

MCAT-TEST^{Q&As}

Medical College Admission Test: Verbal Reasoning, Biological Sciences, Physical Sciences, Writing Sample

Pass MCAT MCAT-TEST Exam with 100% Guarantee

Free Download Real Questions & Answers **PDF** and **VCE** file from:

<https://www.pass2lead.com/mcat-test.html>

100% Passing Guarantee
100% Money Back Assurance

Following Questions and Answers are all new published by MCAT
Official Exam Center

- ⚙️ **Instant Download** After Purchase
- ⚙️ **100% Money Back** Guarantee
- ⚙️ **365 Days** Free Update
- ⚙️ **800,000+** Satisfied Customers



QUESTION 1

The amount of lactic acid in muscles rises when they start lacking:

- A. carbon dioxide.
- B. oxygen.
- C. glucose.
- D. hydrogen carbonate.

Correct Answer: B

QUESTION 2

The anthropomorphic bias of those who would relegate marsupials to an inferior evolutionary status is most apparent in their recourse to data on brain structure and behavior. Unlike humans and other placentals, marsupials lack the corpus callosum, which facilitates inter-hemisphere transfer of data acquired through the senses. Yet it cannot be inferred that marsupials are thus deprived of such function. *Didelphis Virginiana*, one of the opossums, makes use of the anterior commissure, an adaptation that is also found in reptiles and monotremes. Diprodontons, including kangaroos and koalas, supplement the anterior commissure with the fasciculus aberrans. While the modes of neocortical interconnection may be diverse, the work of Johnson, Heath and Jones points to the conclusion that, functionally speaking the cortices and neocortices of both groups of mammals exhibit parallel connections. Parker also notes "a similar range of brain size to body weight ratios and of neocortical expansion". Another stigma borne by marsupials is the consensus that they are less intelligent than placentals. Yet Williams argues that, all else being equal, natural selection will favor instinctive over learned behavior as being more biologically efficient and that it is the accidental death of the young that is the prime selective pressure for the evolution of intelligence. Seen in this light, marsupials have a competitive edge; their gestation period is brief and the young remain in the pouch for an extended period exposed only to those dangers which also affect the mother. There they are directly exposed to the mother's food supply and can observe her behavior at leisure. Placentals, on the other hand, not only have a longer gestation period but, once their young are born, must often leave while foraging. Such absences increase the risk of mortality and decrease the opportunity to learn. Thus, among placentals, selection would favor the apparent intelligence in the young and protective behavior in the mother. Marsupials are not known to exhibit maternal protective behavior. In fact, Serventy has reported that frightened female kangaroos will drop their pouch-young as they flee, drawing a predator's attention to the less able offspring while the adult escapes. This behavior, whether purposeful or accidental, instantaneously relieves the female marsupial of the mechanical difficulties of pregnancy with which her placental counterpart would be burdened, while marsupials can replace any lost young quickly. Thus, in the absence of any need for close maternal supervision, sacrificing their offspring in this manner may well have been favored in selection. Pointing to the absence of the "virtue" of maternal protectiveness in marsupials is an instance of how mistaken are those theorists who see similarities with humans as marks of evolutionary sophistication.

The author's attitude toward those who consider marsupials to occupy an inferior evolutionary position would most probably be one of:

- A. criticism because they ignore evidence that marsupials are more intelligent than usually supposed.
- B. disagreement because current studies support the opposite view.
- C. disagreement because they apply human standards in an inappropriate context.
- D. agreement, but on the basis of marsupials' lack of maternal protective behavior rather than their brain structure.

Correct Answer: C

The answers break down into two parts -- first, there is the author's attitude; second, there are the reasons for that attitude, which are going to test our ability to follow the logical progression of the passage. Choice D can be eliminated

immediately because we know that the author does not support this view. The point made in choice C echoes throughout the passage from the anthropomorphic bias of the first sentence to the point made in the last sentence in the passage.

The context is inappropriate because the author seems to feel that what serves placentals, including humans, in the evolutionary sense, does not necessary serve marsupials.

Choice A misses the point of the passage. No such evidence is cited. Choice B is wrong because it suggests that marsupials occupy a superior evolutionary position based on current studies. This is not correct.

QUESTION 3

When softball players take batting practice, they often use a machine called an "automatic pitcher," which is essentially a cannon that uses air pressure to launch a projectile. In a prototype automatic pitcher, a softball is loaded into the barrel of the cannon and rests against a flat disk. That disk is locked into place, and a high air pressure is built up behind it. When the disk is released, the softball is pushed along the barrel of the cannon and ejected at a speed of v_0 . Figure 1 shows the batter and automatic pitcher. The angle of the barrel to the horizontal is θ . The unit vectors i and j point in the horizontal and vertical directions respectively.

