

Started on	Monday, 12 August 2024, 1:35 PM
State	Finished
Completed on	Monday, 12 August 2024, 1:38 PM
Time taken	3 mins 33 secs
Marks	6.00/6.00
Grade	10.00 out of 10.00 (100%)

Question 1

Correct

Mark 1.00 out of 1.00

Contamination of semiconductor wafers during device or IC fabrication can lead to:

- ☐ a. enhanced yield.
- ☒ b. reduction of performance. ✓
- ☐ c. no consequence.
- ☐ d. improved performance.
- ☒ e. reduction of yield. ✓

Your answer is correct.
The correct answers are: reduction of yield. , reduction of performance.

Question 2

Correct

Mark 1.00 out of 1.00

Incorporation of trace amounts of metallic impurities in silicon wafers can lead to:

- ☒ a. decrease in retention time (the duration over which the DRAM can hold the data without refresh) ✓
- ☒ b. higher leakage in pn junction diodes. ✓
- ☐ c. improved performance of solar cells.
- ☐ d. shorting of gates in MOSFETs

Your answer is correct.
The correct answers are: higher leakage in pn junction diodes. , decrease in retention time (the duration over which the DRAM can hold the data without refresh)

Question 3

Correct

Mark 1.00 out of 1.00

The particle count measurement in a cleanroom yielded 1300 particles greater than 0.1 μm size per cubic meter. What is the likely class of the cleanroom as per ISO 14644-1?

- ☐ a. 3.3
- ☐ b. 3.1
- ☒ c. 3.2 ✓

Your answer is correct.
The correct answer is: 3.2

Question 4

Correct

Mark 1.00 out of 1.00

What is the accepted resistivity of DI water in $\text{M}\Omega\cdot\text{cm}$ at 300K for silicon device processing?

Answer: ✓

The correct answer is: 18

Question 5

Correct

Mark 1.00 out of 1.00

Sufficient water is needed for manufacturing chips of the potato kind and the IC kind. Quickly glance through the March 2023 article in Asia Pacific Foundation of Canada, <https://www.asiapacific.ca/publication/changing-climate-could-drain-taiwans-high-tech-wealth> How many tonnes of water will be required per day in the TSMC IC manufacturing facilities in Taiwan in 2027?

Answer: ✓

The correct answer is: 381017

Question 6

Correct

Mark 1.00 out of 1.00

Extrinsic gettering of transition metals in silicon is required in the case of

- ☒ a. Power Semiconductor Devices ✓
- ☒ b. Solar Cells ✓
- ☐ c. VLSI chips

Your answer is correct.
The correct answers are: Solar Cells, Power Semiconductor Devices

