

USMLE-STEP-1^{Q&As}

United States Medical Licensing Step 1

Pass USMLE USMLE-STEP-1 Exam with 100% Guarantee

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

https://www.passapply.com/usmle-step-1.html

100% Passing Guarantee 100% Money Back Assurance

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

Instant Download After Purchase

- 100% Money Back Guarantee
- 😳 365 Days Free Update
- 800,000+ Satisfied Customers





QUESTION 1

An elderly resident of a nursing home fell down the front steps and subsequently became disoriented and lethargic. He is brought to the emergency room where an emergency MRI reveals that he has developed hydrocephalus due to a small hemorrhage obstructing the foramina of Monro. The foramina of Monro allow for communication between which of the following?

- A. fourth ventricle and cerebral aqueduct
- B. fourth ventricle and subarachnoid space
- C. lateral ventricles and third ventricle
- D. third ventricle and cerebral aqueduct
- E. third ventricle and fourth ventricle

Correct Answer: C

Section: Anatomy The foramina of Monro form the communication between the lateral ventricles and the third ventricle. The cerebral aqueduct of Sylvius flows caudally into the fourth ventricle (choice A). The lateral foramina of Luschka and the median foramen of Magendie allow for communication between the fourth ventricle and the subarachnoid space. The third ventricle communicates posteriorly with the cerebral aqueduct of Sylvius (choice D). Thus, the third and fourth ventricle communicate by way of this cerebral aqueduct.

QUESTION 2

The ability of the liver to regulate the level of blood glucose is critical for survival. Anumber of sources of carbon atoms of nonhepatic origin are used by the liver for gluconeogenesis. However, the net conversion of carbons from fat into carbons of glucose cannot occur in humans because of which of the following?

- A. Fat oxidation occurs in the mitochondria and gluconeogenesis occurs in the cytosol.
- B. States of catabolism and anabolism are never concurrently active.
- C. Storage of fats occurs in adipose tissue and gluconeogenesis occurs in liver and kidney.
- D. The carbons of acetyl-CoA from fat oxidation are lost as C in the TCA cycle.
- E. The carbons of acetyl-CoA from fat oxidation inhibit conversion of pyruvate to oxaloacetate.
- Correct Answer: D

Section: Biochemistry When the carbons of fatty acids are oxidized for energy production, the by-product of that process is the two-carbon compound, acetyl-CoA. Acetyl-CoA can then enter the TCA cycle for complete oxidation. Although, several compounds of the TCA cycle can be directed into the gluconeogenic pathway of glucose synthesis, the carbons of acetyl-CoA cannot provide a net source of carbon in that latter pathway. This is due to the fact that, following entry of the two carbons of acetyl-CoA into the TCA cycle, two carbons are lost as CO2 during the subsequent reactions of the cycle. The subcellular compartmentalization of fat oxidation and gluconeogenesis (choice A) has no bearing on net carbon deposition into glucose. Anabolic and catabolic reactions (choice B) are always occuring concurrently in cells but at different rates dependent on cellular status. The site of fat storage (choice C) has no bearing on net incorporation of carbon into glucose. Acetyl-CoA does not inhibit conversion of pyruvate to oxaloacetate (choice E) but acts as an allosteric activator of pyruvate carboxylase, a gluconeogenic enzyme.



QUESTION 3

Oseltamivir is used for the treatment of infections by a virus with a segmented negative strand genome. Which of the following would respond to this treatment?

A. EBV

- B. herpes simplex virus
- C. influenza virus
- D. rabies virus
- E. rhinovirus
- Correct Answer: C

Section: Microbiology/Immunology The NA inhibitors zanamivir and oseltamivir (tamiflu) were approved in 1999 for the treatment of influenza Aand influenza B. Amantadine (generic name) or Symmetrel (trade name) inhibits an early event in the multiplication cycle of influenza virus, as well as arenaviruses. It blocks the uncoating process. Mutations in the M protein genes result in the development of drug-resistant mutants. The drug is not used extensively in the United States because it seems impractical to control this type of infectious disease that is not ordinarily fatal. To protect individuals at high risk, and in those in whom the infection is potentially dangerous, the choice is between this drug and the influenza vaccine. In most cases, the vaccine is usually preferred. Acyclovir is used to shorten the duration of herpes simplex virus episodes and also to limit the duration of viral shedding (choice B). There are no antiviral drugs for rabies (choice D). Acyclovir has slight antiviral action for EBV (choice A). There is no antiviral agent against rhinovirus (choice E).

