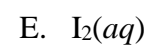
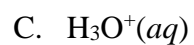
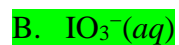
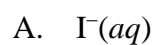
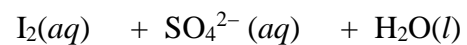
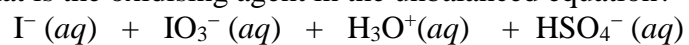


### Multichoice questions - Answers

1. What is the oxidising agent in the unbalanced equation?



2. Oxalate ions ( $\text{C}_2\text{O}_4^{2-}$ )

9. Which kind of attractive forces are likely to be holding particles together in a substance that melts at  $681^{\circ}\text{C}$  and that conducts electricity when molten but not when solid?
- A. Ionic bonding
  - B. Metallic bonding
  - C. Dipole-dipole interactions
  - D. Network covalent bonding
  - E. Covalent molecular bonding
10. At room temperature, fluorine is a gas (boiling point  $-188^{\circ}\text{C}$ ), while bromine is a liquid (boiling point  $+59^{\circ}\text{C}$ ). Which one of the following best explains the difference in the physical states of these two halogens?
- A. The covalent bonds in bromine are more polar.
  - B. The covalent bonds in bromine are stronger.
  - C. The covalent bonds in bromine are weaker.
  - D. The intermolecular forces in bromine are stronger.

17. What is the correct classification of these alcohols?

	1	2	3
A	tertiary	primary	secondary
B	tertiary	secondary	primary
C	tertiary	tertiary	secondary
D	secondary	primary	secondary
E	secondary	tertiary	secondary

18. Methyl-t-butyl ether,  $C_5H_{12}O$ , can be added to gasoline to promote cleaner burning. How many moles of oxygen gas,  $O_2$ , are required to burn 1.0 mol of this compound completely to form carbon dioxide and water?

- A. 9.5 mol      B. 8.0 mol      C. 7.5 mol      D. 6.0 mol      E. 4.5 mol

19. A hydrocarbon X of molecular formula  $C_6H_{14}$  was allowed to react with limited chlorine gas in the presence of light. The resulting mixture produced only two monochloroalkane



27. Which of the alcohols below would give a carboxylic acid when reacted with  $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}^+$  ?

A.

**B.**

C.

D.



35. For the reaction  $X \rightleftharpoons Y$ , an initial concentration of  $1.0 \text{ mol L}^{-1}$  X is allowed to come to equilibrium. If  $K = 10$ , what is the equilibrium concentration of Y?

- A.  $0.10 \text{ mol L}^{-1}$     B.  $0.50 \text{ mol L}^{-1}$     **C.  $0.91 \text{ mol L}^{-1}$**     D.  $1.1 \text{ mol L}^{-1}$     E.  $10 \text{ mol L}^{-1}$

36. The C=O double bond has a bond length of  $0.122 \text{ nm}$  and a bond energy of about  $740 \text{ kJ mol}^{-1}$  in some organic compounds. Which of the following pairs of figures is most likely to be correct for a C – O single bond?

	Bond length, nm	Bond energy, $\text{kJ mol}^{-1}$
A	0.113	335
B	0.113	1080
C	0.116	805
<b>D</b>	<b>0.143</b>	<b>360</b>
E	0.143	1080

37. The ionic-product constant for water,  $K_w$ , at  $45 \text{ }^\circ\text{C}$  is  $4.0 \times 10^{-14}$ . What is the pH of pure water at this temperature?

- A. 6.7**                      B. 7.0                      C. 7.3                      D. 8.5                      E. 13.4

38. What is the pH of a  $0.025 \text{ mol L}^{-1}$  solution of KOH?

- A. 1.60                      B. 3.69                      C. 7.00                      D. 10.31                      **E. 12.40**

39. What is the conjugate acid of  $\text{HPO}_4^{2-}$ ?

- A.  $\text{H}_3\text{PO}_4(\text{aq})$     **B.  $\text{H}_2\text{PO}_4^-(\text{aq})$**     C.  $\text{H}_3\text{O}^+(\text{aq})$     D.  $\text{H}^+(\text{aq})$





50. Bob dissolved 4.021 g of NaOH in water and made up the solution to 1 litre with water. He then pipetted 10.00 mL of this solution into a flask and titrated it with 0.0500 mol L<sup>-1</sup> HCl solution from a burette. A volume of 20.42 mL of acid had been used at the endpoint. Bob's teacher deduced that:

A. 