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https://www.100test.com/kao_ti2020/637/2021_2022_2011_E5_B9_B4GMA_c89_637877.htm The sensation of pain cannot accurately be described as "located" at the point of an injury， or， for that matter，in any one place in the nerves or brain. Rather， pain signals-and pain relief-are delivered through a highly(5) complex interacting circuitry. When a cell is injured， a rush of prostaglandin ’s sensitizes nerve endings at the injury. Prostaglandins are chemicals produced in and released from virtually all mammalian cells when they are injured： these are the only(10) pain signals that do not originate in the nervous system. Aspirin and other similar drugs (such as indomethacin and ibuprofen) keep prostaglandins from being made by inter- fering with an enzyme known as prostaglandin synthetase，or cyclooxygenase. The drugs ’ effectiveness against pain is(15) proportional to their success in blocking this enzyme at the site of injury. From nerve endings at the injury， pain signais move to nerves feeding into the spinal cord. The long， tubular membranes of nerve cells carry electrical impulses. When(20) electrical impulses get to the spinal cord， a pain-signaling chemical known as substance P is released there. Substance P then excites nearby neurons to send impulses to the brain. Local anesthetics such as novocaine and xylocaine work by blocking the electrical transmission(25)along nerves in a particular area. They inhibit the flow of sodium ions through the membranes, making the nerves electrically quiescent. thus no pain signals are sent

to the spinal cord or to the brain. Recent discoveries in the study of pain have involved(30) the brain itself-the supervising organ that notices pain signals and that sends messages down to the spinal cord to regulate incoming pain traffic. Endorphins-the brain ’ s own morphine-are a class of small peptides that help to block pain signals within the brain itself. The presence(35) of endorphins may also help to explain differences in response to pain signals, since individuals seem to differ in their ability to produce endorphins. It now appears that a number of techniques for blocking chronic pain-such as acupuncture and electrical stimulation of the central(40) brain stem-involve the release of endorphins in the brain and spinal cord.
1. The passage is primarily concerned with (A) analyzing ways that enzymes and other chemicals influence how the body feels pain (B) describing the presence of endorphins in the brain and discussing ways the body blocks pain within the brain itself. (C) describing how pain signals are conveyed in the body and discussing ways in which the pain signals can be blocked (D) demonstrating that pain can be influenced by acupuncture and electrical stimulation of the central brain stem. (E) differentiating the kinds of pain that occur at different points in the body ’ s nervous system. 2. According to the passage, which of the following is one of the first things to occur when cells are injured? The flow of electrical impulses through nerve cells at the site of the injury is broken. (B) The production of substance P traveling through nerve cells to the brain increases. (C) Endorphins begin to speed up the response of nerve cells at the site of the injury. (D) A flood of prostaglandins sensitizes nerve endings at the site of

the injury. (E) Nerve cells connected to the spinal cord become electrically quiescent. 3. Of the following, which is most likely attributable to the effect of endorphins as described in the passage? (A) After an injection of novocaine, a patient has no feeling in the area where the injection was given. (B) After taking ibuprofen, a person with a headache gets quick relief. (C) After receiving a local anesthetic, an injured person reports relief in the anesthetized area. (D) After being given aspirin, a child with a badly scraped elbow feels better. (E) After acupuncture, a patient with chronic back pain reports that the pain is much less severe. 4. It can be inferred from the passage that if the prostaglandin synthetase is only partially blocked, which of the following is likely to be true? (A) Some endorphins will be produced, and some pain signals will be intensified. (B) Some substance P is likely to be produced, so some pain signals will reach the brain. (C) Some sodium ions will be blocked, so some pain signals will not reach the brain. (D) Some prostaglandins will be produced, but production of substance P will be prevented. (E) Some peptides in the brain will receive pain signals and begin to regulate incoming pain traffic. 