable equilibrium?

(a) A ball rolling on a smooth floor.

(b) A lorry moving along a curved path within safe limit.

(c) A rubber ball floating in a water.

(d) A circus artist riding bicycle on a single tyre.

Sol. (b)

A lorry moving along a curved path with a speed less than safe limit. Hence, the correct option is (b).

10. The mass and radius of a planet are eight times and two times the mass and radius of the Earth, respectively. Then, the acceleration due to gravity of the planet is _____ times the acceleration due to gravity on the Earth.

(Take g = 10 m s–2)

(a) eight (b) four (c) two (d) three

Sol . (c)

Given: Mp = 8Me; Rp = 2Re , $\Rightarrow g_e = GMe / Re$ $\Rightarrow g_p = G8Me / 4R_e^2$

$g_p = 2g_e$ Hence, the correct option is (c).

11. What is the acceleration due to gravity at a height equal to R / 2 from the Earth's surface?

(a) 3 / 4 g_0 (b) 4 / 3 g_0 (c) 9 / 4 g_0 (d) 4 / 9 g_0

Sol. (d) $g_h = \frac{g}{(1+\frac{h}{R})^2}$ given h=R / 2

$4g_0 / 9$

Hence, the correct option is (d).

12. Which of the following is used in SONAR?

(a) Ultrasonic sound (b) Infrasound

(c) Supersonic sound (d) Infra-red reactivation

Sol. (a) SONAR uses ultra sound. Hence, the correct option is (a).

13. Velocity of sound in a gas is:-

(a) directly proportionate to its molecular weight.

(b) inversely proportionate to its molecular weight.

(c) directly proportionate to square root of its molecular weight.

(d) inversely proportionate to square root of its molecular weight.

Sol. (d)

Velocity of sound in a gas is inversely proportional to the square root of its molecular weight. Hence, the correct option is (d).

14. Sound travels through rocks in the form of

(a) non-elastic waves.
(b) only transverse and elastic waves.
(c) only longitudinal and elastic waves.
(d) both longitudinal, transverse and elastic waves

Sol. (d)

Sound is transmitted through solids and on surface of liquids in the form of transverse and longitudinal waves. Hence, the correct option is (d).

15. True statement about compound is :

(a) A pure compound is heterogeneous in nature
(b) Constituents of a chemical compound can be separated mechanically
(c) Formation of compound involve energy changes
(d) A compound dos not has definite m.p. and b.p

Sol. (c) Formation of compound involve energy change.(Released or absorbed)

16. Metals and hydrogen are always:

(a) Electropositive
(b) Electronegative
(c) Both (a) and (b)
(d) None of the above

Sol. Metals and hydrogen are always electropositive because : Hydrogen-it has 1 outermost electron and its valency is 1 as it can lose it. So it is placed in the first group. Hence, it is electropositive Metals it has tendency to lose their electron and form positive charge ion. Hence metals are electropositive

17. The correct order of evaporation of

Water, Alcohol, Petrol and Kerosene is

(a) Water > Alcohol > Kerosene > Petrol
(b) Alcohol > Petrol > Water > Kerosene
(c) Petrol > Alcohol > Water > Kerosene
(d) Petrol > Alcohol > Kerosene > Water

Sol. (d) The correct order of boiling point

Petrol <Alcohol <Kerosene <Water

That's why correct order of evaporation

Petrol > Alcohol >Kerosene > Water

18. In rainy day evaporation process takes place.

(a) Fastly (b) Moderately (c) No change (d) Very slowly

Sol. (d)

On increasing wetness evaporation takes place very slowly because evaporation rate varies inversely with humidity

19. The amount of heat supplied to convert 100gm of ice at 0ºC to water at 0ºC is

(a) 3.34×10^5 Joules (b) 2.25×10^5 Joules

(c) 22.5×10^6 Joules (d) 33.4×10^3 Joules

Sol. (d)

$$Q = mL = \left(\frac{100}{1}gm\right)(80\times4.2J/gm) = 33.6\times10^3 J \text{ (1 cal=4.2J)}$$

20. Choose the correct relation between Celsius and Kelvin :

(a) $^oC = K - 273$ (b) $K = 273 - ^oC$

(c) $K = ^oC + 273$ (d) Both A and C are correct

Sol. (d) $K = ^oC + 273$

$^oC = K - 273$

21. Mercury is used as a thermometric liquid because it has :

(a) Lowest latent heat of fusion (b) Lowest specific heat among all the liquids

(c) High specific heat among all the liquid (d) Can't say

Sol. (b)

Mercury is the only one in liquid state at room temperature. It's used in thermometers because it has high coefficient of expansion. Hence, the slightest change in temperature is notable when it's used in a thermometer.

22. Choose the incorrect statement :

(a) Plasma state consists of highly energetic electrons and ions

(b) Bose Einstein condensate is possible at very high temperature and low pressure

(c) Diffusion process depends upon temperature as well as nature of the liquid.

(d) On adding impurities melting point of solid decreases.

Sol. (b) Boson is possible at very low temperature

23. At higher altitudes

(a) Boiling point of a liquid increases (b) Boiling point of a liquid decreases

(c) No change in boiling point (d) Melting point of solid increases

Sol. (B)

When that occurs, bubbles begin to form and the water boils. When atmospheric pressure is lower, such as at a higher altitude, it takes less energy to bring water to the boiling point. Less energy means less heat, which means water will boil at a lower temperature at a higher altitude.

