

Name: _____

Points: _____

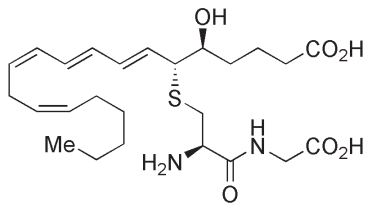
Prof. K. C. Nicolaou

Midterm Exam

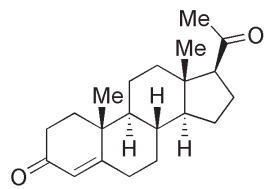
CHEM 151 - Molecules that Changed the World

February 5, 2009

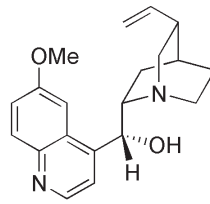
1. Match the following names with the appropriate molecular structure: adenine, penicillin G, glucose, sucrose, Aspirin®, Celebrex®, terpineol, tropinone, haemin, quinine, morphine, progesterone, strychnine, prostaglandin E₂, leukotriene D₄, prostacyclin, vitamin B₁₂, vitamin C, erythromycin A (40 points).



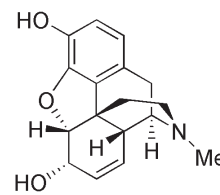
1. _____



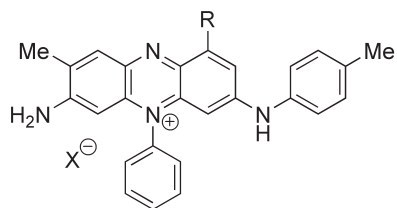
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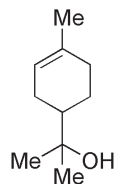
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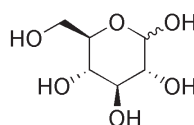
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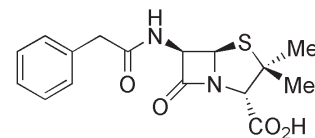
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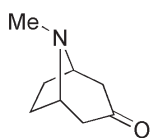
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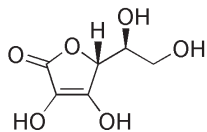
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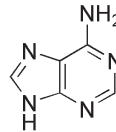
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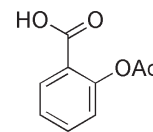
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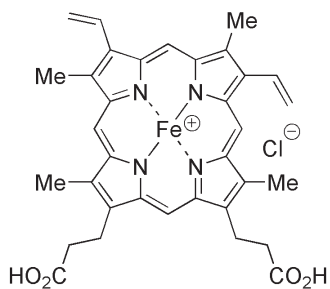
10. _____



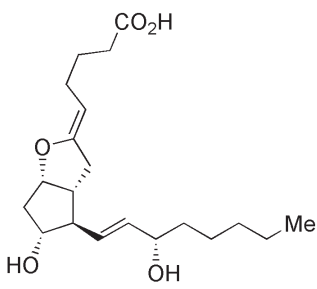
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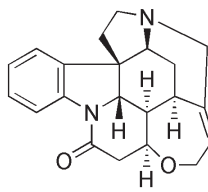
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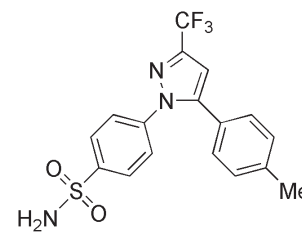
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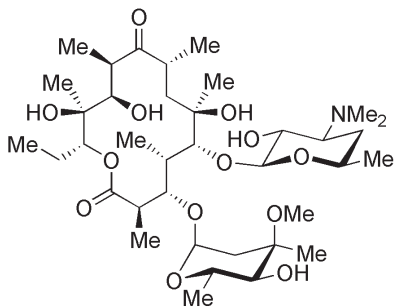
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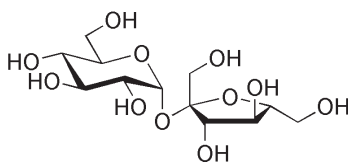
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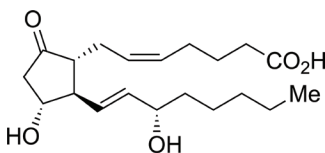
16. _____



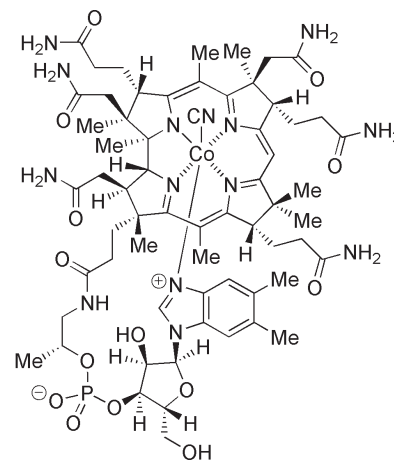
17. _____



18. _____



19. _____



20. _____

2. Match the following names with the appropriate discovery, achievement or theory shown below:
Demokritos, Friedrich Wöhler, R. B. Woodward, E. J. Corey, Emil Fischer, John C. Sheehan,
Sir Robert Robinson, William Henry Perkin, Sr., Alexander Fleming, Dorothy Crowfoot Hodgkin (20 points).

1. The discovery of the purple dye mauviene: _____

2. The first total synthesis of glucose: _____

3. The first total synthesis of urea: _____

4. The first total synthesis of penicillin G: _____

5. The Atomic Theory of matter: _____

6. The concept of Retrosynthetic Analysis: _____

7. The introduction of the arrow to describe reaction mechanisms: _____

8. The discovery of penicillin: _____

9. The x-ray crystallographic analysis of penicillin and vitamin B₁₂: _____

10. The first synthesis of quinine and strychnine: _____

3. Match each of the following molecules with their use, biological activity or medical indication: penicillin, morphine, haemin, quinine, prostacyclin, thromboxane, Aspirin[®], monensin, chlorophyll, leukotriene D₄ (20 points).

1. _____ Causes constrictions in the lungs, involved in asthmatic attacks.
2. _____ Responsible for carrying oxygen from the lungs to the cells.
3. _____ Involved in photosynthesis in plants.
4. _____ Binds metal ions, serves as an antibiotic in agriculture.
5. _____ Dilates blood vessels and prevents thrombosis.
6. _____ Constricts blood vessels and causes aggregation of platelets.
7. _____ Mild analgesic, pain killer, anti-inflammatory.
8. _____ First medication against malaria.
9. _____ First major antibiotic to treat bacterial infections.
10. _____ Powerful pain killer, hallucinogenic, narcotic.

4. Name 10 Nobel Prize winners in *Chemistry*, or in *Physiology or Medicine*, and describe in one sentence (20 words or less) the contribution for which they were awarded the prize (20 points).

1.

2.

3.

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5.

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10.

5. Write a short essay (150 words or less) on the discovery and impact of penicillin on medicine and society, mentioning its discoverers, structural features, synthesis, mechanism of action and medical indications (20 points).