# PCAT Q&As

Pharmacy College Admission Test

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**QUESTION 1**

What are the relative pKa values of the following compounds?

I. H2O

II. NH3

III. HCl

IV.

CH3COOH

A.

II > I > IV > III

B.

IV > II > III > I

C.

III > IV > I > II

D.

I > III > IV > II

Correct Answer: A

**QUESTION 2**

In the process of Mitosis, if the number of chromosomes in the mother cell is designated as 2n, how many chromosomes will be present in each daughter cell?

A. 2n

B. n

C. 4n

D. 8n

Correct Answer: A

Cell division is a very complex process. There are two main types of cell division:

1.

Mitosis

2.

Meiosis

1.

Mitosis: In this type of cell division, chromosomes are equally distributed in each daughter cell. As a result, the number of chromosomes in the daughter cells is the same as that in the mother cell. It is also known as equational division. (e.g.

Somatic cells division)

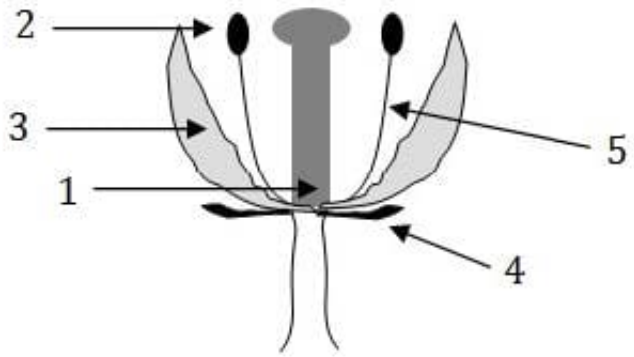
2.

Meiosis: In this type of cell division, chromosomes are divided in half of the original mother cells, therefore the daughter cells consist of half the number of chromosomes that are in the mother cell. (e.g.

reproductive or sex cells division)

**QUESTION 3**

The structure in which microspores are produced: A. 3




B. 1

C. 5

D. 4

E. 2

Correct Answer: E

Anthers produce microspores (the male gametophytes of flowering plants), which undergo meiosis to produce pollen grains.

**QUESTION 4**

If number x is subtracted from 27, the result is -5. What is number x?

A. 22

B. 25

C. 32

D. 35

Correct Answer: C

In this problem, if you do not know how to solve, try filling in the answer choices to see which one checks out. Many math problems may be solved by a guess and check method when you have a selection of answer choices. 27 - x = -5x =

**QUESTION 5**

Sickle cell disease (SCD) affects millions of individuals worldwide, and the Sickle Cell Disease Association of America estimates that 70,000 to 100,000 individuals have SCD and 3 million individuals have the sickle cell trait. While SCD is known to primarily affect individuals of African American descent, individuals from South America, the Caribbean, Central America, the Middle East, and the Mediterranean can also have SCD or the SCD trait. SCD is estimated to affect 1 in 500 African American infants, and 1 in 12 African Americans are estimated to have the sickle cell trait. SCD is characterized by episodes of acute and chronic pain. By increasing awareness about SCD and promoting patient education, health care professionals can help patients and their families cope with SCD and better manage the associated pain. Recurring episodes of acute and/or severe pain are hallmarks of SCD. SCD pain can often be debilitating, and episodes of pain vary from patient to patient in both frequency and intensity. SCD pain can be classified as acute, chronic, or mixed. At some point, most SCD patients experience episodes of pain often referred to as vaso-occlusive crisis (sickle cell crisis), the duration of which may range from hours to days. Some patients seldom have a sickle cell crisis, while others may experience crises several times a year. Some episodes may be so severe that hospitalization is warranted to manage the pain. An acute pain event is the most common type of pain, and the onset is typically abrupt. It is often the result of an ischemic tissue injury, which is due to the occlusion of microvascular beds by sickled erythrocytes during an acute crisis. Acute pain episodes can also be triggered by factors including extreme temperature changes, changes in altitude, physical and emotional stress, illnesses, infections, dehydration, cold climates, menstruation, and fatigue. Chronic pain is pain that lasts for 3 to 6 months or longer. Chronic pain often results from the destruction of bones, joints, and visceral organs due to recurrent crises. Sources of chronic sickle cell pain include aseptic necrosis, leg ulcerations, and osteomyelitis. Unfortunately, acute and chronic pain associated with SCD are commonly undertreated or inappropriately managed due to patient fear of potential addiction and adverse effects. Many studies report that some health care professionals are also concerned about the potential for addiction. When appropriate, pharmacologic management of SCD pain may involve the use of 3 major pharmacologic classes: nonopioids, opioids, and adjuvants.

Which of the following is NOT a possible cause of chronic pain in SCD patients?

A. aseptic necrosis

B. leg ulcerations

C. changes in altitude

D. osteomyelitis

Correct Answer: C

"Changes in altitude" is described by the passage as a cause of acute pain, not chronic pain. The other three answer choices are all listed as possible causes of chronic pain in the passage.