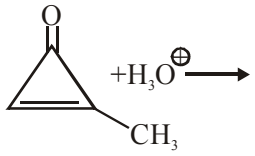
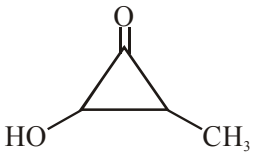
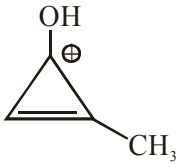
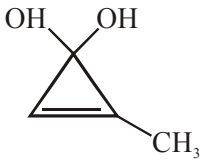
CARBONYL COMPOUNDS

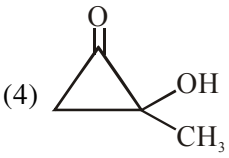
1. The major product in the following reaction is:



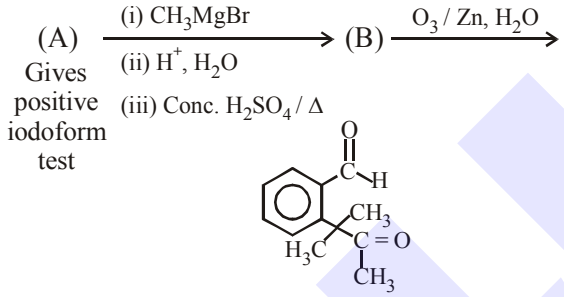
(1) 

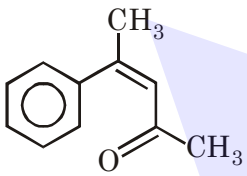
(2) 

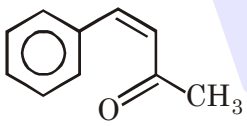
(3) 

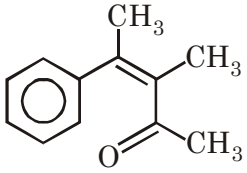
(4) 

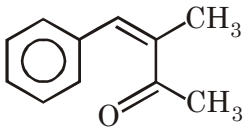
2. Identify (A) in the following reaction sequence :



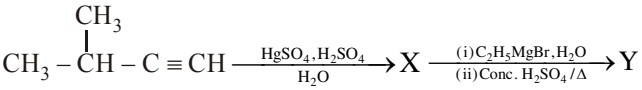
(1) 

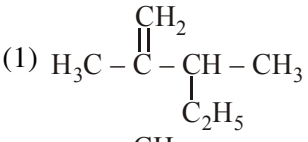
(2) 

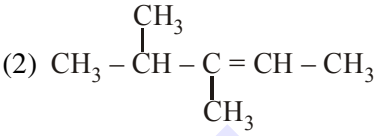
(3) 

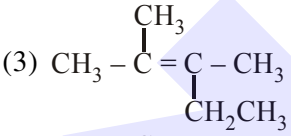
(4) 

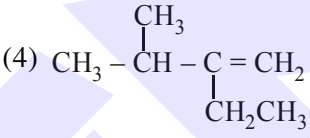
3. The major product (Y) in the following reactions is :



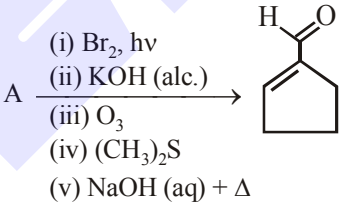
(1) 

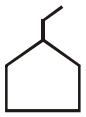
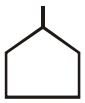
(2) 

(3) 

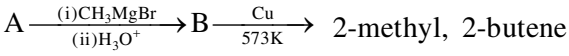
(4) 

4. In the following reaction A is :



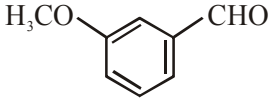
(1)  (2)  (3)  (4) 

5. Consider the following reactions

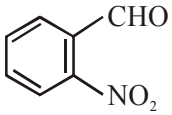


The mass percentage of carbon in A is _____.

