

Chemistry 431
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Answers to Symmetry Homework

HW 1
I

1. $C_{\infty v}$
2. O_h
3. $D_{\infty h}$
4. C_s
5. C_{3v}
6. D_{6h}
7. O_h
8. T_d
9. $C_{\infty v}$
10. D_{3h}
11. C_{2v}
12. C_s
13. C_{2v}
14. D_{4h}
15. C_{2v}

HW 2
II

1. C_{2v}
2. C_{2v}
3. C_{2v}
4. C_{2v}
5. C_{3v}
6. C_{3v}
7. D_{3h}
8. $C_{\infty v}$
9. D_{4h}
10. C_{2v}
11. D_{2h}
12. C_s
13. C_{2v}
14. D_{2d}
15. C_{3v}
16. $C_{\infty v}$
17. T_d
18. C_{2v}
19. C_{2h}
20. C_1
21. C_s
22. C_{4v}
23. C_{2v}
24. O_h

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EXTRA MOLECULES

HW 3

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|----------------------|--|
| $D_{\infty h}$ - 1. | CO_2 |
| C_{2v} - 2. | $OC(Cl)_2$ (not linear) |
| C_s - 3. | $ONCl$ |
| C_{3v} - 4. | $OPCl_3$ (same as PF_3) |
| C_s - 5. | $SOCl_2$ |
| D_{3h} - 6. | $GaCl_3$ (planar) |
| $C_{\infty v}$ - 7. | $I-Cl$ |
| D_{4h} - 8. | XeF_4 |
| Oh - 9. | SeF_6 |
| C_{2v} - 10. | IBr_3 |
| D_{2h} - 11. | Al_2Br_6 |
| C_s - 12. | $OSeF_2$ |
| C_{2v} - 13. | SF_4 |
| $C_{\infty v}$ - 14. | XeF_6 |
| D_{2d} - 15. | Our old friend - tennis ball with the stripe |

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Homework 4 Answers

1. C_{2v}
2. D_{6h}
3. T_d
4. C_{3v}
5. C_{2v}
6. D_{5h}
7. O_h
8. C_{2v}
9. D_{2h}
10. C_s
11. C_{5v}
12. C_{2v}
13. D_{2d}

14. $C_{\infty v}$
15. D_{3h}
16. C_{3v}
17. C_s
18. C_{2v}
19. $C_{\infty v}$
20. D_{3h}
21. C_s
22. C_{3v}
23. D_{3h}
24. C_{3v}
25. C_{4v}