## ALDEHYDES, KETONES AND CARBOXYLIC ACIDS



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	(b) Can 2,2-dimethylpropanal ( $CH_3$ ) <sub>3</sub> - C - CHO undergo Cannizzaro reaction?	
	Give a reason for your answer.	
Q.162	An organic compound with the molecular formula $C_9H_{10}O$ :	5
	(i) forms the 2,4-DNP derivative.	
	(ii) does not reduce Tollens' reagent.	
	(iii) forms iodoform when reacted with sodium hypoiodite.	
	(iv) gives 1,2-benzenedicarboxylic acid on oxidation.	
	Determine the compound's structure and illustrate how you utilized provided information to identify it.	

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## **Answer Key and Marking Scheme**

Q.No	Answers	Marks
Q.161	(a) 1 mark each for the following:	4
	- In benzaldehyde the carbocation is less electrophilic than in formaldehyde due to resonance with the ring electrons.	
	- The initial nucleophilic addition of hydroxide anion is therefore faster on formaldehyde than on benzaldehyde.	
	- The aldehyde that undergoes nucleophilic attack by OH <sup>.</sup> is converted to the sodium salt of the acid and the other aldehyde to the alcohol.	
	(b)	
	- Yes [0.5]	
	- It does not have an alpha hydrogen atom. [0.5]	
	(No marks to be awarded if reason is not given.)	
Q.162	O CH <sub>3</sub>	5
	Since it forms a 2,4-DNP derivative, it contains a carbonyl group and must be an aldehyde or a ketone.	
	Since it does not reduce Tollens' reagent, it cannot be an aldehyde and is therefore a ketone.	
	Since it gives the iodoform reaction, it must have a methyl group linked to the carbonyl carbon atom and is, therefore, a methyl ketone.	
	0.5 marks each for the following:	
	- Since it gives 1,2-benzenedicarboxylic acid on oxidation, it is a 1,2-substituted benzene derivative.	
	<ul> <li>using the molecular formula together with the points above, we arrive at the structure of the compound</li> </ul>	





