

SOLUTION TO QUESTIONS

Chapter 3

Practice questions 3

1.(b) $4.22 \text{ A} = 10^{25} \text{ N}$

2.(b). $5.73 \text{ A} = 10^{-36} \text{ N}$

3.(c) $6.14 \text{ A} = 10^{14} \text{ kg}$

4.(b) (i) 8.6 ms^{-2} (ii) 129000 N (iii) 21000 N

5.(c) (i) $-1.563 \text{ A} = 10^{12} \text{ J}$ (ii) $-1.556 \text{ A} = 10^{12} \text{ J}$

6. 1.111 N kg^{-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) $1.12 \text{ A} = 10^{-4}$

Chapter 4

Practice questions 4a

1(b) 111.5 N

2(c) 3.6 N

3.(b)(i) $6.08 \text{ A} = 10^5 \text{ NC}^{-1}$ 3b (ii) $1.606 \text{ A} = 10^6 \text{ NC}^{-1}$

4b (i) 0 NC^{-1} (ii) 288000 V

5c (i) 0.1728 N (ii) $5.76 \text{ A} = 10^{-3} \text{ V}$ (iii) $1.92 \text{ A} = 10^3 \text{ V}$

6c (i) $2.0 \text{ A} = 10^{-4} \text{ V m}^{-1}$ (ii) $8.0 \text{ A} = 10^{-4} \text{ N}$

Practice questions 4b

2c. $1.024 \text{ A} = 10^{-9} \text{ F}$

3b. (i) $1.0 \text{ A} = 10^{-14} \text{ F}$ (ii) $1.0 \text{ A} = 10^{-11} \text{ C}$ (iii) $5.0 \text{ A} = 10^{-9} \text{ J}$

4b(i) $1.2 \frac{1}{4} \text{ F}$ (ii) 3.6 V and 2.4 V

(iii) $1.2 \text{ A} = 10^{-5} \text{ J}$ and $8.64 \text{ A} = 10^{-6} \text{ J}$

5. (i) $1.5 \frac{1}{4} \text{ F}$ (ii) $3.6 \text{ A} = 10^{-5} \text{ C}$ (iii) 12 V

(iv) $2.16 \text{ A} = 10^{-4} \text{ J}$

6. $2 \frac{1}{4} \text{ F}$ and $3 \frac{1}{4} \text{ F}$

Past questions

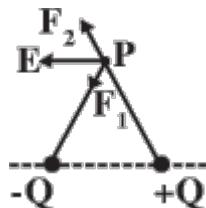
Objectives

- 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) $5.00 \text{ Å} = 10^4 \text{ Vm}^{-1}$

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



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

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

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

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

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

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

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

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

Chapter 5

Practice questions 5b

1c 0.6 A

1d 0.43 A

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

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

4b (i) 0.02 A (ii) 290 A

Practice questions 5c

1c 3.70 A

2c 7.5 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

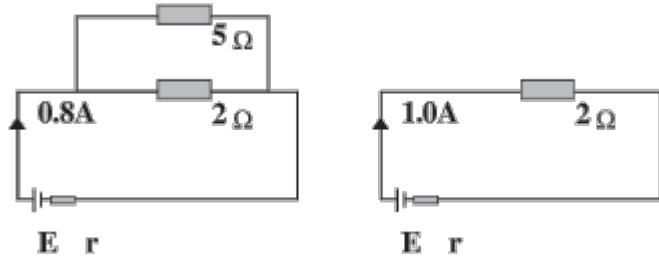
21. B

22. D

23. A

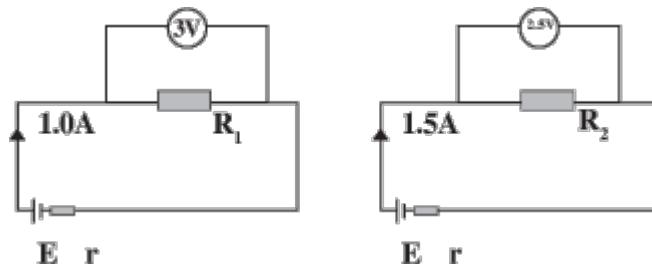
Essay

24b (i)



