SEC 3E CHEMISTRY 6092

TERM 3 TIMED PRACTICE MARK SCHEME

Question	1	2	3	4	5
Answer	В	D	D	С	C

copper(II) carbonate CuCO ₃ [ALLOW copper carbonate] (a) Helium and neon are unreactive OR Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ (c) Correct electronic structures for both ions (2) Correct charges for both ions (1) (d) F C Cl Rest of molecule correct (1) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction			SECTION B & C [30 marks]				
(c) CH ₄ (g) + 2O ₂ (g) → CO ₂ (g) + 2H ₂ O (g) 7 (a) Diamond has a giant molecular structure of strong covalent bonds (1), which makes diamond very hard (1) (b) Graphite has weak forces of attraction between the layers of carbon atoms (1) The layers can slide over one another easily (1) 8 (a) Any four (with clear comparisons) from: Dalton's formula of carbon monoxide disagrees with the modern formula of CO (1), as his formula of ammonia has 2 hydrogen instead (1) Dalton's formula of water has 1 hydrogen atoms fewer (1) than the modern formula of his ormula of water has 1 hydrogen atom fewer (1) than the modern formula of his O(1) (b) potassium bromide 19, 35 copper(II) carbonate CuCO ₂ [ALLOW copper carbonate] SO ₂ 16, 8(2) 9 (a) Helium and neon are unreactive OR Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ (c) Correct electronic structures for both ions (2) Correct pair of shared electrons (1) Rest of molecule correct (1) (e) In LiCI, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction	6	(a)	$CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$				
7 (a) Diamond has a giant molecular structure of strong covalent bonds (1), which makes diamond very hard (1) (b) Graphite has weak forces of attraction between the layers of carbon atoms (1) The layers can slide over one another easily (1) 8 (a) Any four (with clear comparisons) from: Dalton's formula of carbon monoxide disagrees with the modern formula of CO (1), as his formula showed carbon bonded to a hydrogen instead (1) Dalton's formula of ammonia has 2 hydrogen atoms fewer (1) than the modern formula of NHs (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of NHs (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of NHs (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of HsO (1) (b) potassium bromide cocycle (16, 8(2)) 9 (a) Helium and neon are unreactive OR Hellum and neon have completely filled outer shells of electrons (b) BeCl ₂ Correct electronic structures for both ions (2) Correct charges for both ions (1) (c) Correct charges for both ions (1) (d) Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCl, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction		(b)					
diamond very hard (1) (b) Graphite has weak forces of attraction between the layers of carbon atoms (1) The layers can slide over one another easily (1) Any four (with clear comparisons) from: Dalton's formula of carbon monoxide disagrees with the modern formula of CO (1), as his formula showed carbon bonded to a hydrogen instead (1) Dalton's formula of ammonia has 2 hydrogen atoms fewer (1) than the modern formula of NHs (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of NHs (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of HzO (1) (b) potassium bromide 19, 35 CuCO ₃ [ALLOW copper carbonate] SO ₂ Helium and neon are unreactive OR Helium and neon have completely filled outer shells of electrons BeCl ₂ (c) (d) (d) (e) Correct electronic structures for both ions (2) Correct charges for both ions (1) Correct charges for both ions (1) (e) In LiCi, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction		(c)	$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$				
diamond very hard (1) (b) Graphite has weak forces of attraction between the layers of carbon atoms (1) The layers can slide over one another easily (1) Any four (with clear comparisons) from: Dalton's formula of carbon monoxide disagrees with the modern formula of CO (1), as his formula showed carbon bonded to a hydrogen instead (1) Dalton's formula of ammonia has 2 hydrogen atoms fewer (1) than the modern formula of NHs (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of NHs (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of HzO (1) (b) potassium bromide 19, 35 CuCO ₃ [ALLOW copper carbonate] SO ₂ 9 (a) Helium and neon are unreactive OR Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ (c) (d) (d) (d) Correct electronic structures for both ions (2) Correct charges for both ions (1) (e) Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCi, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction							
The layers can slide over one another easily (1) Any four (with clear comparisons) from: Dalton's formula of carbon monoxide disagrees with the modern formula of CO (1), as his formula showed carbon bonded to a hydrogen instead (1) Dalton's formula of ammonia has 2 hydrogen atoms fewer (1) than the modern formula of NH ₃ (1) Dalton's formula of water has 1 hydrogen atoms fewer (1) than the modern formula of H ₂ O (1) (b) potassium bromide 19, 35 copper(II) carbonate CuCO ₃ [ALLOW copper carbonate] SO ₂ 16, 8(2) 9 (a) Helium and neon are unreactive OR Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ (c) (d) (d) (e) Correct electronic structures for both ions (2) Correct charges for both ions (1) (e) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction	7		diamond very hard (1)				
Daiton's formula of carbon monoxide disagrees with the modern formula of CO (1), as his formula showed carbon bonded to a hydrogen instead (1) Dalton's formula of ammonia has 2 hydrogen atoms fewer (1) than the modern formula of NH ₃ (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula of H ₂ O (1) (b) potassium bromide 19, 35 copper(II) carbonate CuCO ₃ [ALLOW copper carbonate] SO ₂ 16, 8(2) 9 (a) Helium and neon are unreactive OR Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ 1 (c) Correct electronic structures for both ions (2) Correct charges for both ions (1) (d) Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction		(b)					
copper(II) carbonate CuCO ₃ [ALLOW copper carbonate] 9 (a) Helium and neon are unreactive OR Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ Correct electronic structures for both ions (2) Correct charges for both ions (1) (d) F (Cl	8	Dalton's formula of carbon monoxide disagrees with the modern formula of CO (as his formula showed carbon bonded to a hydrogen instead (1) Dalton's formula of ammonia has 2 hydrogen atoms fewer (1) than the mode formula of NH ₃ (1) Dalton's formula of water has 1 hydrogen atom fewer (1) than the modern formula					
Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ (c) Correct electronic structures for both ions (2) Correct charges for both ions (1) (d) F Cl Rest of molecule correct (1) (e) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCl, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction		(b)	potassium bromide 19, 35 copper(II) carbonate CuCO ₃ [ALLOW copper carbonate]	6			
Helium and neon have completely filled outer shells of electrons (b) BeCl ₂ (c) Correct electronic structures for both ions (2) Correct charges for both ions (1) (d) Correct pair of shared electrons (1) Rest of molecule correct (1) (e) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCl, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction	9	(a)	Helium and neon are unreactive OR	1			
Correct electronic structures for both ions (2) Correct charges for both ions (1) Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction	•	(4)		•			
Correct electronic structures for both ions (2) Correct charges for both ions (1) Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction		(b)		1			
Correct electronic structures for both ions (2) Correct charges for both ions (1) (d) Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCi, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction			Г Т-	3			
Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCI, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction			Correct electronic structures for both ions (2)				
Correct pair of shared electrons (1) Rest of molecule correct (1) In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCl, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction		(d)	XX	2			
In LiCl, the lithium and chloride ions are held together by strong ionic bonds in a giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCl, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction		Correct pair of shared electrons (1)					
giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction In FCI, the molecules are held together by weak Van der Waals' forces (1) and little heat energy is required to overcome these intermolecular forces of attraction							
heat energy is required to overcome these intermolecular forces of attraction		(e)	giant ionic lattice (1) and a large amount of heat energy is required to overcome the strong electrostatic forces of attraction				
A statement describing a difference in amount of heat energy required (1)							
7 Clatomont accombing a amoronico in amount of float chorgy required (1)			A statement describing a difference in amount of heat energy required (1)				