

SOLUTION TO QUESTIONS

Chapter 3

Practice questions 3

- 1.(b) $4.22 \text{ } \tilde{\text{A}} \text{---} 10^{25} \text{N}$
2.(b). $5.73 \text{ } \tilde{\text{A}} \text{---} 10^{-36} \text{N}$
3.(c) $6.14 \text{ } \tilde{\text{A}} \text{---} 10^{14} \text{kg}$
4.(b) (i) 8.6 ms^{-2} (ii) 129000 N (iii) 21000 N
5.(c) (i) $-1.563 \text{ } \tilde{\text{A}} \text{---} 10^{12} \text{J}$ (ii) $-1.556 \text{ } \tilde{\text{A}} \text{---} 10^{12} \text{J}$
6. 1.111 Nkg^{-1}
7.(c). 11200 ms^{-1}

Past questions

Objectives

- 1.B
2.A
3.D
4.A
5.B
6.B
7.B
8.B
9.A
10. D

Essay

- 11(d)(ii) $1.12 \text{ } \tilde{\text{A}} \text{---} 10^{-4}$

Chapter 4

Practice questions 4a

- 1(b) 111.5N
2(c) 3.6N
3.(b)(i) $6.08 \text{ } \tilde{\text{A}} \text{---} 10^5 \text{NC}^{-1}$ 3b (ii) $1.606 \text{ } \tilde{\text{A}} \text{---} 10^6 \text{NC}^{-1}$
4b (i) 0NC^{-1} (ii) 288000v
5c (i) 0.1728N (ii) $5.76 \text{ } \tilde{\text{A}} \text{---} 10^{-3} \text{V}$ (iii) $1.92 \text{ } \tilde{\text{A}} \text{---} 10^3 \text{V}$
6c (i) $2.0 \text{ } \tilde{\text{A}} \text{---} 10^{-4} \text{Vm}^{-1}$ (ii) $8.0 \text{ } \tilde{\text{A}} \text{---} 10^{-4} \text{N}$

Practice questions 4b

- 2c. $1.024 \text{ } \tilde{\text{A}} \text{---} 10^{-9} \text{F}$
3b. (i) $1.0 \text{ } \tilde{\text{A}} \text{---} 10^{-14} \text{F}$ (ii) $1.0 \text{ } \tilde{\text{A}} \text{---} 10^{-11} \text{C}$ (iii) $5.0 \text{ } \tilde{\text{A}} \text{---} 10^{-9} \text{J}$
4b(i) $1.2 \text{ } \hat{\text{I}}\frac{1}{4} \text{ F}$ (ii) 3.6V and 2.4V
(iii) $1.2 \text{ } \tilde{\text{A}} \text{---} 10^{-5} \text{J}$ and $8.64 \text{ } \tilde{\text{A}} \text{---} 10^{-6} \text{J}$
5. (i) $1.5 \text{ } \hat{\text{I}}\frac{1}{4} \text{ F}$ (ii) $3.6 \text{ } \tilde{\text{A}} \text{---} 10^{-5} \text{C}$ (iii) 12V
(iv) $2.16 \text{ } \tilde{\text{A}} \text{---} 10^{-4} \text{J}$
6. $2 \text{ } \hat{\text{I}}\frac{1}{4} \text{ F}$ and $3 \text{ } \hat{\text{I}}\frac{1}{4} \text{ F}$

Past questions

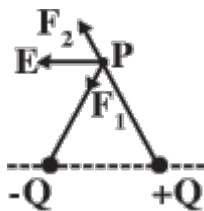
Objectives

- 1.D
- 2.C
- 3.C
- 4.C
- 5.B
- 6.C
- 7.A
- 8.B
- 9.D
10. C
11. D
12. C
13. A
14. C
15. D
16. E
17. C
18. D
19. B
20. B
21. A
22. C

Essay

23c (i) $5.00 \times 10^4 \text{ Vm}^{-1}$

24c (ii) $4 \frac{1}{4} \text{ F}$ (iii) $3.6 \times 10^4 \text{ C}$ (iv) 45 V



25c (iii) $20 \frac{1}{4} \text{ F}$

26c (i) $3.542 \times 10^{-9} \text{ F}$ (ii) $3.452 \times 10^{-6} \text{ C}$ (iii) $2.0 \times 10^5 \text{ Vm}^{-1}$ (iv) $1.771 \times 10^{-3} \text{ J}$

