A

Quarterly Common Examination Sep – 2023
Science – Answer Key

IX Standard

<table>
<tr><th>Question No.</th><th>Answer Key</th><th>Marks</th></tr>
<tr><td>1</td><td>(b) 10 quintals</td><td>1</td></tr>
<tr><td>2</td><td>(d) acceleration</td><td>1</td></tr>
<tr><td>3</td><td>(a) density</td><td>1</td></tr>
<tr><td>4</td><td>(b) Juice</td><td>1</td></tr>
<tr><td>5</td><td>(c) Homogeneous Mixture</td><td>1</td></tr>
<tr><td>6</td><td>(b) an isotope</td><td>1</td></tr>
<tr><td>7</td><td>(c) Laws of octaves</td><td>1</td></tr>
<tr><td>8</td><td>(b) Coelentera e</td><td>1</td></tr>
<tr><td>9</td><td>(c) Crocodile</td><td>1</td></tr>
<tr><td>10</td><td>(b) Sclerenchyma</td><td>1</td></tr>
<tr><td>11</td><td>(c) thigmotropism</td><td>1</td></tr>
<tr><td>12</td><td>(a) photosynthesis</td><td>1</td></tr>
<tr><td>13</td><td>• Pitch of the screw gauge is the distance between wo successive screw threads. It is measured by the ratio of dist nce travelled on the pitch scale to the number of rotations of the he d sc l .</td><td>2</td></tr>
<tr><td>14</td><td>
<table>
<tr><th>S.No</th><th>Distance</th><th>Displacement</th></tr>
<tr><td></td><td>The actual length of the path travelled by a moving body irrespective of the direction</td><td>The change in position of a moving body in a particular direction</td></tr>
<tr><td></td><td>Scalar quantity</td><td>Vector quantity</td></tr>
</table>
</td><td>1

1</td></tr>
<tr><td>15</td><td>a) less
b) atmospheric pressure</td><td>1
1</td></tr>
<tr><td>16</td><td>• When a magnet is br ught near he mixture containing saw dust naphthalene and ron filings, it attracts the iron filings. Thus iron filings are separated
• The mixtu of naphthalene and saw dust are put in a china dish and cove ed wi a perforated asbestos sheet. An inverted funn l is placed over the bestos sheet.</td><td>1

1</td></tr>
<tr><td>17</td><td>K – 2, L 8, M – 18
28 electrons – Nickel</td><td>1
1</td></tr>
<tr><td>18</td><td>gills, lungs, skin and pharyngeal region.</td><td>2</td></tr>
<tr><td>19</td><td>a. Sclereids Sclerenchyma
b. Chloroplast Chlorenchyma
c. Companion cell Phloem
d. Tracheids Xylem</td><td>4 × 1/2 = 2</td></tr>
<tr><td>20</td><td>• During meiosis, a germ cell or gamete divides to make four new sex cells. As a result of fertilization two gamates join together to form an egg or zygote. Therefore only if gametes are produced, fertilization can take place.</td><td>2</td></tr>
</table>

21

- *Blood platelets play a major role in the clotting of blood whenever there is a wound/injury. If blood platelets are removed from the blood, clotting of blood will not occur. In case of any injury/surgery etc., blood will be lost from the body in excess and may even prove to be fatal.*

2

22

Density of Mercury = 13600 kg m^{-3}

Density of water at 4°C= 1000 kg m^{-3}

$$\text{Relative density} = \frac{\text{Density of mercury}}{\text{Density of water at } 4^{\circ}\text{C}}$$

$$= \frac{13600\ \text{kg m}^{-3}}{1000\ \text{kg m}^{-3}}$$

$$\text{Relative Density} = 13.6$$

1

1

23

Mass	Weight
1. It is a fundamental quantity.	It is a derived quantity.
2. It has magnitude alone – scalar quantity.	It has magnitude and direction – vector quantity.
3. It is the amount of matter contained in a body.	It is the normal force exerted by the surface on the object against gravitational pull.
4. Remains the same everywhere.	Var es from place to place.
5. It is measured using physica balance.	It is measured using spring balance.
6. Its unit is kilogram	Its unit is newton

Any 4
(4 × 1 = 4)

24

a)

- When an object moves with constant speed along a circular path, the motion is called uniform circular motion.

b) Example :

- The earth moves around the sun in the uniform circular motion.
- The moon moves in uniform circular motion arou d the earth.