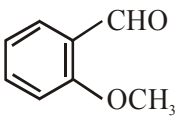
6. The increasing order of the following compounds towards HCN addition is :



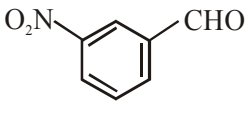
(i)



(ii)



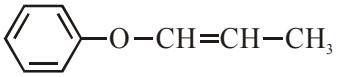
(iii)

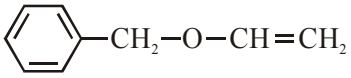


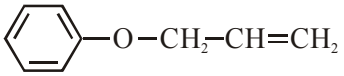
(iv)

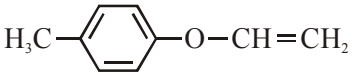
(1) (iii) < (iv) < (ii) < (i) (2) (iii) < (iv) < (i) < (ii)
(3) (iii) < (i) < (iv) < (ii) (4) (i) < (iii) < (iv) < (ii)

7. An organic compound 'A' ($C_9H_{10}O$) when treated with conc. HI undergoes cleavage to yield compounds 'B' and 'C'. 'B' gives yellow precipitate with $AgNO_3$ where as 'C' tautomerizes to 'D'. 'D' gives positive idoform test. 'A' could be :

(1) 

(2) 

(3) 

(4) 

8. The increasing order of the reactivity of the following compound in nucleophilic addition reaction is :

Propanal, Benzaldehyde, Propanone, Butanone

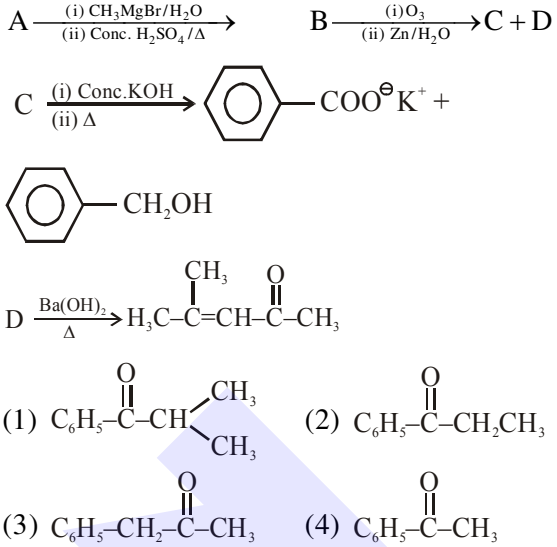
(1) Butanone < Propanone < Benzaldehyde < Propanal

(2) Benzaldehyde < Butanone < Propanone < Propanal

(3) Propanal < Propanone < Butanone < Benzaldehyde

(4) Benzaldehyde < Propanal < Propanone < Butanone

9. The compound A in the following reaction is :



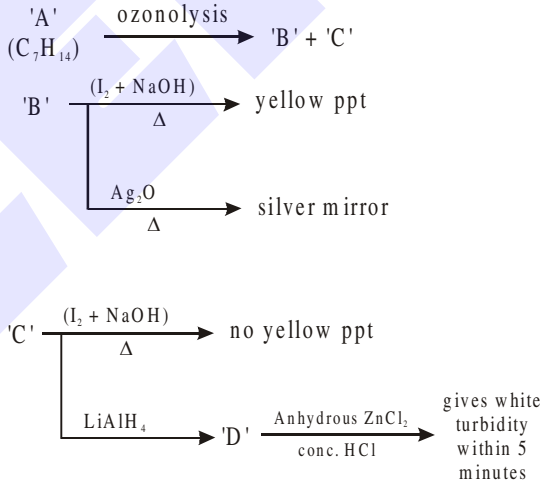
(1)

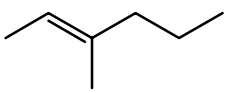
(2)

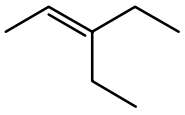
(3)

