

Exercise 0.24 – Hybridisation

Q024-01 Appropriate hybridisation schemes for the C atoms in molecular $\text{CH}_3\text{CO}_2\text{H}$ are:

- A. sp^3 and sp
 - B. sp^3 and sp^2
 - C. sp^2 and sp
 - D. sp^3 and sp^3
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Q024-02 sp^3 hybridisation would not be appropriate for the central atom in:

- A. SiF_4
 - B. $[\text{PCl}_4]^+$
 - C. XeF_4
 - D. $[\text{Me}_4\text{N}]^+$
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Q024-03 Suitable hybridisation schemes for Be in $\text{BeCl}_2(\text{g})$ and $\text{BeCl}_2(\text{s})$ are, respectively:

- A. sp and sp
 - B. sp^3 and sp^3
 - C. sp^3 and sp
 - D. sp and sp^3
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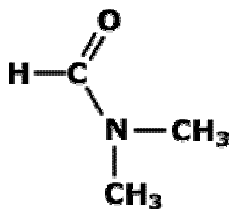
Q024-04 Which of the following molecules contain a central atom which is sp^2 hybridised?

- A. H_2SO_4
 - B. H_2CO_3
 - C. ICl_2
 - D. H_3CCH_3
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Q024-05 Which molecule utilizes sp^3 hybridisation according to Valence Bond Theory?

- A. NH_3
 - B. BF_3
 - C. BeF_2
 - D. XeF_4
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Q024-06 The Lewis structure for dimethylformamide is shown below: How many C and N atoms are sp^3 , sp^2 , and sp hybridised?



- A. 4 (sp^3), 0 (sp^2), 0 (sp)
 - B. 3 (sp^3), 0 (sp^2), 1 (sp)
 - C. 3 (sp^3), 1 (sp^2), 0 (sp)
 - D. 2 (sp^3), 2 (sp^2), 0 (sp)
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Q024-07 What is the hybridisation of nitrogen atoms I, II, III and IV in the following molecules?

	$\text{H}_2\text{N}^{\text{I}}\text{N}^{\text{II}}\text{H}_2$			$\text{HN}^{\text{III}}\text{N}^{\text{IV}}\text{H}$
	I	II	III	IV
A.	sp^2	sp^2	sp^3	sp^3
B.	sp^3	sp^3	sp^2	sp^2
C.	sp^2	sp^2	sp	sp
D.	sp^3	sp^3	sp	sp

Q024-08 Identify the types of hybridisation show by the carbon atoms in the molecule $\text{CH}_2\text{CH}_2\text{CH}_2\text{COOH}$

- I sp
II sp^2
III sp^3
- A. I and II only
B. I and III only
C. II and III only
D. I, II and III

Q024-09 Which types of hybridisation show by the carbon atoms in the molecule $\text{CH}_2=\text{CH}-\text{CH}_3$

- I sp
II sp^2
III sp^3
- A. I and II only
B. I and III only
C. II and III only
D. I, II and III

Q024-10 NO_3^- is trigonal planar and NH_3 is trigonal pyramidal. What is the approximate hybridisation of N in each of these species?

	N in NO_3^-	N in NH_3
A.	sp^2	sp^3
B.	sp^2	sp^2
C.	sp^3	sp^2
D.	sp^3	sp^3