

**A cube that is 20 nanometer on an edge contains 399,500 silicon atoms, and each silicon atom has 14 electrons and 14 protons. In the silicon we replace 4 silicon atoms with phosphorus atoms (15 electrons and 15 protons/atom), and we replace 7 silicon atoms with boron atoms (5 electrons and 5 protons/atom). How many "holes" are available to carry current at 300K? Holes look like positive mobile carriers. Three significant digits and fixed point notation.**

Answer:

Total 3 holes are available for conduction of current at 300K.

Explanation:

In order to develop a semiconductor, two type of impurities can be added as given below:

1. N-type Impurities: Pentavalent impurities e.g. Phosphorous, Arsenic are added to have an additional electron in the structure. Thus a pentavalent impurity creates 1 additional electron.
2. P-type Impurities: Trivalent impurities e.g. Boron, Aluminium are added to have a positive "hole" in the structure. Thus a trivalent impurity creates 1 hole.

Now for estimation of extra electrons in the impured structure is as

Now for estimation of "holes" in the impured structure is as

Now when the free electrons and "holes" are available in the structure ,the "holes" will be filled by the free electrons therefore

So total 3 "holes" are available for conduction of current at 300K.

What is a good thesis statement on Sara Teasdale for my research paper?

In pea plants round seeds [R] are dominant over wrinkled seeded plant [r]. Cross a heterozygous round seeded plant with a wrinkled seeded plant. What is the chance of seeds will be wrinkled? PLEASE

HELPPPPP!!!!!!

Members of the public buy and sell shares of stock at a \_\_\_\_\_. A. stock market B. trading house C. stock exchange D. trade commission

Jon has y stickers. He uses 20 stickers and divided the remainder equally between his two sisters. find the number of stickers each sister receives

Why are Henry VIII's views on Martin Luther so ironic

Which statement about New Zealand's economy is not true? A. The economy is largely based on agriculture.

B. The economy in cities depends on manufacturing.

C. The economy is largely based on tourism.

D. The economy depends partially on livestock.

(Gradpoint)

After Muhammad's death, which group accepted his son-in-law, Ali, as his rightful successor? a. Samaritans

b. Secularists

c. Sufis

d. Shi'ites

4.30 makeup 5 percent discount 7 percent tax

Which behavior is most likely to carry risk of serious infection? A. Eating uncooked vegetables

B. Having Dirty Hands

C. Avoiding Travel Vaccinations

D. Kissing

How Far East have you traveled if you ran 80 meters northeast

What is the best way to describe Eisenhower's domestic policy?

Jennifer wants to rent a car for 5 days, and she's interested in the loss damage waiver but not the collision damage waiver. If the daily rate is \$39 and the LDW is \$65, what is her total rental cost?

For which of the following situations would you most likely use empathetic listening? A. when someone is giving a speech

B. when someone is playing music

C. when someone is asking you for advice

D. when someone is trying to sell you something

During the 1800s, how did Florida attract settlers to the area?

\_\_\_\_\_ offers a variety of programs and support services.

The biggest factors that distinguish one competitive strategy from another are \_\_\_\_\_

A) a customer value proposition, profit formula, and collection of valuable resources.

B) striving for a high degree of customer loyalty to the company's brand.

C) assembling a wide portfolio of company resources, competitive capabilities, and core competencies.

D) developing a better credit rating than rivals.

E) choosing between (1) a market target that is either broad or narrow, and (2) whether the company should pursue a competitive advantage linked to lower costs or product differentiation.

\_\_\_\_\_ is a group of words that states the main thought of a sentence and is complete within itself.

An unknown diatomic gas has a density of 3.164 g/l at stp. What is the identity of the gas?

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