24. Arrange the following in decreasing order of force of attraction between particles; iodine (violet solid) bromine (brown liquid) Chlorine (greenish, yellow gas)

(a) Cl, Br, I (b) I, Br, Cl

(c) Br, I, Cl

(d) All the three have equal intermolecular force of attraction

Sol. (b) Force of attraction solid > liquid > gas

Hence- I>Br> Cl

25. The law of multiple proportions is illustrated by the two compounds :

(a) Sodium chloride and sodium bromide (b) Ordinary water heavy water

(c) Caustic soda and caustic potash (d) Sulphur dioxide and sulphur trioxide

Sol. (d) Low of multiple proportion is illustrated by SO_2 and SO_3 in which different weight of oxygen (i.e. 32 : 48) combining with same weight of sulphur (32g) bear a simple whole number ratio (2 : 3) with one another.

26. The ratio by mass of C and O in CO_2 is

(a) 1 : 2 (b) 3 : 14 (c) 3 : 8 (d) 3 : 1

Sol. (c) Ratio by mass of C and O in CO_2 = 12 . 32 i.e. 3 : 8

27. Law of multiple proportions will remain valid when nitrogen combines with oxygen to from N_2O_3 and

(a) N_2O (b) N_2O_3 (c) N_2O_4 (d) All of these

Sol. (d)

In given example $N_2O, N_2O_3, N_2O_4, N_2O_3$

Wt. of O combining will 14 parts by weight of nitrogen } = $\begin{matrix} 8 & 24 & 32 & 40 \\ \text{or } 1 & 3 & 4 & 5 \end{matrix}$

Thus different weight of O which combine with a fixed weight of N(14g) in all these oxides are in simple number ratio and hence supports the law

28. 0.202 g of carbon compound, on combustion, gave 0.361 g of carbon dioxide and 0.47 g of water. Calculate the percentage composition of carbon

(a) 48.76% (b) 8.07% (c) 43.17% (d) 42.17%

Sol. (a)

Solution : Given,

Mass of carbon compound = 0.202 g

Mass of carbon dioxide = 0.361 g

Mass of water = 0.47 g

Molar mass of carbon = 12 g / mole

Molar mass of Carbon dioxide = 44 g / mole

First we have to calculate the moles of CO2

Moles of CO2=0.361 / 44

The moles of CO2 = 0.008205 moles there are 1 carbon atom and 2 oxygen atoms in 1 CO2 molecule

So, the moles of is C equal to the moles of CO2

The moles of C = 0.008205 moles

Now we have to calculate the mass of Carbon.

Mass of Carbon = Moles of Carbon × Molar mass of Carbon

Mass of Carbon = 0.008205 moles × 12 g / mole = 0.09846 g

Now we have to calculate the % composition of Carbon.

% composition of Carbon = (0.09846 / 0.202)*100

Therefore, the % composition of Carbon is 48.743%

PART – IV : BIOLOGY

1. Within chloroplasts light is captured by

(a) thylakoids within grana (b) grana within cisternae

(c) cisternae within grana (d) grana within thylakoids

Sol. (a)

2.. The bacterial cell wall is composed of

(a) a phospholipid matrix (B) a lipoprotein

(c) chitin (d) a polymer of sugars

Sol. (b)

3. The Golgi apparatus is involved in

(a) transporting protein that are to be released from the cell

(b) packaging proteins into vesicles

(c) altering or modifying proteins

(d) all of the above

Sol. (d)

4. simple tissues are

(a) parenchyma xylem and phloem (b) parenchyma xylem and sclerenchyma

(c) parenchyma collenchyma and sclerenchyma (d) parenchyma xylem and collenchymas

Sol. (c)

5. living cells provides tensile and mechanical strength

(a) sclerenchyma (b) collenchyma (c) sclereids (d) phloem

Sol. (b)

6. collenchyma differs from sclerenchyma in

(a) retaining cytoplan at maturity (b) having thick walls

(c) having a wild lumen (d) being meristematic

Sol. (a)

7. why are house flies not considered to be biological vectors

(a) they do not spread disease (b) they are pathogens

(c) they do not transmit the disease directly (d) they transmit the disease directly

Sol. (c)

8.. Select the incorrect statement regarding AIDS

(a) it is an immunodeficiency disease

(b) HIV has RNA as genetic material

(c) AIDS can be transmitted to an infant from the infected mother through her milk

(d) The time lag between the infection and appearance of AIDS symptoms may vary from week to months

Sol. (b)

9. Materials of biological origin which are commonly used to maintain and improve soil fertility are

(a) green manure (b) biofertilizer

(c) bioinsecticides (d) both a and b

Sol. (d)

10. Pullorum disease of chickens is caused by

(a) aspergillus fungus (b) paramyxovirus

(c) salmonella bacterium (d) candida fungus

Sol. (c)

11. Renderpeste is a

(a) bacterial disease (b) viral disease

(c) protozoan disease (d) helminthetic disease

Sol. (b)

12. Find out incorrect sentence

(a) protista includes unicellular eukaryotic organisms

(b) Whittaker considered cell structure mode and source of nutrition for classified the organism in five kingdoms

(c) both Monera and protista maybe autotrophic and heterotrophic

(d) monerans have wall defined nucleus

Sol. (d)

13. Which one is a true fish

(a) jellyfish (b) starfish (c) dogfish (d) silverfish

Sol. (c)

14. Pteridophyta do not have

(a) root (b) stem (c) flowers (d) leaves

Sol. (c)