

## ANSWER KEY

## EXERCISE I

- |       |       |           |       |       |       |       |
|-------|-------|-----------|-------|-------|-------|-------|
| 1. b  | 2. b  | 3. a,c    | 4. c  | 5. c  | 6. a  | 7. b  |
| 8. c  | 9. d  | 10. b     | 11. d | 12. b | 13. d | 14. a |
| 15. b | 16. c | 17. a     | 18. a | 19. d | 20. d | 21. a |
| 22. b | 23. a | 24. d     | 25. a | 26. a | 27. d | 28. c |
| 29. b | 30. a | 31. a     | 32. b | 33. d | 34. c | 35. b |
| 36. d | 37. b | 38. a     | 39. c | 40. c | 41. a | 42. b |
| 43. c | 44. b | 45. a     | 46. c | 47. d | 48. b | 49. a |
| 50. d | 51. b | 52. b     | 53. c | 54. b | 55. c | 56. c |
| 57. c | 58. c | 59. d     | 60. c | 61. * | 62. d | 63. c |
| 64. c | 65. b | 66. b     | 67. d | 68. a | 69. c | 70. b |
| 71. b | 72. b | 73. $\pi$ | 74. * | 75. * | 76. b | 77. a |
| 78. a |       |           |       |       |       |       |

## EXERCISE - II

- |        |          |           |          |          |        |          |
|--------|----------|-----------|----------|----------|--------|----------|
| 1. a,b | 2. a,b,d | 3. a,c    | 4. a,b,c | 5. a,b,c | 6. b,d | 7. a,b,c |
| 8. b,c | 9. a,c   | 10. b,c,d | 11. a    | 12. a,d  |        |          |

## EXERCISE III

- |  |  |
|--|--|
| 1. $\sqrt{15}, \sqrt{48}, \sqrt{8}, \sqrt{0}$  | 2. $g = 1, g = 9$  |
| 3. 0.70 nm   | 4. $3.202 \times 10^{-19} \text{ J}, 838.89 \text{ km/s}$                          |
| 5. $1.56 \times 10^{16}$   | 6. 219.3 m, $4.56 \times 10^{-3} \text{ m}^{-1}$                                   |
| 7. 200 watt.   | 8. $x = 2$   |
| 9. $A = 2, B = 4$  | 10. (a) 15.6 V, (b) 233.9 nm, (c) $1.009 \times 10^7 \text{ m}^{-1}$               |
| 11. $n = 4$ to $n = 2$   | 12. $6.3 \times 10^6 \text{ m/s}$  |
| 13. 8/9  | 14. 6.91   |
| 15. 3  | 16. 4/3 R  |
| 17. 4/3 R  | 18. 21   |
| 19. $0.55 \times 10^{-10} \text{ m}$   |  |
| 20. (a) $7.274 \times 10^6 \text{ ms}^{-1}$ (b) 150.6 (c) $2.414 \times 10^{-17} \text{ J}$ .  |  |
| 21. $0.5 \times 10^{-7} \text{ J}$ .   |  |
| 22. (i) $6.025 \times 10^{-20} \text{ J}$ (ii) $18.075 \times 10^{-20} \text{ J}$ (iii) 0.0486 |  |
| 23. 108 eV.  | 24. 93 nm  |
| 25. $8.366 \times 10^{-20} \text{ J}$ .  | 26. (a) $2.482 \times 10^{-38} \text{ J}$ (b) $1.8072 \times 10^{-17} \text{ J}$ . |

## EXERCISE IV

- |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|
| 1. c | 2. d | 3. d | 4. * | 5. c | 6. * | 7. c |
|------|------|------|------|------|------|------|

8. (a)  $3/2 a_0$  (b)  $a_0$

9. (i)  $mvr = \frac{nh}{2\pi}$  (ii)  $r = \frac{n^2 h^2}{4\pi^2 Z M e^2} \times 4\pi \epsilon_0$

10. (a)  $(3 \pm \sqrt{5})a_0$  (b)  $2 \times 10^{-9} \text{ m}$

11.  $E = (n_x^2 + n_y^2 + n_z^2) \frac{h^2}{8ma^2}$

12. a,c

13. a,b

14. b

15. c

16. 1

17. c,d

18. b

19. d

20. c

21. c

22. \*

23. \*

24. \*

25. c

26. d

27. c

28. a,b

29. a

30. b

31. d

32. a

33. \*

34. c

35. b

36. \*

37. \*

38. \*

39. c

40. c

41. \*

42. v

43. d

44. \*

45. a

46. a

47. a

48. d

49. d

50. a

51. d

52. b

53. c

54. \*

55. c

56. d

57. b

58. b

59. a

60. a

61. \*

62. \*

63. \*

64. \*

65. \*

66. \*

67. \*

68. \*

69. \*

CHEM ACADEMY