Biochemistry cumulative exam

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1. (10) What is the primary biological purpose of H2S?

2. (10) Name 2 enzymes that produce H2S

3. (10) Draw a reaction showing a common protein post-translational modification mediated by RSS.

4. (25) Describe the 3 primary strategies or mechanisms employed in the design of fluorescent H2S probes. Use schematics and/or chemical structures to illustrate and clarify your answer.

5. (15) Explain the difference(s) between ratiometric fluorescent probes and turn-on fluorescent probes. Which kind is preferable for cellular imaging and why is it better?

6. (10) Draw out the equilibrium scheme for sulfide in water. Circle the predominant form.

7. (10) Describe and show the mechanism for 1 type of higher order reactive sulfur species (RSS) probe.

8. (10) Are hydrogen sulfide fluorescent probes reversible? How might there (ir)reversibility affect their performance and cellular imaging probes.