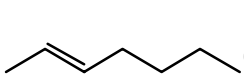
(4)

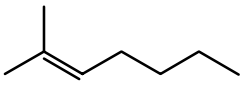
10. Consider the following reactions 'A' is -



(1) 

(2) 

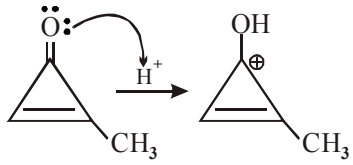
(3) 

(4) 

SOLUTION

1. NTA Ans. (2)

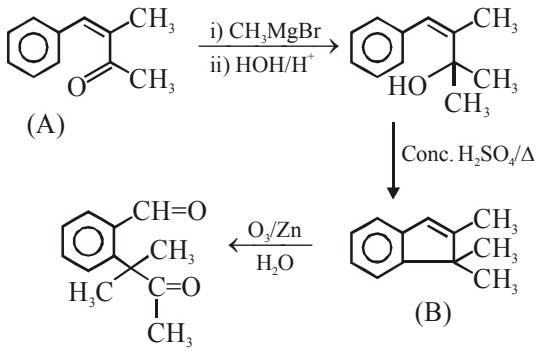
Sol.



(Aromatic stable product)

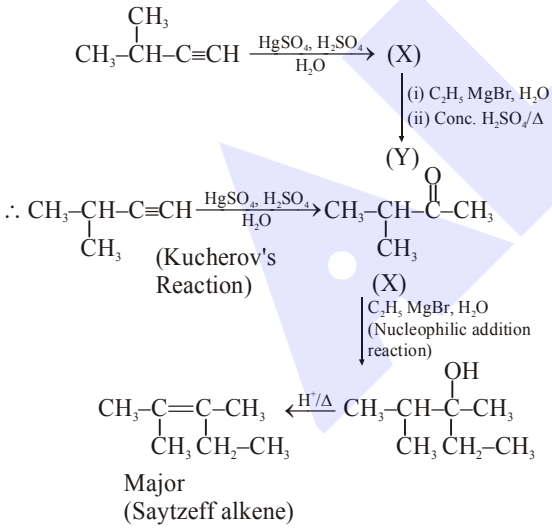
2. NTA Ans. (4)

Sol.



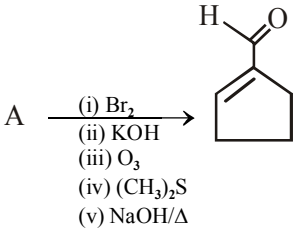
3. NTA Ans. (3)

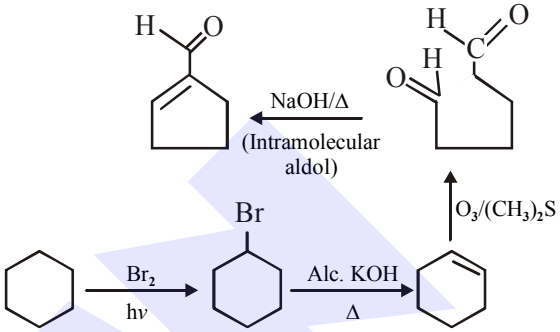
Sol.



4. NTA Ans. (3)

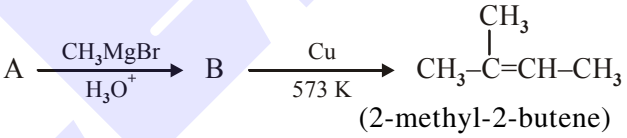
Sol.



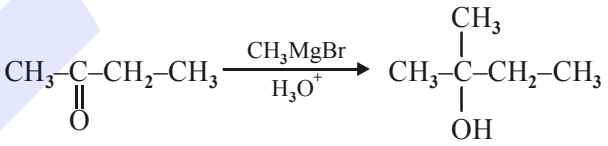


5. NTA Ans. (66.65 to 66.70)

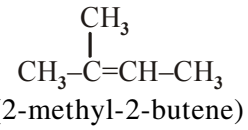
Sol.



