

Answers

1. b) 1g of urea is 60 times less than its molecular weight. Mass of glucose required should be 60 times less, i.e. $180\text{g} / 60 = 3\text{g}$
2. a) $\text{pH}=5$ therefore $[\text{H}^+] = 10^{-5}$
 $\text{pH}=2$ therefore $[\text{H}^+] = 10^{-2}$ Decrease in $\text{pH} = 5-2 = 3$. Increase in the $[\text{H}^+] = 10^3 = 1000$ times.
3. c) $K_1 = 1/\sqrt{K} = 1/\sqrt{0.0025} = 20$
4. d) $\text{N}\equiv\text{N} + 3 \text{H}-\text{H} \rightarrow 2 \text{NH}_3$ $\Delta H = \Delta H_P - \Delta H_R = -105$
5. b)
6. c)
7. b) C:H:Cl $47.5/12 : 2.54/1 : 50/35.5$
 $3.96/ 1.41 : 2.54/ 1.41 : 1.41/1.41$
 $2.8 : 1.8 : 1$
 $= \text{C}_{14}\text{H}_9\text{Cl}_5$
8. d)
9. a) 3 carbon is chiral
10. a)
11. c)
12. d) dehydrohalogenation produces an alkene
13. c) it is the alkyl part of the alkyl magnesium halide that comes in the form of alkane
14. d)
15. b)
16. c)
17. c)
18. b) the product of uncertainties in the position and momentum of subatomic particle = $h/4\pi$
since Δx is same for electron and helium, so Δp must be the same for both particles.
19. c) energy acquired by electron (as K.E) on being accelerated by potential difference of $1\text{kv} = 1\text{keV}$. Since proton has same charge and energy = potential difference \times charge, therefore same K.E
20. a)
21. a) Li^+ is heavily hydrated
22. a)
23. d)
24. a)
25. c)
26. c) due to higher electronegativity of F
27. d)
28. d)
29. d) 0.5 mole of $\text{NaOH} = 0.5$ equivalent of NaOH
0.25 mole of $\text{H}_2\text{SO}_4 = 0.5$ equivalent of NaOH
Heat liberated = $57.3 \times 0.5 = 28.65\text{kJ}$
30. d)
31. a) No of moles = $2/40 = 0.05$ mole/ dm^3 $[\text{OH}^-] = 0.05 = 5 \times 10^{-2}$

$$[H^+] = 10^{-14} / 5 \times 10^{-2} = 0.2 \times 10^{-12} \text{ pH} = 12.7$$

32. b)

33. b)

34. d) $r_2/r_1 = \sqrt{d_1}/\sqrt{d_2}$

35. b)

36. c) hydrogen connected to triple bonded carbons are acidic

37. a) higher the branching lower the boiling point

38. c) $\frac{1}{2}$ mole of hydrogen

39. b)

40. d)

41. b)

42. a)

43. d)

44. c) $18 \text{ g of H}_2 = 6.022 \times 10^{23} \times 18 \text{ atoms} = 108.36 \times 10^{23} \text{ atoms}$

45. a) 1000ml of 1N HCl = 1 equivalent = 1000miliequivalent

1000ml of 0.5N HCl = 1 equivalent = 500miliequivalent

100ml of 0.5N HCl = 1 equivalent = 50miliequivalent

46. d) 2.75 g of HCl gives 4.4 g of salt

therefore 36.5g of HCl gives $4.4 \times 36.5 / 2.75 = 58.4$

47. d)

48. a)

49. d)

50. c)

51. c)

52. c)

53. d)

54. d)

55. c)

56. d)

57. c)

58. a)

59. d)

60. d)