

Name of the Student: _____

Max. Marks : 18 Marks

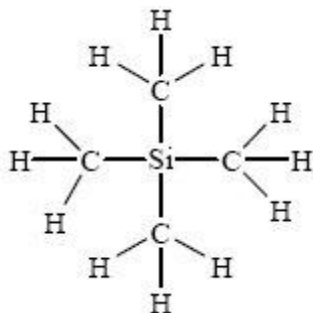
Time : 18 Minutes

Mark Schemes

Q1.

- (a) (i) **W** 3 1
- X** 4 1
- Y** 2 1

(ii)

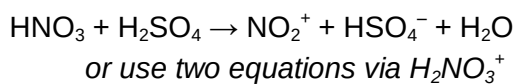
*displayed formula shows ALL bonds*

1

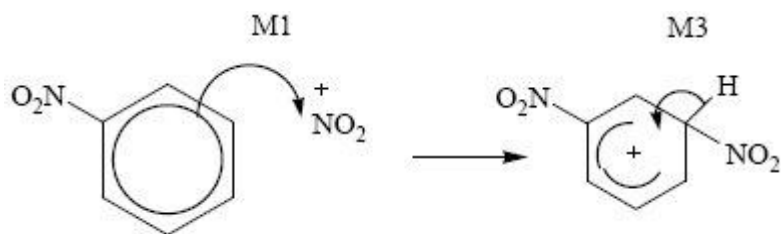
- (b) (i) NO_2^+
allow + anywhere
can score in equation 1



1

OR

- (ii) electrophilic substitution
Not Friedel Crafts 1



Allow Kekule structures

+ must be on N of $^+\text{NO}_2$ (which must be correct)

both NO_2 must be correctly positioned and bonded to gain M2

M1 arrow from circle or within it to N or to + on N

horseshoe must not extend beyond C2 to C6 but can be smaller

+ not too close to C1

M3 arrow into hexagon unless Kekule

allow M3 arrow independent of M2 structure

ignore base removing H in M3

3

- (c) (i) H_2/Ni or H_2/Pt or Sn/HCl or Fe/HCl (conc or dil or neither)

allow dil H_2SO_4

ignore mention of NaOH

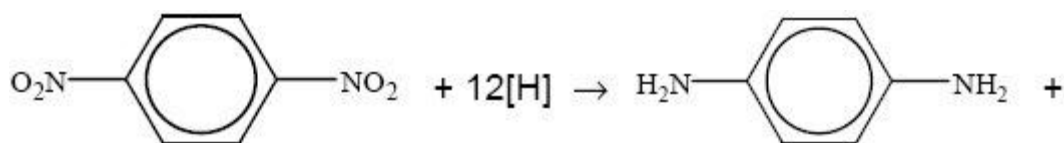
Not NaBH_4

Not LiAlH_4

Not $\text{Na}/\text{C}_2\text{H}_5\text{OH}$

not conc H_2SO_4 or any HNO_3

1



$4\text{H}_2\text{O}$

Or 6H_2

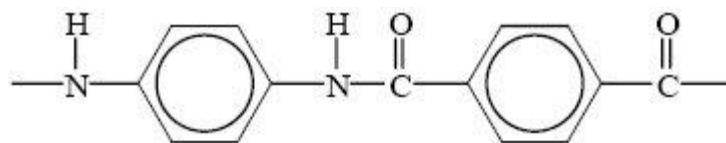
allow $\text{C}_6\text{H}_4(\text{NO}_2)_2$ etc ,

allow NO_2-NH_2-

i.e. be lenient on structures, the mark is for balancing equ

1

(ii)



allow $-\text{CONH}$

ignore $[\]_n$ as in polymer

1st mark for correct peptide link

2nd mark for the rest correct including trailing bonds

2

- (iii) **M1** Kevlar is biodegradable but polyalkenes not

allow Kevlar is more biodegradable

1

M2 Kevlar has polar bonds/is a (poly) amide/has peptide link

comment on structure of Kevlar

1

M3 can be hydrolysed/attacked by nucleophiles/acids/
bases/enzymes

1

M4 polyalkenes non polar/has non-polar bonds

comment on structure of polyalkenes but not just strong bonds

1

[18]