

QUIZ - 6

← Back Week 6 Review Quiz
Graded Quiz • 30 min

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1. [Answer O, X]

1 point

All two-qubit entangled states can have some probability of being converted by LOCC to a maximally entangled state.

- ☒ O
☐ X

2. Consider two vectors $\mu = (2/3, 1/3)$ and $\lambda = (1/2, 1/2)$. Which of the followings is correct?

1 point

- ☒ (a) μ majorizes λ .
☐ (b) λ majorizes μ .
☐ (c) μ majorizes λ and λ majorizes μ .

3. Consider a single-copy state $|\psi\rangle = \cos\theta|00\rangle + \sin\theta|11\rangle$ with $\theta \in (0, \pi/4)$. What is the optimal LOCC conversion rate to a maximally entangled state?

1 point

- ☐ (a) $1/2$
☒ (b) $2\sin^2\theta$
☐ (c) $2\cos^2\theta$

4. Consider a bipartite pure state with Schmidt coefficients $(\sqrt{3/4}, \sqrt{1/4})$. Given copies of the state, how many a maximally entangled state can be distilled by LOCC?

1 point

- ☐ (a) 0
☐ (b) $1/2$
☒ (c) $H(3/4, 1/4)$ where H denotes a binary entropy

5. How many maximally entangled two-qubit states can be obtained from the following state?

1 point

$$|\psi\rangle = \frac{1}{\sqrt{d}} \sum_{i=1}^d |ii\rangle$$

- ☐ (a) 1
☒ (b) $\log_2 d$
☐ (c) d

**** Extra question: ****

LOCC cannot create entangled states.

Ans: O