27d (i) $1.0 \times 10^{-4} \text{ C}$; $1.5 \times 10^{-4} \text{ C}$ (ii) 50 V (iii) $6.25 \times 10^{-3} \text{ J}$

28d (i) $2.4 \times 10^{-4} \text{ C}$

(ii) 60 V and 40 V (iii) $1.2 \times 10^{-2} \text{ J}$

29b $6.8 \times 10^5 \text{ NC}^{-1}$

30c (i) $9.0 \times 10^5 \text{ NC}^{-1}$ (ii) -0.036 N ;

31c. (i) $1.0 \times 10^7 \text{ NC}^{-1}$; (ii) $1.6 \times 10^{-12} \text{ N}$; (iii) $1.76 \times 10^{18} \text{ ms}^{-2}$

Chapter 5

Practice questions 5b

1c 0.6 A

1d 0.43 A

2d(i) 2A (ii) 4V

3c $E = 1.5\text{V}$; $r = 1.0\ \Omega$

4b (i) $0.02\ \text{A}$ (ii) $290\ \Omega$

Practice questions 5c

1c $3.70\ \text{A}$

2c $7.5\ \text{A}$

3c 56.2 cm

Past questions

Objectives

1.C

2.A

3.C

4.C

5.A

6.C

7.E

8.C

9.B

10. C

11. D

12. D

13. A

14. D

15. E

16. C

17. B

18. A

19. C

20. B

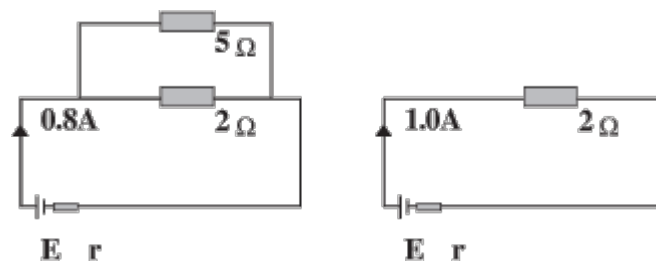
21. B

22. D

23. A

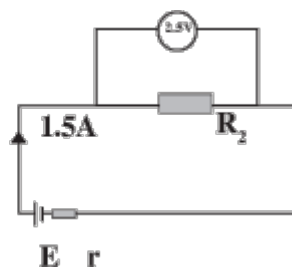
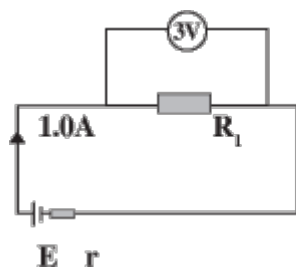
Essay

24b (i)



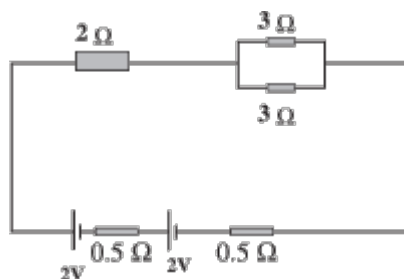
24b (ii) $E = 0.8(2 + r)$; $E = 1.0(2 + r)$ (iii) $r = 1.0\ \Omega$ and $E = 2.4\text{V}$

25 (i)



(ii) $r = 1.0 \, \Omega$ and $E = 4V$

26



(i) $I = 0.8889A$ (ii) $V_p = 1.333V$

(iii) $Ir = 0.8889V$ 27 (i) $13.0 \, \Omega$ (ii) $0.11A$

28. $1980 \, \Omega$

29. (i) $0.01 \, \Omega$ (ii) $20 \, cm$.

Chapter 6

Practice questions 6a

4.6.04g 5. 0.475g

Past questions Objectives

1.D

2.C

3.

