Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Physical

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Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Mark Schemes

Q1.

(a) electron deficient H

Allow H delta plus / slightly positive

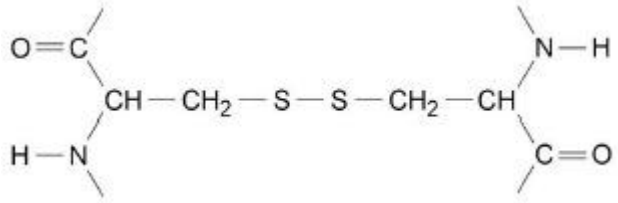
M1

(Which attracts) lone pair/electron pair on O

Penalise lone pair/electron pair donation

M2

(b)



Penalise dashed/dotted S—S
Ignore extra additions to structures

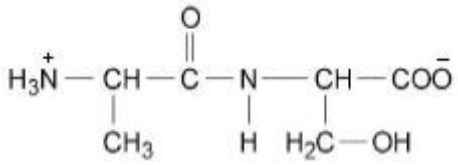
1

(c) Tertiary or Quaternary

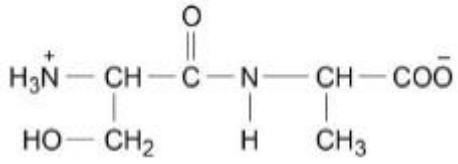
Allow 3° or 4°
do not penalise minor error in spelling e.g. Quarternary

1

(d)



OR



Incorrect peptide bond CE=0
M1 for correct dipeptide
M2 for correct charges
Ignore additional dipeptide in working
Allow –CONH— or –COHN—

1

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1

[6]

Q2.

(a) $P_4 + 5\ O_2 \longrightarrow P_4O_{10}$

allow 4 P + 5 $O_2 \longrightarrow P_4O_{10}$

allow multiples

ignore state symbols

1

(b) React with water / add water / solution (of substances in question)

If no M1 then CE = 0/3

1

Add litmus paper / universal indicator / measure pH (with pH meter)

Allow other reagents in solution, e.g. sodium carbonate solution, that give a positive result

Allow other indicators with appropriate colour changes

1

M3 is dependent on M2

Litmus: blue with sodium oxide (solution) **and** red with phosphorus oxide (solution)OR
If blue litmus added phosphorus oxide solution goes red OR
If red litmus added sodium (hydr)oxide goes blue

Universal Indicator: blue/ purple with sodium oxide (solution) **and** red with phosphorus oxide (solution)

pH meter or Universal Indicator: sodium (hydr)oxide (solution) has a higher pH (than phosphorus oxide (solution)) or vv

sodium (hydr)oxide pH (12 to 14) **and** phosphorus oxide (solution) pH (-1 to 2)

For pH meter or Universal Indicator: allow sodium (hydr)oxide (solution) has a higher pH and phosphorus oxide (solution) has lower pH.

1

(c) For silicon dioxide - giant covalent (molecule)/ macromolecular

1

For sulfur trioxide - molecular / (simple) molecule

1

Do not allow simple covalent

(d) Covalent bonds (between atoms) in SiO_2

1

Van der Waals between molecules / intermolecular forces in SO_3

1

Covalent bonds are stronger than van der Waals forces

1

(Covalent bonds) take more energy to be overcome/broken or (Van der Waals) take less energy to be overcome/broken

1

If covalent bonds between molecules of SiO_2 lose M1 only

If hydrogen bonds in SO_3 lose M2 only

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If metallic or ionic max score = 1 (either M1 or M2)
If IMF in SiO_2 then max 1 (M2 only)
Allow dipole-dipole forces between molecules
For M3 and M4 comparison is required/implied

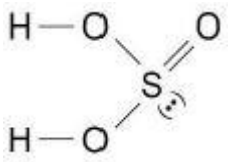
(e) $SO_3 + 2KOH \longrightarrow K_2SO_4 + H_2O$
$SO_3 + KOH \longrightarrow KHSO_4$
$SO_3 + 2OH^- \longrightarrow SO_4^{2-} + H_2O$
$SO_3 + OH^- \longrightarrow HSO_4^-$
Allow multiples
Ignore state symbols

1

(f) $3\ MgO + 2\ H_3PO_4 \longrightarrow Mg_3(PO_4)_2 + 3\ H_2O$
Allow multiples
Ignore state symbols

1

(g)



Ignore lone pairs

1

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