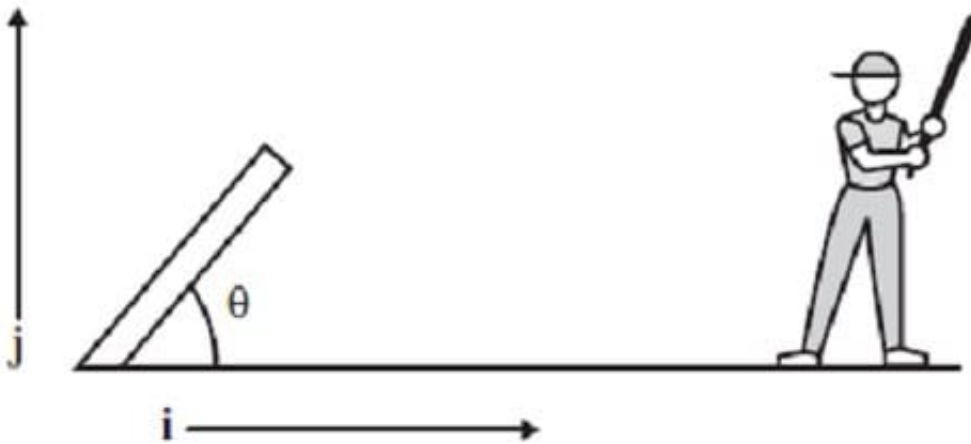


Figure 1

The height above the ground y of the softball as a function of time t is shown in Figure 2, where $t = 0$ at Point A, $t = t_B$ at Point B, and $t = t_C$ at Point C. The softball is ejected from the barrel of the cannon at Point A; it reaches its maximum height at Point B; and the batter hits the softball at Point C. (Note: Assume that the effects of air resistance are negligible unless otherwise stated.)

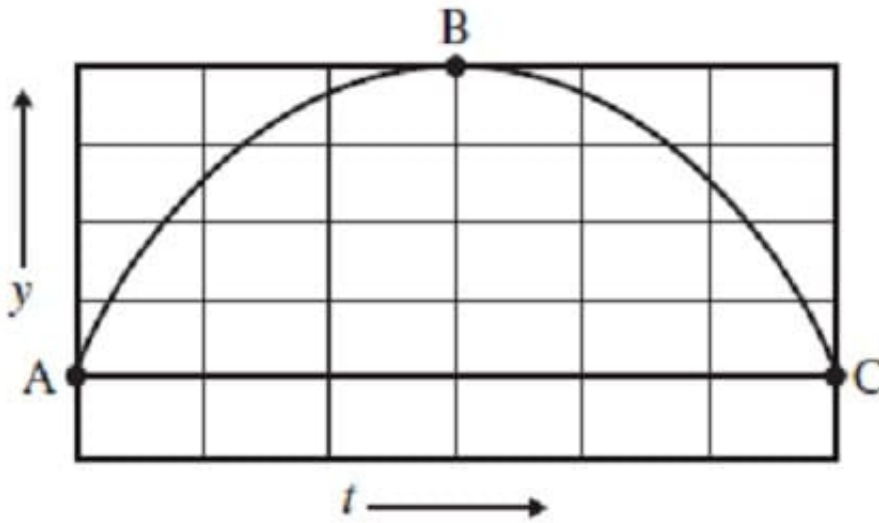


Figure 2

What is the acceleration of the softball t seconds after it exits the barrel?

- A. $-g\mathbf{j}$
- B. $-\frac{v_0}{t}\mathbf{i}$
- C. $-\frac{v_0}{t}\mathbf{j}$
- D. $-\frac{v_0}{t}\mathbf{i} - g\mathbf{j}$

- A. Option A
- B. Option B
- C. Option C
- D. Option D

Correct Answer: A

Newton's second law $F = ma$ states that a force produces an acceleration in the same direction as the force. In the absence of a force, there is no acceleration. In this situation, the only force present is the force of gravity, which is the same at

all times during the softball's flight. Near the Earth's surface, the gravitational force is directed downward and its magnitude is given by $F = mg$, where m is the softball's mass and g is the acceleration due to gravity. Putting the gravitational

force into Newton's second law, we obtain $ma = mg$. Canceling the masses, we obtain $a = g$. In other words, the acceleration of the softball is the same as the acceleration due to gravity.

Figure 1 shows that the unit vector \mathbf{j} points upwards, which means that \mathbf{a} points downwards.

Because \mathbf{j} is a unit vector, its magnitude is 1. Since the softball accelerates downward with a magnitude of g , the acceleration is symbolically given by $\mathbf{a} = -g\mathbf{j}$. Thus, choice A is correct. Choice C is incorrect because it has the wrong magnitude. Choices B and D are wrong because they both include an acceleration in the horizontal direction.