QUESTION 4

Persistent fever and neutropenia with persistently negative blood cultures is often caused by which of the following?

A. fungi

- B. gram-negative organisms
- C. gram-positive organisms
- D. viral infections
- Correct Answer: A

Section: Microbiology/Immunology Most fungi reside in nature and are essential in breaking down and recycling organic matter. About 90% of human infections by fungi can be traced to a few dozen species. Most pathogenic fungi are exogenous, their natural habitats being water, soil, and organic debris. The mycoses with the highest incidence-candidiases and dermatophytosis--are caused by fungi that are part of the usual or normal microbial flora of humans. Most fungal growth is kept at low levels by bacteria that are more successful at using available nutrients, but fungi are efficient opportunists. Often, hosts who become infected with fungi have some serious metabolic or immune disability. Pathogenic fungi do not produce patent toxins, and the mechanisms of fungal pathogenicity are complex and multifocal, often making these infections hard to treat. The relatively low numbers of fungi in the infection and medium requirements make fungi (choice A) more difficult to isolate, identify, and relate to a medical condition. Gram-positive (choice C) and gramnegative (choice B) bacteria will usually be isolated from clinical specimens. Viral isolation (choice D) is routinely performed successfully today. The symptoms of persistent fever and neutropenia (small number of PMNs) reflect a probable infectious disease process. Failure to associate bacteria and/or viruses with an infectious



disease process and clinical history might justify consideration of a fungal etiology.

QUESTION 5

An 8-year-old boy is referred to a neurologist by his family physician because he has developed progressive slow and clumsy walking. On examination, the patient has difficulty with standing and running. While standing, he adopts a widebased gait with constant shifting of position to maintain his balance. Sitting or standing, he also displays a constant tremor of the head and trunk. When asked to walk, his feet strike the ground in an uneven and irregular rhythm; if he attempts to correct his imbalance, he displays wild and abrupt movements. A magnetic resonance image (MRI) reveals demyelination in the dorsal columns, corticospinal and spinocerebellar tracts. The child is diagnosed with Friedreich\\'s ataxia, an autosomal recessive neurological disorder resulting from mutation of a gene locus on chromosome 9. Second-order neurons of the dorsal (posterior) spinocerebellar tracts are located in which of the following?

- A. deep cerebellar nuclei
- B. dorsal root ganglion
- C. nucleus cuneatus
- D. nucleus dorsalis (Clarke\\'s column)
- E. Rexed\\'s lamina IX of the spinal cord
- Correct Answer: D

Section: Anatomy The nucleus dorsalis (Clarke\\'s column, Rexed\\'s lamina VII of the spinal cord) contains the cell bodies of the second order neurons of the dorsal (posterior) spinocerebellar tract. Axons from these neurons ascend ipsilaterally in the lateral funiculus of the spinal cord, join the restiform body of the inferior cerebellar peduncle, and terminate in the vermis of the cerebellum as mossy fibers. The dorsal (posterior) spinocerebellar tract conveys proprioception from muscle spindles and Golgi tendon organs. Collateral branches of this tract also terminate in the deep cerebellar nuclei (choice A). The dorsal root ganglion (choice B) contains the cell bodies of sensory neurons, including the first-order neurons of the dorsal (posterior) spinocerebellar tract. The nucleus cuneatus (choice C) contains the second order neurons of the dorsal column pathways, responsible for conveying sensations of fine touch, pressure, and vibration sense. Rexed\\'s lamina IX of the spinal cord (choice E) contains the spinal cord motorneurons responsible for the innervations of voluntary muscles.

USMLE-STEP-1 PDF Dumps USMLE-STEP-1 VCE Dumps

USMLE-STEP-1 Practice Test