(2-methyl-2-butene)



(A) **(B)**



(2-methyl-2-butene)

C ⇒ 12 × 4 = 48

H ⇒ 8 × 1 = 8

O ⇒ 16 × 1 = 16

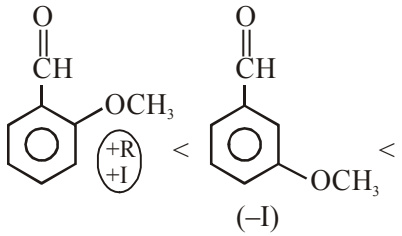
Total 72

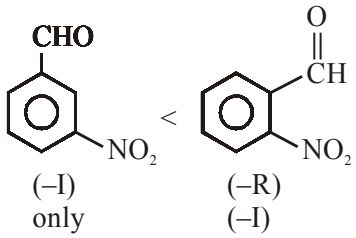
$$\% \text{ of C} = \frac{48}{72} \times 100 = 66.66\%$$

6. Official Ans. by NTA (3)

Sol. Increasing order of reactivity towards HCN addition

Greater the electrophilicity on $-\overset{\overset{O}{\|}}{C}-$ group greater the reactivity in nucleophilic addition.



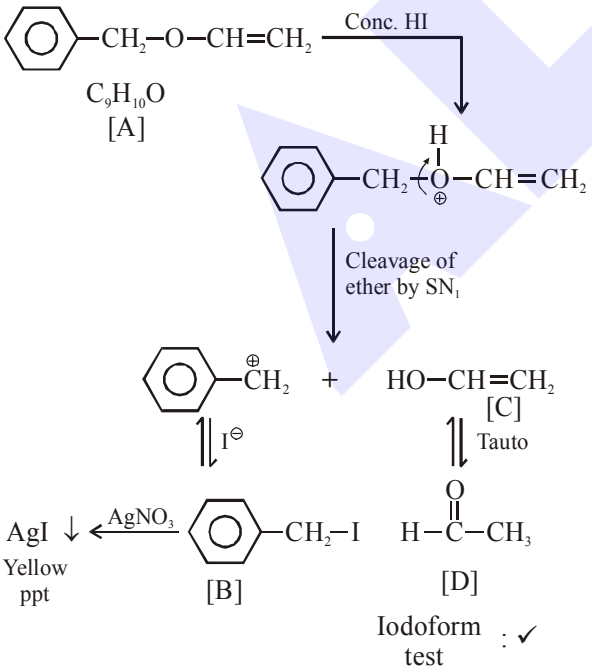


(iii) < (i) < (iv) < (ii)

7. Official Ans. by NTA (2)

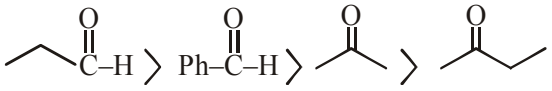
Sol

.



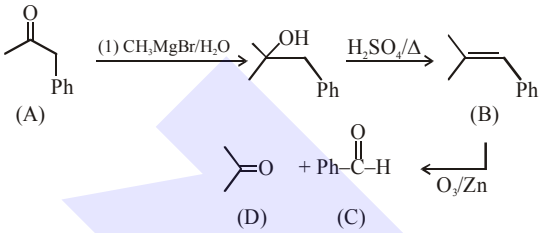
8. Official Ans. by NTA (1)

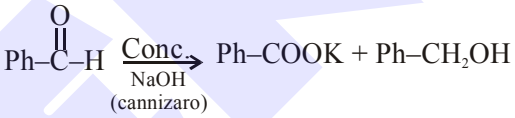
Sol. Reactivity order of various carbonyl compounds → Aldehydes > Ketones

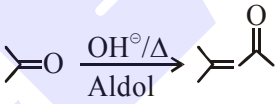


9. Official Ans. by NTA (3)

Sol.







10. Official Ans. by NTA (2)