

## Bonding and hybridisation in organic compounds

41. (c) Geometry in  $sp^2$ -hybridisation is trigonal.

42. (a)  $CH_{sp^2} = C_{sp} = CH_{sp^2} - CH_3_{sp^3}$

43. (c) Single bond has longest distance of bonds so  $C_2H_6$  ethane is correct answer.

44. (b) and (c) A **conjugated system** means **double – single – double** pattern, AND all carbons involved must be  **$sp^2$  hybridized** → allows  $\pi$ -electron delocalization.

45. (b)  $CH_3 \underline{CH}_2OH$

46. (a)  $109^\circ 28'$

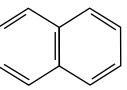
47. (b)  $HC_{sp} \equiv C_{sp^2} - CH_{sp^3} = CH_2$

48. (c) In ethylene molecule carbons are  $sp^2$  hybridised so its structure is trigonal planar

49. (a)  $CH_{sp} \equiv CH_{sp}$

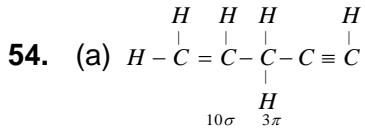
50. (c)  $sp^3$ -hybridised orbitals

51. (c)  $sp^2$

52. (c)  5  $\pi$  bonds are present in naphthalene.



53. (c)  $sp^3$



55. (C) To compare acidity of hydrocarbons (alkane, alkene, alkyne), we check **stability of conjugate base**.

**More s-character = more acidity**

Bond type	Hybridization	% s-character	Acidity order
C-H (alkane)	$sp^3$	25%	Least acidic
C=C-H (alkene)	$sp^2$	33%	Moderate
C≡C-H (alkyne)	sp	50%	Most acidic ✓

56. (c) Graphite is in planar form while diamond is in tetrahedral form