2

2

25

a) False

A compound can be broken into simpler ubst nces chemically.

b) Certain solids change directly to a gas witho t pa sing through the liquid is called sublimation.

1
1
2

26

- Elements with large difference i properties were included in the same group. Eg: Hard metals like copper (Cu) and silver (Ag) were included along with soft metals like sodium (Na) and potassium (K).
- No proper position could be given to the element hydrogen. Non-metallic hydrogen w s placed along with metals like lithium (Li), sodium (Na) and potassium (K)
- The increasing der of atomic mass was not strictly followed throughou
  Eg Co N Te & I.
- No lac for isotopes in the periodic table.

4

27

a) Lithiu s dium and potassium atoms have only one electron in their valence shell. Hence their coefficient is 1

	Elements	*Electron Configuration*	*Valancy*
1	*Lithium*	*2 , 1*	*1*
2	*sodium*	*2, 8 , 1*	*1*
3	*potassium*	*2 8 8 , 1*	*1*

b)

Beryllium, magnesium and calc um atoms have two electrons in their valence shell, so their valence is 2.

	Elements	*Electron Configuration*	*Valancy*
1	*Beryllium*	*2 , 2*	*2*
2	*magnesium*	*2, 8 , 2*	*2*
3	*calcium*	*2 , 8 , 8 , 2*	*2*

2

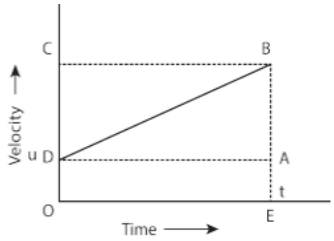
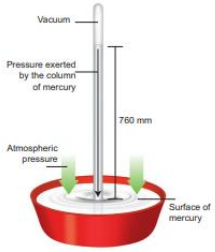
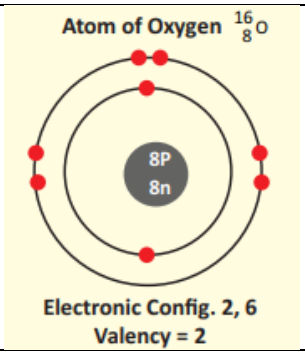
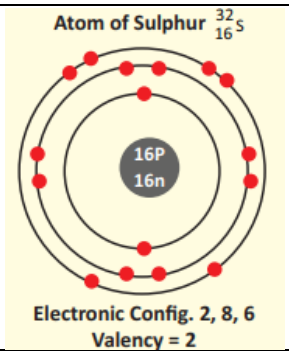
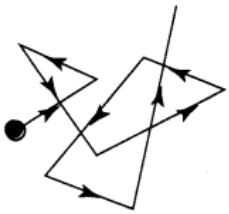
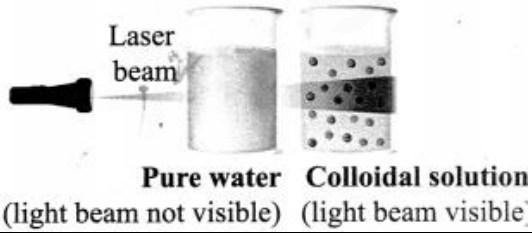
		2
28	**Aquatic habits of amphibians:** • The larva of amphibians (tadpole) lives in water and breathes with gills. • External fertilization occurs in frog with water as a medium of fertilization. • The adult frog has webbed feet to swim in water. • The skin is moist and glandular which helps in Respiration. **Terrestrial habits of amphibians:** • The adul s live on land and breathe through the lungs. Bucco-pharynx lso helps in Respiration. • The forelimbs are short and help to hop on land.	**2** **2**
29	• *Complex tissues are made of more than one type of cells that work together as a unit.* • *Types : Two types* *1. Xylem* *2. Phloem* *1) Xylem* • *xylem tracheids* • *xylem fibres* • *xyl m vessels* • *xylem parenchyma.* *2) Phloem* • *Sieve elements,* • *Companion cells* • *Phloem fibres* • *Phloem*	**1** **1** **1** **1**
30	***Phototropism*** / ***Photonasty*** *Movement of a plant part towards the light.* / *Mo em nt of a plant part is a response to light* *Eg: Shoot of a plant.* / *Eg Moonflower, Taraxacum Officinale.*	***4***
31	***Stomatal transpiration*** / ***Lenticular transpiration*** *Loss of water from plants throu h stomata.* / *Loss of water from plants as vapour through the lenticels* *90-95% of transpiration in a plant takes place through stomata only.* / *A very small percentage of water is lost by through plants lenticular transpiration.*	***4***
32	W = 98 N g = 9.8 m/s^2 W = mg m = $\frac{W}{g}$ m = $\frac{98}{9.8}$ The mass of an object m = 10 kg	***2*** ***2***
33		***1 (Figure)***