4.E

5.A

6.A

7.C

8.C

9.D

10. B

Essay

11. 1.04 hrs or 62.6 minutes

16. $3.333 \, \text{Å} \times 10^{-4} \, gC^{-1}$ 19b $1.962 \, \text{Å} \times 10^{-4} kg$

Chapter 7

Practice questions 7d

1c. (i) $5.13 \, \text{Å} \times 10^{-14} N$ (ii) $5.92 \, \text{Å} \times 10^{-14} N$

2b. (iii) $1.054 \, \text{Å} \times 10^8 ms^{-1}$

4c. (i) 0.3 N (ii) 0.6N

6d. (i) $0.1 \text{ i}\odot$ (ii) $250 \text{ i}\odot$

7d. $10 \text{ i}\odot$

Past questions

Objectives

1.D

2.E

3.B

4.B

5.D

6.B

7.D

8.C

9.E

10. E

11. D

12. A

13. C

14. C

15. A

16. E

Essay

17c. (ii) $4.0 \text{ Å} \text{---} 10^{-12} \text{N}$

Chapter 7

Practice questions 7a

1c. (i) 155.6 A (ii) 50 Hz

2b. (ii) $318.4 \text{ i}\odot$; 0.77 A

3b 14.84 W

3c. 35.6 Hz

Past questions

Objectives

1.C

2.B

3.C

4.B

5.D

6.E

7.C

8.A

9.A

10. D

11. E

12. C

13. C

14. B

15. B

16. D

17. A

18. A

19. A

20. A

Essay

21b. (ii) $37.7 \text{ } \mu\text{C}$ (iii) $132.6 \text{ } \mu\text{C}$ (iv) $137.9 \text{ } \mu\text{C}$ (v) 0.80 A (vi) 24 W

22c. (i) 35600 V (ii) $8.97 \text{ } \mu\text{F}$ (iii) 0.0159 H

23. (i) $12.6 \text{ } \mu\text{C}$ (ii) $13.5 \text{ } \mu\text{C}$ (iii) 9.3 V

24. (i) $636.94 \text{ } \mu\text{C}$ (ii) $1185.4 \text{ } \mu\text{C}$ (iii) 0.076 A (iv) 48.4 V (v) 76 W

25. (i) 50 Hz (ii) 30 A (iii) 21.2 A

26a. (ii) 10.6 A

28c (ii) 0.03 A ($X_c = X_L$ at resonance) (iii) 1591.5 Hz

Chapter 8

Practice questions 8a

2c. 10.8 V

3c. 0.15 m

Practice questions 8b

1c. 25 J

2b. 50 V

5c. (i) $N_s : N_p = 1:20$ (ii) 4800 turns

7c. (i) 50 A (ii) 1000 turns

Past questions

Objectives

1.A

2.A

3.E

4.C

5.E

6.B

7.E

8.C

9.D

10. B

11. B

12. E

13. C

14. E

15. E

16. B

17. B

18. A

19. B

20. D

21. C

Essay

22d. (i) 80% (ii) 353.55 24c. (i) $N_p : N_s = 20:1$ (ii) $I = 0.014A$

p

Chapter 9

Practice questions 9a

5c. (ii) $3.662 \text{ \AA} \text{---} 10^{-12} \text{s}^{-1}$

Practice questions 11b

3b. 0.02561u ; $3.816 \text{ \AA} \text{---} 10^{-12} \text{J}$

5c. $5.963 \text{ \AA} \text{---} 10^{-10} \text{J}$; $1.501 \text{ \AA} \text{---} 10^{-10} \text{J}$

7b. 0.1089U ; $1.623 \text{ \AA} \text{---} 10^{-11} \text{J}$

Past questions

Objectives

1.B

2.D

3.D

4.B

5.A

6.A

7.D

8.C

9.E

10. A

11. B

12. A

13. D

14. C

15. C

16. D

17. A

18. C

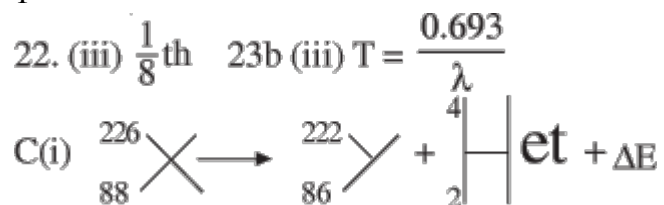
19. C

20. B

21. B

Essay

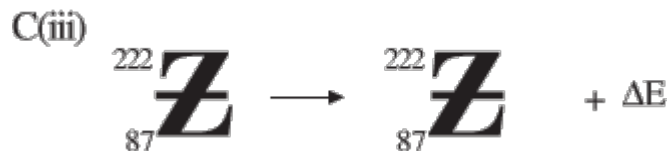
1



The mass of number of X decreases by 4 while its atomic number decreases by 2



The mass number remains the same while the atomic numbers increases by 1. C(iii)



