**Name of the Student**:_____
**Max. Marks : 18 Marks** **Time : 18 Minutes**

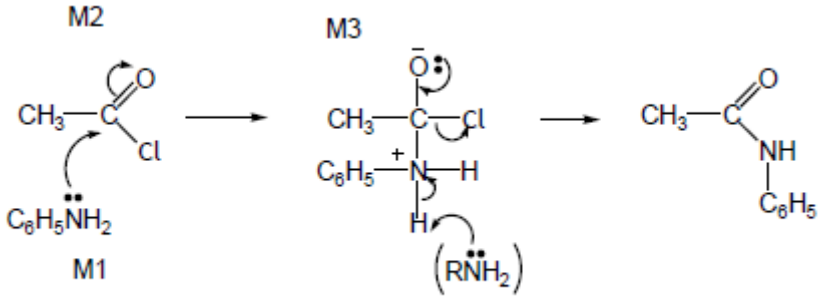
Mark Schemes

Q1.

(a) (nucleophilic) addition-elimination

*Not electrophilic addition-elimination*

**1**




*Allow $C_6H_5$ or benzene ring*

*Allow attack by :$NH_2C_6H_5$*

*M2 not allowed independent of M1, but allow M1 for correct attack on C+*

*M3 for correct structure <u>with charges</u> but lone pair on O is part of M4*

*M4 (for three arrows and lone pair) can be shown in more than one structure*

**4**

(b) **The minimum quantity of hot water was used:**

To ensure the hot solution would be saturated / crystals would form on cooling

**1**

**The flask was left to cool before crystals were filtered off:**

Yield lower if warm / solubility higher if warm

**1**

**The crystals were compressed in the funnel:**

Air passes through the sample not just round it

*Allow better drying but not water squeezed out*

**1**

**A little cold water was poured through the crystals:**

To wash away soluble impurities

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1

(c) Water

*Do not allow unreacted reagents*

1

Press the sample of crystals between filter papers

*Allow give the sample time to dry in air*

1

(d) $M_r$ product = 135.0

1

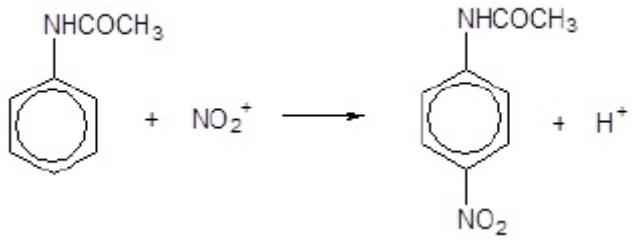
Expected mass = $5.05 \times \frac{135.0}{93.0} = 7.33$ g

1

Percentage yield = $\frac{4.82}{7.33} \times 100 = 65.75 = 65.8(\%)$

*Answer must be given to this precision*

(e)




OR

$C_6H_5NHCOCH_3 + NO_2^+ \rightarrow C_6H_4(NHCOCH_3)NO_2 + H^+$

1

(f) Electrophilic substitution

1

(g) Hydrolysis

1

(h) Sn / HCl

*Ignore acid concentration; allow Fe / HCl*

1

**[18]**

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