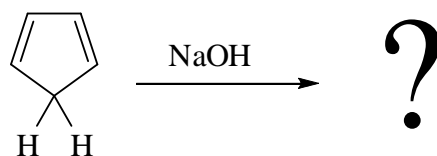


**Marks**  
**2**

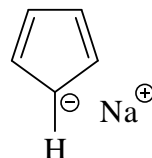
- Cyclopentadiene reacts with sodium hydroxide. Predict the structure of the product and explain its relative stability.



**The product is the cyclopentadienyl anion.**

**This is an aromatic ring as it:**

- (i) flat
- (ii) has  $6\pi$  electrons (2 C=C bonds and a lone pair on the C<sup>-</sup> atom) so satisfies Hückel's  $4n+2$  rule with  $n = 1$
- (iii) all C atoms are  $sp^2$  hybridized.
- (iv)



**The negative charge is delocalized around the ring as shown in the resonance forms below:**

