

Name _____

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Signature _____

Points [300] _____

Sample Exam

Problem	Points
A	
B	
C	
D	
E	
F	
G	
H	

Good Luck!

A. (30 points) (i) Compare and contrast the Lewis structures of nitromethane, CH_3NO_2 , and methylnitrite, CH_3ONO . (ii) Write at least 2 resonance forms for each molecule. (iii) Based on your examination of the resonance forms, what can you say about the polarity and bond order of the two NO bonds in each substance?

B. (30 points) What kind of a C-C bond length (in Å) would you expect for the dianion of ethene, e.g. an [ethene]²⁻ molecule where two additional electrons are "injected" into the π -bond? Rationalize your conclusion graphically with an **orbital** diagram for [ethene]²⁻.