There is no change at all in the element produced (same element produced)

26c. $8.277 \text{ Å} \times 10^{-11} \text{ J}$

27. 3.01604 u

28b. (ii) $6.282 \text{ Å} \times 10^{-12} \text{ J}$

30c. $6.03 \text{ Å} \times 10^5$;

31c. (ii) $1.28 \text{ Å} \times 10^{-4} \text{ s}^{-1}$;

32d. $2.12 \text{ Å} \times 10^{-13} \text{ J}$

Chapter 10

Practice questions

1b. (ii) $21.8 \text{ Å} \times 10^{-19} \text{ J}$ (iii) $2.94 \text{ Å} \times 10^{15} \text{ Hz}$; $1.02 \text{ Å} \times 10^{-7} \text{ m}$

2b. (i) $2.176 \text{ Å} \times 10^{-18} \text{ J}$ (ii) $9.71 \text{ Å} \times 10^{-8} \text{ m}$

3c. $3.0 \text{ Å} \times 10^{-19} \text{ J}$

Practice Question 12 b

2b. $9.9 \text{ Å} \times 10^{-19} \text{ J}$

3b. (i) $4.78 \text{ Å} \times 10^{-19} \text{ J}$ (ii) $3.87 \text{ Å} \times 10^{-7} \text{ m}$

4. (i) $3.33 \text{ Å} \times 10^{-14} \text{ Hz}$; (ii) $2.376 \text{ Å} \times 10^{-19} \text{ J}$ (iii) $1.76 \text{ Å} \times 10^{-20} \text{ J}$ (iv) 0.11 V

Practice questions 12c

2c. $2.063 \text{ Å} \times 10^{-14} \text{ m}$

Past questions

Objectives

1.D

2.D

3.A

4.B

5.C

6.C

7.C

8.D

9.A

10. C

11. C

12. B

13. C

14. A

15. D

16. C

- 17. B
- 18. A
- 19. A
- 20. D
- 21. C
- 22. C
- 23. D
- 24. E

Essay

25c. 0.08Hz

26c. (i) $4.85 \text{ \AA} \text{---} 1014 \text{ Hz}$ (ii) $1.2 \text{ \AA} \text{---} 10^{-19} \text{ J}$

28 (i) $3.96 \text{ \AA} \text{---} 10^{-19} \text{ J}$ (ii) $0.92 \text{ \AA} \text{---} 10^{-19} \text{ J}$ (iii) 0.575 V

30b. (i) $4.5 \text{ \AA} \text{---} 1014 \text{ Hz}$ (ii) $6.08 \text{ \AA} \text{---} 10^{-34} \text{ Js}$ (iii) $2.73 \text{ \AA} \text{---} 10^{-19} \text{ J}$

33d. $2.06 \text{ \AA} \text{---} 10^{-11} \text{ m}$

34. $2.47 \text{ \AA} \text{---} 10^{-11} \text{ m}$

35c. (i) $6.25 \text{ \AA} \text{---} 10^{15} \text{ C}$ (ii) $2.4 \text{ \AA} \text{---} 10^{-16} \text{ J}$ (iii) $1.105 \text{ \AA} \text{---} 10^{-7} \text{ m}$

Chapter 11

Practice questions

3. $1.223 \text{ \AA} \text{---} 10^{-11} \text{ m}$

Past questions

Objectives

- 1. B
- 2. B
- 3. D
- 4. C
- 5. C
- 6. C
- 7. B
- 8. A

10. $1.98 \text{ \AA} \text{---} 10^{-15} \text{ J}$

12. $6.6 \text{ \AA} \text{---} 10^6 \text{ ms}^{-1}$

Chapter 12

Practice questions 14

- 1. C
- 2. A
- 3. A
- 4. D
- 5. B

Past questions (Objectives)

- 1. D
- 2. A
- 3. A
- 4. A
- 5. D

- 6. D
- 7. D
- 8. B
- 9. D
- 10. C