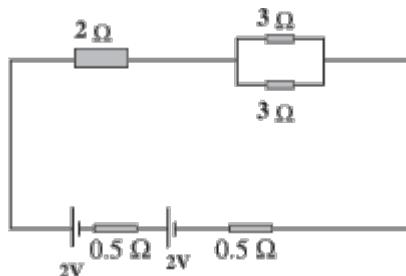
24b (ii) $E = 0.8(2 + r)$; $E = 1.0(1.4 + r)$ (iii) $r = 1.0 \Omega$ and $E = 2.4V$

25 (i)



$$(ii) r = 1.0 \text{ } \Omega \text{ and } E = 4V$$

26



$$(i) I = 0.8889A \text{ (ii) } V_p = 1.333V$$

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

$$28.1980 \text{ } \Omega$$

$$29. (i) 0.01 \text{ } \Omega \text{ (ii) } 20 \text{ cm.}$$

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. $3.333 \text{ Å} = 10^{-4} \text{ m}$ 19b $1.962 \text{ Å} = 10^{-4} \text{ kg}$

Chapter 7

Practice questions 7d

1c. (i) $5.13 \text{ Å} = 10^{-14} \text{ m}$ (ii) $5.92 \text{ Å} = 10^{-14} \text{ m}$

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

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

6d. (i) 0.1 A (ii) 250 A

7d. 10 A

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 A — 10^{-12}N

Chapter 7

Practice questions 7a

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

2b. (ii) 318.4 A ; 0.77A

3b 14.84W

3c. 35.6Hz

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) $37.7 \text{ } \mu\text{F}$ (iii) $132.6 \text{ } \mu\text{F}$ (iv) $137.9 \text{ } \mu\text{F}$ (v) 0.80A (vi) 24 W

22c. (i) 35600V (ii) $8.97 \text{ A} = 10^{-7}\text{F}$ (iii) 0.0159H

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

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

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

26a. (ii) 10.6A

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

Chapter 8

Practice questions 8a

2c. 10.8V

3c. 0.15 m

Practice questions 8b

1c. 25J

2b. 50V

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

7c. (i) 50A (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) $3.662 \text{ Å} = 10^{-12} \text{ s}^{-1}$

Practice questions 11b

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

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

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

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

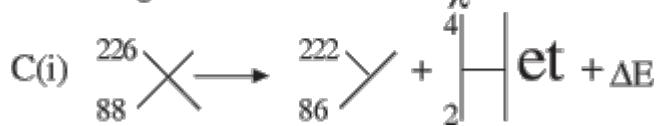
20. B

21. B

Essay

1

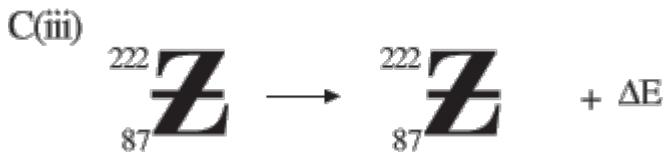
22. (iii) $\frac{1}{8}\text{th}$ 23b (iii) $T = \frac{0.693}{\lambda}$



The mass 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. $8.277 \text{ \AA} = 10^{-11} \text{ J}$

27. 3.01604 u

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

30c. $6.03 \text{ \AA} = 10^5 \text{ s}$

31c. (ii) $1.28 \text{ \AA} = 10^{-4} \text{ s}^{-1}$

32d. $2.12 \text{ \AA} = 10^{-13} \text{ J}$

Chapter 10

Practice questions

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

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

3c. $3.0 \text{ \AA} = 10^{-19} \text{ J}$

Practice Question 12 b

2b. $9.9 \text{ \AA} = 10^{-19} \text{ J}$

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

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

Practice questions 12c

2c. $2.063 \text{ \AA} = 10^{-14} \text{ m}$

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) $4.85 \text{ A} = 1014 \text{ Hz}$ (ii) $1.2 \text{ A} = 10^{-19}\text{J}$

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

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

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

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

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

Chapter 11

Practice questions

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

Past questions

Objectives

1. B

2. B

3. D

4. C

5. C

6. C

7. B

8. A

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

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

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