QUIZ - 2

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Graded Quiz • 30 min

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1. [Answer O, X] — 1 point

A pure state can be prepared as a mixture of other states.

- ○ O
- ◉ X

2. For a Hadamard gate H and a Pauli matrix Z, compute ZHZ. — 1 point

- ○ (a) H
- ◉ (b) $-H$
- ○ (c) X

3. For Pauli matrices X, Y, Z, compute $\mathrm{tr}[X+Y+Z]$ — 1 point

- ○ (a) $-3/2$
- ◉ (b) 0
- ○ (c) $3/2$

4. Consider two qubit states $|0\rangle$ and $|-\rangle = (|0\rangle - |1\rangle)/\sqrt{2}$ generated with probability $1/2$. Find the success probability of discriminating between the states. — 1 point

- ○ (a) $1/2$
- ○ (b) $1/\sqrt{2}$
- ◉ (c) $1/2 + 1/\sqrt{8}$

5. Consider a four-outcome measurement for a qubit state in the following, $M = \{|0\rangle\langle 0|/2, M_?, |+\rangle\langle +|/2, |-\rangle\langle -|/2\}$.
Find $M_?$. — 1 point

- ○ (a) $M_? = |0\rangle\langle 0|/2$
- ◉ (b) $M_? = |1\rangle\langle 1|/2$
- ○ (c) $M_? = 0$

***** Extra question: *****

A mixed state can be decomposed into pure states.

Ans: O