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# Answers

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## Chapter 3

4. (a)  $\text{MgCl}_2$   
(b)  $\text{CaO}$   
(c)  $\text{Cu}(\text{NO}_3)_2$   
(d)  $\text{AlCl}_3$   
(e)  $\text{CaCO}_3$
5. (a) Calcium, oxygen  
(b) Hydrogen, bromine  
(c) Sodium, hydrogen, carbon and oxygen  
(d) Potassium, sulphur and oxygen
6. (a) 26 g  
(b) 256 g  
(c) 124 g  
(d) 36.5 g  
(e) 63 g
7. (a) 14 g  
(b) 108 g  
(c) 1260 g
8. (a) 0.375 mole  
(b) 1.11 mole  
(c) 0.5 mole
9. (a) 3.2 g  
(b) 9.0 g
10.  $3.76 \times 10^{22}$  molecules
11.  $6.022 \times 10^{20}$  ions

## Chapter 4

10. 80.006
11.  $\frac{16}{8} \times 100 = 90\%$ ,  $\frac{18}{8} \times 100 = 10\%$
12. Valency = 1, Name of the element is lithium,
13. Mass number of X = 12, Y = 14, Relationship is Isotope.
14. (a) F (b) F (c) T (d) F
15. (a) ✓ (b) × (c) × (d) ×
16. (a) × (b) × (c) ✓ (d) ×

17. (a)  $\times$  (b)  $\checkmark$  (c)  $\times$  (d)  $\times$   
 18. (a)  $\times$  (b)  $\times$  (c)  $\times$  (d)  $\checkmark$   
 19.

Atomic Number	Mass Number	Number of Neutrons	Number of Protons	Number of Electrons	Name of the Atomic Species
9	19	10	9	9	Fluorine
16	32	16	16	16	Sulphur
12	24	12	12	12	Magnesium
01	2	01	1	01	Deuterium
01	1	0	1	0	Protium

## Chapter 8

- (a) distance = 2200 m; displacement = 200 m.
- (a) average speed = average velocity =  $2.00 \text{ m s}^{-1}$   
 (b) average speed =  $1.90 \text{ m s}^{-1}$ ; average velocity =  $0.952 \text{ m s}^{-1}$
- average speed =  $24 \text{ km h}^{-1}$
- distance travelled = 96 m
- velocity =  $20 \text{ m s}^{-1}$ ; time = 2 s
- speed =  $3.07 \text{ km s}^{-1}$

## Chapter 9

- c
- $2 \text{ m s}^{-2}$ , 14000 N
- 4 N
- (a) 35000 N  
 (b)  $1.944 \text{ m s}^{-2}$
- 2550 N in a direction opposite to the motion of the vehicle
- d
- 200 N
- $0 \text{ m s}^{-1}$
- $3 \text{ kg m s}^{-1}$
- 2.25 m; 50 N
- $10 \text{ kg m s}^{-1}$ ;  $10 \text{ kg m s}^{-1}$ ;  $5/3 \text{ m s}^{-1}$
- $500 \text{ kg m s}^{-1}$ ;  $800 \text{ kg m s}^{-1}$ ; 50 N
- $40 \text{ kg m s}^{-1}$
- A2. 240 N
- A3. 2500 N
- A4.  $5 \text{ m s}^{-2}$ ;  $24000 \text{ kg m s}^{-1}$ ; 6000 N

## Chapter 10

3. 9.8 N
12. Weight on earth is 98 N and on moon is 16.3 N.
13. Maximum height is 122.5 m and total time is  $5\text{ s} + 5\text{ s} = 10\text{ s}$ .
14. 19.6 m/s
15. Maximum height = 80 m, Net displacement = 0, Total distance covered = 160 m.
16. Gravitational force =  $3.56 \times 10^{22}\text{ N}$ .
17. 4 s, 80 m from the top.
18. Initial velocity =  $29.4\text{ m s}^{-1}$ , height = 44.1 m. After 4 s the ball will be at a distance of 4.9 m from the top or 39.2 m from the bottom.
21. The substance will sink.
22. The packet will sink. The mass of water displaced is 350 g.

## Chapter 11

2. Zero
4.  $-210\text{ J}$
5. Zero
9.  $9 \times 10^8\text{ J}$
10. 2000 J, 1000 J
11. Zero
14. 15 kWh (Unit)
17. 208333.3 J
18. (i) Zero  
(ii) Positive  
(iii) Negative
20. 20 kWh

## Chapter 12

7. 17.2 m, 0.0172 m
8. 18.55
9. 6000
13. 11.47 s
14. 22,600 Hz
20.  $1450\text{ ms}^{-1}$