

Answer Key

Chapter 2

Revise, Reflect, Refine

2. (iii) 4. (i) 7. (ii) 11. (iii)
16. (i) Osmosis
(ii) Concentration of salt or sugar is higher than the cell sap of bacterial or fungal cell, and therefore, water inside the cell comes out due to osmosis.

Chapter 3

Revise, Reflect, Refine

1. (iii) 2. (iii) 3. (ii) 5. (iii)
6. A (iii) B (i) C (iv) D (iii)

Chapter 4

Pause and Ponder

4. 80 km h^{-1} ; 0 km h^{-1}

Revise, Reflect, Refine

1. 1000 m; 0 m
2. (i) 18 m (ii) 6 m in upward direction
3. Yes, Yes, different
4. 4 m s^{-2} in the direction of velocity, 72 m
5. -4 m s^{-2} in the direction opposite to the velocity; 7 s
6. No 7. (i); (ii)
8. 450 m 9. 310 m
10. 25 m; Yes 12. 320 m; $\frac{1}{60} \text{ m s}^{-2}$
14. 774 m 15. 12.5 m; 15 m
16. (i) 66 cm (ii) 14 cm
(iii) $\frac{11}{900} \text{ cm s}^{-1}$ (iv) $\frac{7}{2700} \text{ cm s}^{-1}$

Chapter 5

Pause and Ponder

1. 12 g 2. 20 % v/v

Revise, Reflect, Refine

1. (iv) 2. (iii)
4. (i) % m/m; Sugar = 15%; All-purpose flour = 84%; Sodium hydrogencarbonate = 1%
(ii) Copper = 84 g; Zinc = 36 g
6. (iii)
14. (i) Student A = 20%; Student B = 16.67%; Student C = 27.27%
(ii) Student C

Chapter 6

Pause and Ponder

2. No; S 3. No 4. (i); (ii)
6. 0 N

Revise, Reflect, Refine

1. F in the direction opposite to the applied force.
2. (i) same (ii) increase (iii) decrease
3. (i) 4. 18,000 N in the forward direction
5. (iv) 6. (iii)
9. (iv) 11. 25 N

12. 500 N in the direction opposite to the motion
13. 0.015 s 14. 10 m

$$15. \frac{a_1 a_2}{a_1 + a_2}$$

Chapter 7

Pause and Ponder

1. No 2. Negative
4. 2:1 5. No
6. No; yes

Revise, Reflect, Refine

1. (i) F (ii) T (iii) T
(iv) F (v) T
2. (i) Force; Displacement
(ii) 1 (iii) $\frac{1}{2}mv^2$
(iv) mgh (v) rate
3. (iii); (iv)
5. (i) 36250 J (ii) 36250 J
(iii) does not depend upon the path
6. Energy twice of initial energy; power same as initial power
8. 4:5
10. (i) Negative and positive (ii) -12 J
11. 6 m s^{-1} ; $\sqrt{66} \text{ m s}^{-1}$; No
12. 48 m
13. (i) with constant speed
(ii) 612500 J (iii) -612500 J
(iv) potential energy
14. $2\sqrt{10} \text{ m s}^{-1}$; 0 m s^{-1} ; The ball cannot reach position R
15. (i) $10\sqrt{2} \text{ m s}^{-1}$ in the direction of motion
(ii) 0.05 m

Chapter 8

Pause and Ponder

7. (ii)
10. Electrons 26; Protons 26; Neutrons 30
11. Neutrons 21 12. Mass number 35
13. Neutrons 12
14. (i) 4 (ii) 7 (iii) 4
15. 2, 8, 2; 2, 8, 6; 2, 8, 8 16. Sodium; 12
18. 80.006 u

Revise, Reflect, Refine

1. (ii), (iii) are correct 2. (iii) is correct
3. (i) Isotopes (ii) Isobars
7. (ii)
8. (i) Protons 12 (ii) Neutrons 12
(iii) Electrons 12;
Electronic configuration 2, 8, 2
9. (a) (i) Lithium; (ii) Li; (iii) 3; (iv) 1; (v) 1; (vi) 3; (vii) 3
(b) (i) Nitrogen; (ii) N; (iii) 7; (iv) 5; (v) 3; (vi) 7; (vii) 7
(c) (i) Aluminium; (ii) Al; (iii) 13; (iv) 3; (v) 3; (vi) 13; (vii) 13
(d) (i) Fluorine; (ii) F; (iii) 9; (iv) 7; (v) 1; (vi) 9; (vii) 9
11. Neutrons 39

12. (i) Neutrons 118 (ii) Electrons 79
13.