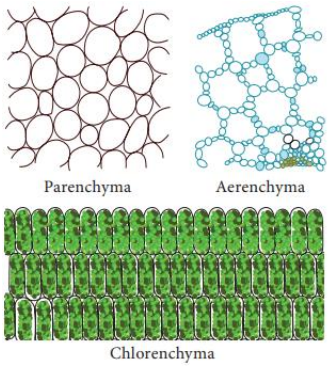
	Figure shows the change in velocity with time for an uniformly accelerated object. The object starts from the point D in the graph with velocity, u. Its velocity keeps increasing and after time, t it reaches the point B on the graph.. **(i) First equation of motion:** u = OD = EA, v = OC = EB, t = OE = DA ∴ From the graph we know that, AB = DC. By definition, Acceleration = Change in velocity / Time = (Final velocity – Initial velocity)/Time at = (OC-OD) /OE = DC / OE = DC / t DC = at = AB From the graph, EB = EA + AB v = u + at …… (1) **(ii) Second equation of motion:** From the graph the distance covered by the object during time, t is given by the area of quadrangle DOEB S = Area of the quadrangle DOEB = Area of the rectangle DOEA + Area of the triangl DAB = (AE × OE) + ½ × (AB × DA) S= ut + ½ at^2 …….(2) (iii) **Third equation of motion** : We see that the distance covered by the object during time t given by the area of the quadrangle DOEB. Here, DOEB is a trapezi m. Then, S = Area of trapezium DOEB = ½ × Sum of length of parallel side × Distance between parallel sides = ½ × (OD + BE) × OE S = ½ × (u + v) × t (Since, a = (v – u) / t) ; t = (v – u)/a S = ½ × (v + u) × (v – u)/a 2as = $v^2 - u^2$ $v^2 = u^2 + 2as$ ……. (3)	*2* *2* *2*
OR	*Mercury Barometer*  *1. It is desig e by T rricelli.* *Construction :* *2. Mercury Bar meter consists of long glass tube closed at one end and opened at the other.* *3. Mercury f d through open end and close that end by thumb and open it after immersing it into a trough of mercury.* *Working:* *4. The Barometer works by balancing the mercury in the glass tube against the outside air pressure.* *5. If air pressure increases, it pushes more of the mercury up into the tub.* *6. If air pressure decreases, more mercury drains from the tub.* *7. As vacuum cannot exert pres u e Mercury in the tube provides a precise measure of air pressu e which is called atmospheric pressure.* *8. It is used i a l b ratory or weather station.*	$3\frac{1}{2}$ $3\frac{1}{2}$

