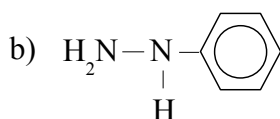
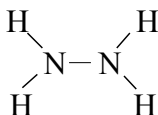


## Chemguide – answers

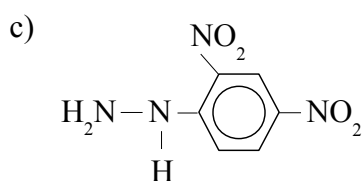
### ALDEHYDES AND KETONES: ADDITION-ELIMINATION (CONDENSATION) REACTIONS

1. a) If you add a few drops of an unknown compound to Brady's reagent and get a bright orange or yellow precipitate, the compound is an aldehyde or ketone.
- b) Filter and wash the precipitate with a little methanol, and then recrystallise it from a suitable solvent such as a mixture of ethanol and water. You do this by dissolving the crystals in a minimum amount of hot solvent, and then allowing the solution to cool - the crystals reform. They are filtered and washed with a small amount of solvent and then dried. You then find their melting point, and compare it with tables of the melting points of similar compounds of the common aldehydes and ketones to find out which one you have.

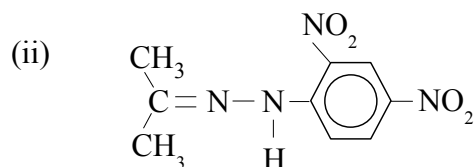
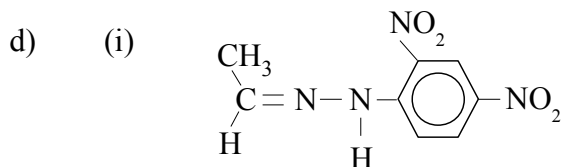
2. a)  $\text{H}_2\text{N}-\text{NH}_2$  ( $\text{H}_2\text{N}-\text{NH}_2$  would probably do, but it is better to be on the safe side!)



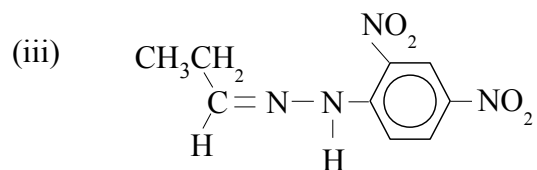
(I have moved this around a bit to bring it into line with the diagram on the Chemguide page. As long as you have got everything joined up correctly, it doesn't matter how you have arranged it in space. But it is best to have the  $\text{H}_2\text{N}$ - group on the left-hand side because it makes it easier to see how you connect compounds like this to an aldehyde or ketone.)



(The  $\text{NO}_2$  groups must be next door to the hydrazine part and opposite it.)



## Chemguide – answers



(In each case, all you have to do is to line up the C=O bond in the aldehyde or ketone with the H<sub>2</sub>N- group and remove water, and then join up whatever is left. It looks complicated, but it isn't once you have got the structure for the 2,4-DNP.)

- e)
- (i) ethanal 2,4-dinitrophenylhydrazone
  - (ii) propanone 2,4-dinitrophenylhydrazone
  - (iii) propanal 2,4-dinitrophenylhydrazone

f) Water

