

ST Jan 2015 (last year's exam) Answers

1. D is the one that will help you identify oxygen.
2. C (a color change is usually a sign of a chemical change.)
3. D
 - a $\text{CH}_4\text{O} + \text{b O}_2 \rightarrow \text{c CO}_2 + \text{d H}_2\text{O}$
 - 2 $\text{CH}_4\text{O} + 3 \text{O}_2 \rightarrow 2 \text{CO}_2 + 4 \text{H}_2\text{O}$
4. B (Thomson discovered the electron)
5. A
6. A
7. C
8. C
9. A
 - $m = CV$
 - $m = 50 \text{ mg/L} \cdot (0.100\text{L}) = 5 \text{ mg} = 0.005 \text{ g}$
10. B
 - Fluoride = -1 charge (halogen)
 - $p - c = e$
 - $9 - (-1) = 10$
11. D
12. D (neutralization)
13. B (pH too high = base)
14. C (speed of molecules = temperature)
15. C
16. B
17. C
18. A
19. B
20. B (C touches from rubbing and each one transfers the right number of electrons which appear in the other object.)

21. 45000 kJ is 30% of what number?

45 000 kJ = 0.30x, where x = input energy

x = 45000/0.30 = 150 000 kJ input (total)

150 000 kJ – 45 000 kJ (heat) = **105 000 kJ useful energy**

(if they had wanted efficiency, you would have divided 105000/145000 and multiplied by 100%)

22. a) Oxidation

b) neutralization

c) oxidation

d) neutralization

23. a small cup of boiling water has a high temp but low heat content due to its small mass.

24. 19+ 2e) 8e) 8e) 1e

K ·

25. $3 \text{Ca}(\text{OH})_2 + 2 \text{H}_3\text{PO}_4 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + 6 \text{H}_2\text{O}$

$\text{S}_8 + 24 \text{F}_2 \rightarrow 8 \text{SF}_6$

26. $(144 + 88 - 200) \text{g} = 32 \text{g}$

Yes mass is always conserved.

27. $V = IR$

$6 = 0.0235 (R)$ You need amps in Ohm's Law

$R = 6 / 0.0235 = 255 \Omega$.

28. $C = m/V = 0.80 \text{g} / 0.075 \text{L} = 10.7 \text{g/L}$

$0.80 \text{g} / (0.075-0.025) \text{L} = 16 \text{g/L}$

29. (1) d

(2) a

(3) b

(4) c

30. A-- $100 \text{ mg}/4 \text{ L} = 25 \text{ ppm}$
B-- 9025 ppm
C— $10\,000 \text{ mg}/0.200 \text{ L} = 50\,000 \text{ ppm}$
D--- $2\,000\,000 \text{ mg}/5 \text{ L} = 400\,000 \text{ ppm}$
In decreasing order : D, C, B, A

This exam was a



Lab

1. C
2. B (hydrogen is less dense than air and will rise)
3. C
4. B
5. A (use $\text{mass} = CV$ and the thin neck of a volumetric flask is more accurate than a wide beaker)
6. B (eye level to the meniscus)
7. C
8. C
9. D
10. C

This exam was another

