Homework Quiz - Week 13 Results for Murshed SK

ⓘ Correct answers are hidden.

Score for this attempt: 10 out of 10
Submitted Jan 27 at 12:38pm
This attempt took 3 minutes.

Question 1
1 / 1 pts

Which of these is a valid quantum state?

a. $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$

b. $\begin{bmatrix} \frac{1}{2} \\ \frac{1}{2} \end{bmatrix}$

c. $\begin{bmatrix} \frac{1}{\sqrt{2}} \\ 0 \end{bmatrix}$

d. $\begin{bmatrix} \sqrt{\frac{5}{6}} \\ \sqrt{\frac{1}{6}} \end{bmatrix}$

e. $\begin{bmatrix} \frac{2}{\sqrt{3}} \\ \frac{1}{\sqrt{3}} \end{bmatrix}$

- A
- B
- C
- D
- E

Question 2
1 / 1 pts

2. What coefficient would normalize this vector: $\begin{bmatrix}3\\4\end{bmatrix}$?

a. $\frac{1}{3}$

b. $\frac{1}{4}$

c. $\frac{1}{5}$

d. $\frac{1}{25}$

e. $\frac{1}{\sqrt{7}}$

- A
- B
- C
- D
- E

Question 3

1 / 1 pts

3. What is the probability of measuring the 0 state of this vector: $\frac{1}{\sqrt{6}}\begin{bmatrix}\sqrt{5}\\1\end{bmatrix}$?

- 91%
- 83%
- 17%
- 40%
- 50%

Question 4

1 / 1 pts

4. What is the result of this inner product: $\langle 0| \frac{1}{\sqrt{8}}(\sqrt{3}|0\rangle + \sqrt{5}|1\rangle)$?

a. 0

b. $\frac{3}{8}$

c. $\sqrt{\frac{3}{8}}$

d. $\sqrt{\frac{5}{8}}$

e. 1

- A
- B
- C
- D
- E

Question 5

1 / 1 pts

5. What is the probability of measuring a 0 in the $\frac{1}{\sqrt{8}}(\sqrt{3}|0\rangle + \sqrt{5}|1\rangle)$ state?

a. 0

b. $\frac{3}{8}$

c. $\frac{9}{16}$

d. $\frac{5}{8}$

e. 1

- A
- B
- C
- D
- E

Question 6

1 / 1 pts

6. What is the result of this inner product: $\langle -|\frac{1}{\sqrt{8}}(\sqrt{3}|0\rangle + \sqrt{5}|1\rangle)$?

a. 0

b. $\sqrt{\frac{3}{8}}$

c. $\frac{\sqrt{3}-\sqrt{5}}{4}$

d. $\frac{\sqrt{3}-\sqrt{5}}{\sqrt{8}}$

e. 1

- A
- B
- C
- D

E

Question 7

1 / 1 pts

7. What is the result of multiplying this matrix by this vector: $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} 1 \\ 0 \end{bmatrix}$?

a. $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$

b. $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$

c. $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$

d. $\begin{bmatrix} 2 \\ 0 \end{bmatrix}$

e. $\begin{bmatrix} 1 \\ 0 \\ 1 \\ 0 \end{bmatrix}$

A

B

C

D

E

Question 8

1 / 1 pts

8. What is the result of multiplying this matrix by this vector: $\begin{bmatrix} 1 & 1 \\ 3 & 5 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \end{bmatrix}$?

a. $\begin{bmatrix} 4 \\ 6 \end{bmatrix}$

b. $\begin{bmatrix} 2 \\ 8 \end{bmatrix}$

c. $\begin{bmatrix} 3 \\ 5 \end{bmatrix}$

d. $\begin{bmatrix} 10 \\ 0 \end{bmatrix}$

e. $\begin{bmatrix} 8 \\ 2 \end{bmatrix}$

- A
- B
- C
- D
- E

Question 9

1 / 1 pts

9. What is the result of performing the following: $\mathbf{X}\frac{\mathbf{1}}{\sqrt{\mathbf{10}}}(\mathbf{2}|\mathbf{0}\rangle + \sqrt{\mathbf{6}}|\mathbf{1}\rangle)$?

a. $\frac{2}{\sqrt{10}}$

b. $|0\rangle$

c. $\frac{1}{\sqrt{10}}(2|+\rangle + \sqrt{6}|-\rangle)$

d. $\frac{1}{\sqrt{10}}(\sqrt{6}|0\rangle + 2|1\rangle)$

e. $\frac{1}{\sqrt{10}}(\sqrt{6}|1\rangle + 2|0\rangle)$

- A
- B
- C
- D
- E

Question 10

1 / 1 pts

10. What gate would have the following effect: $\mathbf{Gate}\frac{1}{3}(|0\rangle + \sqrt{2}|1\rangle) = \frac{1}{3}(|0\rangle - \sqrt{2}|1\rangle)$?

- I
- X
- Z
- H
- CX

Quiz Score: 10 out of 10