14. Give a full formal proof that $\text{ZPP} = \text{RP} \cap \text{coRP}$. [2 points]

15. For constants $0 < \alpha < \beta < 1$, define the class $\text{BPP}_{\alpha,\beta}$ to be the class of all languages $L \subseteq \Sigma^*$ such that there exists a PTM $M$ that runs in polynomial time and behaves as follows on an input $x \in \Sigma^*$:

$$
\begin{align*}
x \notin L & \Rightarrow \Pr[M \text{ accepts } x] \leq \alpha, \\
x \in L & \Rightarrow \Pr[M \text{ accepts } x] \geq \beta.
\end{align*}
$$

Note that our definition of $\text{BPP}$ in class coincides with $\text{BPP}_{\frac{1}{2},\frac{2}{3}}$ in this notation.

Using Chernoff bounds, give a full formal proof that for all $\alpha$ and $\beta$ as above, $\text{BPP}_{\alpha,\beta} = \text{BPP}$. [2 points]