QUESTION 4

Millennialism is, generally speaking, the religious belief that salvation and material benefits will be conferred upon a society in the near future as the result of some apocalyptic event. The term derives from the Latin word for 1,000; in early Christian theology, believers held that Christ would return and establish his kingdom on earth for a period of a thousand years.

Millennialist movements, Christian and non-Christian, have arisen at various points throughout history, usually in times of great crisis or social upheaval. In "nativistic" millennialist movements, a people threatened with cultural disintegration attempts to earn its salvation by rejecting foreign customs and values and returning to the "old ways". One such movement involving the Ghost Dance cults, named after the ceremonial dance which cult members performed in hope of salvation, flourished in the late 19th century among Indians of the western United States.

By the middle of the 19th century, western expansion and settlement by whites was seriously threatening Native American cultures. Mining, agriculture and ranching encroached on and destroyed many Indian land and food sources. Indian resistance led to a series of wars and massacres, culminating in the U.S. Government's policy of resettlement of Indians onto reservations which constituted a fraction of their former territorial base. Under these dire circumstances, a series of millennialist movements began among western tribes.

The first Ghost Dance cult arose in western Nevada around 1870. A Native American prophet named Wodziwob, a member of a Northern Paiute tribe, received the revelation of an imminent apocalypse which would destroy the white man, restore all dead Indians to life, and return to the Indians their lands, food supplies (such as the vanishing buffalo), and old way of life. The apocalypse was to be brought about with the help of a ceremonial dance and songs, and by strict adherence to a moral code which, oddly enough, strongly resembled Christian teaching. In the early 1870s, Wodziwob's Ghost Dance cult spread to several tribes in California and Oregon, but soon died out or was absorbed into other cults.

A second Ghost Dance cult, founded in January 1889, evolved as the result of a similar revelation. This time Wovoka -- another Northern Paiute Indian, whose father had been a disciple of Wodziwob -- received a vision during a solar eclipse in which he died, spoke to God, and was assigned the task of teaching the dance and the millennial message. With white civilization having pushed western tribes ever closer to the brink of cultural disintegration during the previous twenty years, the Ghost Dance movement spread rapidly this time, catching on among tribes from the Canadian border to Texas, and from the Missouri River to the Sierra Nevadas -- an area approximately one-third the size of the continental United States.

Wovoka's Ghost Dance doctrine forbade Indian violence against whites or other Indians; it also involved the wearing of "ghost shirts," which supposedly rendered the wearers invulnerable to the white man's bullets. In 1890, when the Ghost Dance spread to the Sioux Indians, both the ghost shirts and the movement itself were put to the test. Violent resistance to white domination had all but ended among the Sioux by the late 1880s, when government-ordered reductions in the size of their reservations infuriated the Sioux, and made them particularly responsive to the millennialist message of the Ghost Dance. As the Sioux organized themselves in the cult of the dance, an alarmed federal government resorted to armed intervention which ultimately led to the massacre of some 200 Sioux men, women and children at Wounded Knee, South Dakota in December of 1890. The ghost shirts had been worn to no avail, and Wounded Knee marked the end of the second Ghost Dance cult.

The passage implies that a paradoxical element of the Ghost Dance cults was their:

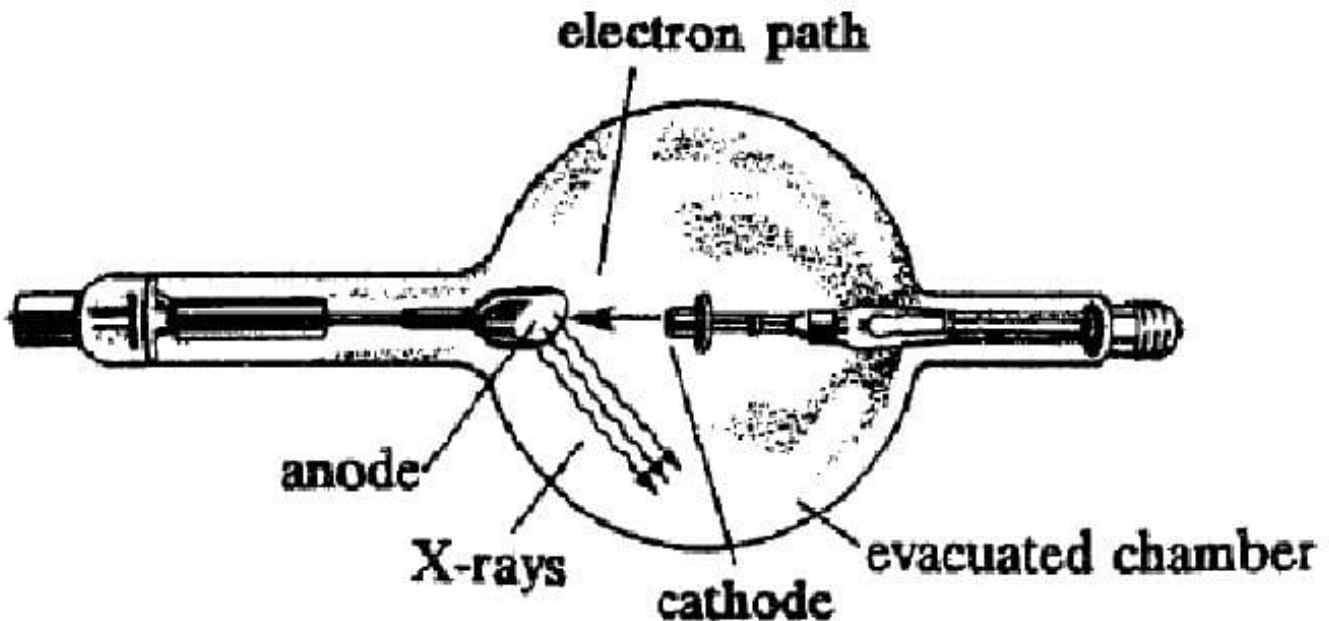
- A. organized resistance to cultural change.
- B. mixture of anti-white sentiment and Christian morality.
- C. belief in the ability of "ghost shirts" to protect them in combat.
- D. combination of millennialist message and desire to revive the "old ways".

Correct Answer: B

This asks what was paradoxical about the Ghost Dance cults. A paradox is something that seems to be contradictory and yet is true. The correct answer, choice (B), can be found paragraph 3. In explaining the doctrine of the first Ghost Dance cult, the author notes that, although the point of the dance was to destroy the white man and foster a return to the old ways, believers were instructed to follow a strict code of morality that, "oddly enough, strongly resembled Christian teaching." The paradox of the Ghost Dance was that it borrowed the moral teachings of the people it hoped to destroy, so choice (B) is our answer. There is nothing paradoxical about choice (A). As defined in the first paragraph, a nativistic millennialist movement like the Ghost Dance is designed to unite a people threatened with cultural disintegration. Choice (C) describes an irrational element of the Ghost Dance religion, not a paradoxical one. Practically all religions are based on one or more articles of faith, and the Indians' belief that "ghost shirts" would protect them in combat was a straightforward, if doomed, element of their cult doctrine. Choice (D) is wrong because there's nothing odd or contradictory in combining a millennialist message with a desire to revive the "old ways". As the author says in paragraph 1, the desire to revive old ways is a defining characteristic of nativistic millennialist movements.

QUESTION 5

X-rays are produced by a device which beams electrons with an energy between 103 and 106 eV at a metal plate. The electrons interact with the metal plate and are stopped by it. Much of the energy of the incoming electrons is released in the form of X-rays, which are high-energy photons of electromagnetic radiation. An example of such a device is shown below. Electrons are accelerated from the cathode towards the anode by an electric field.



There are two mechanisms by which the X-rays are produced within the metal. The first mechanism is called bremsstrahlung, which is German for "breaking radiation." X-rays are emitted by the electrons as they are brought to rest by

interactions with the positive nuclei of the anode.

The second mechanism occurs when an incoming electron knocks an inner electron out of one of the metal atoms of the anode. This electron is replaced by an electron from a higher energy level of the atom, and a photon making up the energy difference is emitted.

X-rays are absorbed by a material when they pass through it. The amount of X-rays absorbed increases with the density of the material. In addition, lower energy X-rays are more likely to be absorbed than higher energy X-rays. (Note: 1 eV =

1.6×10^{-19} J; Planck's constant $h = 4.1 \times 10^{-15}$ eV•s; speed of light $c = 3 \times 10^8$ m/s.)

What is the direction of the electric field that accelerates the electrons?

- A. From the anode toward the cathode
- B. From the cathode toward the anode
- C. Into the page
- D. Out of the page

Correct Answer: A

This question involves the use of information in the passage along with some basic knowledge of electric fields and forces. In the second paragraph of the passage, we are told that electrons are accelerated from the cathode to the anode by an electric field. Now we have to figure out the direction of the electric field that would cause the electrons to move in that way. When the electric field lines are drawn, the arrows always point from the positive charge to the negative charge. So the direction of the electric field is the direction in which a positive charge would accelerate in that field. Since electrons are negative charges, they will be accelerated in the direction opposite to that of the electric field. We are pointing from the anode toward the cathode. Therefore, answer choice A is correct.

[Latest MCAT-TEST Dumps](#)

[MCAT-TEST Practice Test](#)

[MCAT-TEST Exam Questions](#)