34	 	*7*
OR	*Brownian Movement:* • *Brownian movement is a kinetic property. When colloidal solutions are viewed under a powerful microscope, it can be seen that colloidal particles are moving constantly and rapidly in zig-zag directions.*  **Brownian Movement:** • *The Brownian movement of particles is due to the unbalanced bomba dment of the particles by the molecules of the dispersion medium.* *Tyndall effect:* • *Tyndall (1869) observed that when a strong beam of light f c sed on a colloidal solution, the path of the beam becomes visible.* • *This phenomenon is known as Tyndall effect and the il uminated path is called Tyndall cone.* • *This phenomenon is not observed in case of true olu n.*  **Pure water** (light beam not visible) **Colloidal solution** (light beam visible)	$3\frac{1}{2}$ $3\frac{1}{2}$
35	Arthropoda is the largest phy um. • The organisms h ve jointed legs • The body is se m nted into head, thorax and abdomen. • The exosk le is made up of chitin. • The co om c cavity is filled with haemolymph (blood). • The d ot have defined blood vessels. This is called open c rculatory system. • Th insects shed the exoskeleton and this process is called moulting. • Small Arthropods absorb oxygen through the body and larger aquatic species breathe through book gills. • Land Arthropods breathe through a system of tiny body tubes called tracheae. • Excretion occurs through malphigian tubules and through green glands in crabs and prawns. . • Insects spiders, crabs, shrimps, butterflies, millipedes, centipedes, and scorpions are some arthropods.	*7*
OR	Permanent tissues:	

- Permanent tissues are those in which, growth has stopped either completely or for the time being. At times, they become meristematic partially or wholly.

Different types of simple permanent tissue :

- Simple tissue: Simple tissue is homogeneous-composed of structurally and functionally simila cells. Eg : Parenchyma, collenchyma, and sclerenchyma



7

Parenchyma

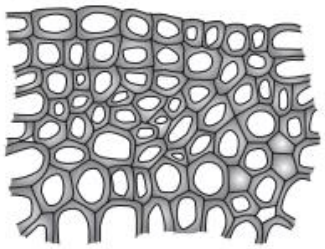
- Parenchyma are simple permanent tissue composed of livi cel
- Parenchyma cells are thin-walled, oval, rounded, or polygon l in shape with well-developed spaces among them.
- In aquatic plants, parenchyma possesses intercellular air paces and is named as aerenchyma.
- When exposed to light, parenchyma cells may dev lop chloroplasts and are known as chlorenchyma.

Functions:

- Parenchyma may store water in many succu ent and xerophytic plan s.
- It also serves the functions of storage of food reserves, absorption, buoyancy, secretion, etc

Collenchyma:

- Collenchyma is a living ti su found beneath the epidermis.
- Cells are elongated wit unevenly thickened non-lignified walls. Cells have rectangular oblique or tapering ends and persistent protoplast.
- They possess thick primary non-lignified walls.

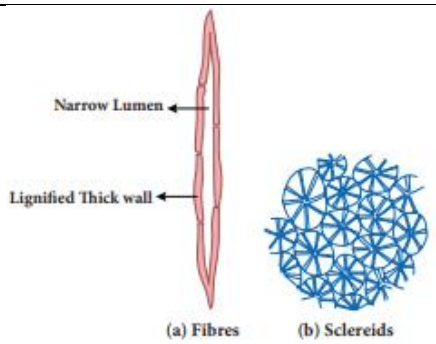


Functions:

They provide mechanical support for growing organs

Sclerenchymà:

- Scierenchyma consists of thick-walled cells which are often lignified.
- Scierenchyma cells do not possess living protoplasts at maturity. Scierenchyma cells are grouped into
- fibers nd (ii) sclereids.



Fibres :

- Elongated scierenchymatous cells, usually with pointed ends. Their walls are lignified. Fibres are abundantly found in many plants. Eg. Jute.

Sclereids:

- Sclereids are widely distributed in plant body. They are usually broad, may occur in single or in groups.
- Sclereids are isodiametric, with lignified walls. Pits are prominent and seen along the walls.
- Lumen is filled with wall materials. Sclereids are also common in fruits and seeds.