Atomic number	Mass number	Number of neutrons	Number of protons	Number of electrons	Name of the element
5	11	6	5	5	Boron
7	14	7	7	7	Nitrogen
12	24	12	12	12	Magnesium
15	31	16	15	15	Phosphorus
1	1	0	1	1	Hydrogen

14. (i) Electrons 17; Protons 17
(ii) Atomic number 17
(iii) Chlorine
(iv) Electronic configuration 2, 8, 7
(v) Valence electrons 7
(vi) Mass number 37
(vii) Isotopes

Chapter 9

Pause and Ponder

2. 180 g
4. 12 g
12. Anion (O^{2-})
16. (i) Carbon dioxide (ii) Nitrogen dioxide
(iii) Sulfur hexafluoride
(iv) Phosphorous trichloride
17. (i) $NaHCO_3$ (ii) SO_2
(iii) $FeCl_3$ (iv) Cu_2O
18. (i) $Fe(OH)_3$ (ii) K_2CO_3
20. (i) MO (ii) Ionic
(iii) Conducts electricity in aqueous solution
21. 63 u
23. 74.5 u

Revise, Reflect, Refine

1. (i) tends to give 1 electron
(ii) Cation (A^+)
(iii) tends to take 2 electrons
(iv) Anion (B^{2-})
(v) Ionic
(vi) A_2B
3. (iii)
5. (i) $Al(NO_3)_3$ (ii) CaO
(iii) Fe_2O_3
6. (i) $CaBr_2$ (ii) $Al_2(CO_3)_3$
(iii) K_2SO_4 (iv) NH_4Cl
7. (ii)
8. (i) 80 u (ii) 98 u
(iii) 84 u
9. (i) Mg_3N_2 (ii) Li_3N
(iii) Na_2S (iv) Al_2O_3
10.

	NO_3^-	SO_4^{2-}	PO_4^{3-}
NH_4^+	NH_4NO_3	$(NH_4)_2SO_4$	$(NH_4)_3PO_4$
Li^+	$LiNO_3$	Li_2SO_4	Li_3PO_4
Al^{3+}	$Al(NO_3)_3$	$Al_2(SO_4)_3$	$AlPO_4$
Cu^{2+}	$Cu(NO_3)_2$	$CuSO_4$	$Cu_3(PO_4)_2$

12. (i) $Z = 11; A = 23$
(ii) Cation
(iii) Electronic configuration 2, 8
(iv) Sodium cation (Na^+)
13. (i) Element B
(ii) Covalent
(iii) AB_3
14. (iii)
15. Electrons 13, Neutrons 14; Electrons 36,
Neutrons 45; Electrons 78, Neutrons 121

Chapter 10

Pause and Ponder

3. (ii)
5. (ii)
9. 1.5 cm
10. (i) 75:17
11. 0.932 s; Yes
13. 3000 m
4. (iii)
8. 1200 oscillations
(ii) 10:3
12. 34.3 m

Revise, Reflect, Refine

1. (ii)
3. 5 Hz
5. (i) (a)
6. A - Green curve; B - Red curve; C - Blue curve
9. 0.01 s
11. 0.007 s
13. 0.04 m; 8500 Hz
14. 0.025 m, 0.05 m; 13800 Hz, 6900 Hz
15. 2:9
2. (iii)
(ii) (a)
10. 3812.5 m
12. $\frac{65}{331}$ s

Chapter 11

Pause and Ponder

5. Internal Fertilisation
6. Adolescence
7. 2nd April
8. 46 Chromosomes

Revise, Reflect, Refine

1. (iii)
2. Correct sequence is (iii), (i), (ii), (iv)
3. (iv)
11. Tomato—self pollination; wheat—self pollination;
papaya—cross pollination

Chapter 12

Revise, Reflect, Refine

1. (ii) 2. (iii)
15. (i) Q (ii) P, characterised by no true nucleus
(iii) both can be classified based on level of
organisation, the organism Q is multicellular
and organism R is unicellular
(v) There is no place for acellular entities

Chapter 13

Revise, Reflect, Refine

1. (ii) 2. (iii)