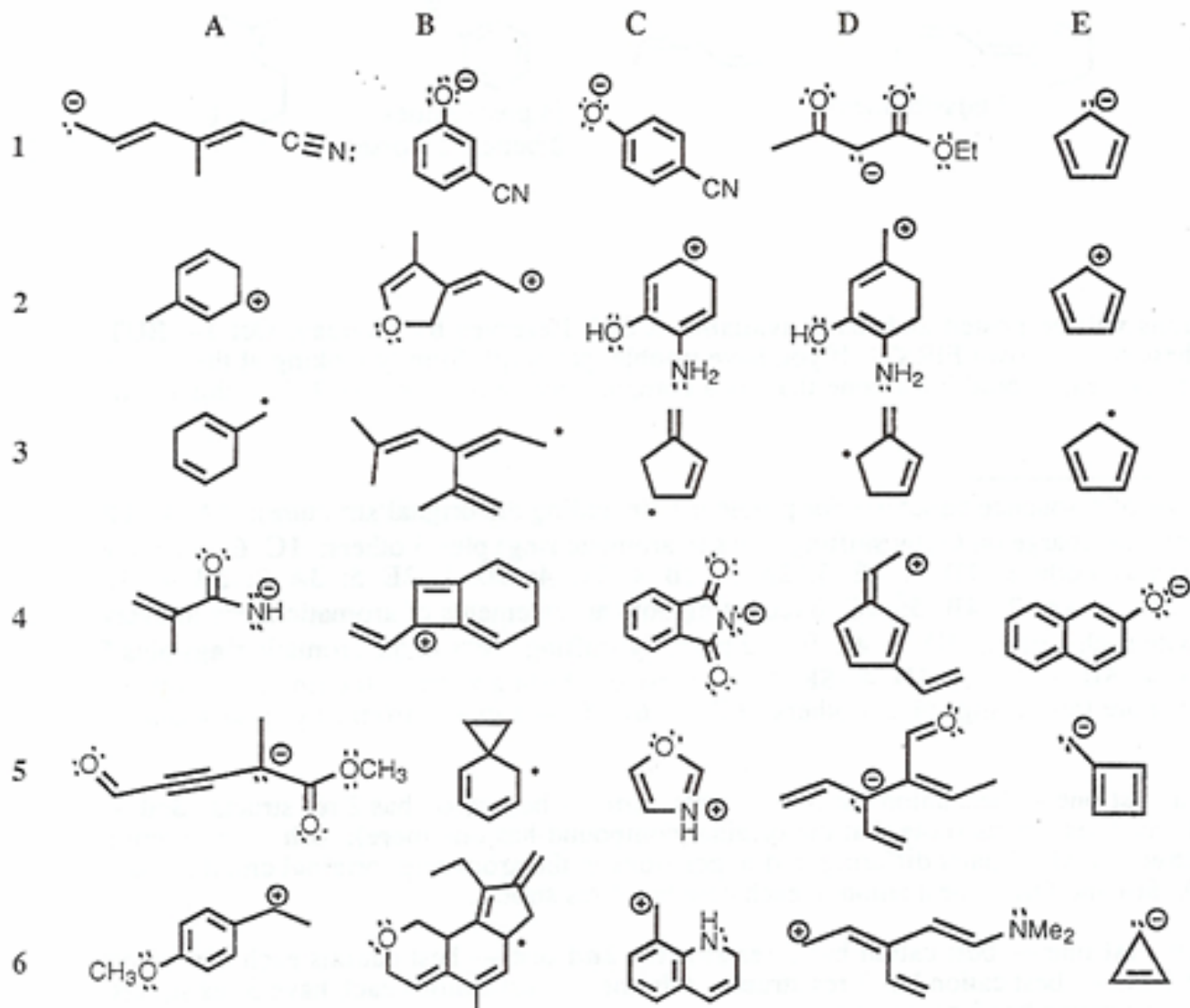


Supplementary Resonance Worksheet
Chemistry 225

1. Draw all of the important resonance structures of the ions and radicals below. Keep in mind that your goal here is to move the charge or unpaired electron around- avoid separating charges that generate unfavorable structures. Be sure that all of your resonance structures have the same net charge. Keep track of the number of hydrogens at each carbon. If you have trouble with this, try drawing out all of the H's first, then try again without the H's.



Hints (numbers include the original structure also):

| | | | | | |
|--------|--------|--------|--------|--------|--------|
| 1a (4) | 2a (3) | 3a (2) | 4a (2) | 5a (4) | 6a (6) |
| 1b (5) | 2b (4) | 3b (4) | 4b (6) | 5b (3) | 6b (5) |
| 1c (6) | 2c (4) | 3c (3) | 4c (6) | 5c (3) | 6c (6) |
| 1d (3) | 2d (4) | 3d (2) | 4d (7) | 5d (4) | 6d (5) |
| 1e (5) | 2e (5) | 3e (5) | 4e (9) | 5e (4) | 6e (3) |

(1c) 1 more (aromatic ring) + 4 others

(4c) 3 + 3 with aromatic electrons shifted

(4e) 2 from shifting pi-electrons + others

2. Deprotonate (remove an H^+ , which results in compound with a negative charge) each of the following compounds to make the most stable anion possible. Draw all out of the resonance structures from the resulting anion.

