Ultimate IT Test Preparation Material

Medical Laboratory
NYMLS
ASCP NY Medical Laboratory Scientist (NYMLS)

- **Up to Date products, reliable and verified.**
- **Questions and Answers in PDF Format.**

Full Version Features:

- **90 Days Free Updates**
- **30 Days Money Back Guarantee**
- **Instant Download Once Purchased**
- **24 Hours Live Chat Support**

For More Information:

https://www.testsexpert.com/

- **Product Version**

Latest Version: 6.0

Question: 1

A factor that can influence data or outcome of a research method is called a(n):

A. hypothesis
B. theory
C. variable
D. statistic

Answer: C

Explanation:
The correct answer to the question "A factor that can influence data or outcome of a research method is called a(n):" is a variable.
A variable in research refers to any characteristic, number, or quantity that can be measured or quantified. Variables play a crucial role in scientific research and statistical analysis as they are the primary tools through which data can be collected, categorized, and analyzed. They can vary among participants and are used to form hypotheses and draw conclusions. Examples of variables include age, gender, income level, temperature, treatment types, and test scores.
There are different types of variables, mainly classified as dependent and independent variables. The independent variable is the one that is manipulated or changed in an experiment to observe how it affects the dependent variable. The dependent variable, on the other hand, is the variable being tested and measured; it is dependent on the independent variable.
Control variables are another important type of variable; these are constants that researchers try to keep the same throughout the experiment to not affect the outcome. By controlling these variables, researchers can ensure that any changes in the dependent variable are likely due to the manipulation of the independent variable.
In any research design, it is essential to identify and define the variables clearly. This clarity helps in formulating a robust research methodology and in the analysis and interpretation of data. Failure to properly account for variables can lead to erroneous conclusions and affect the reliability and validity of the research outcomes.
Thus, understanding variables and correctly managing them is foundational in research methods, ensuring that the findings are accurate reflections of the real-world phenomena being studied.

Question: 2

Which of the following is a pathologic cause of urine turbidity?

A. squamous epithelial cells
B. amorphous phosphates carbonates and urates
C. RBCs and WBCs
D. fecal contamination

Answer: C

Explanation:
When analyzing a urine sample, one key aspect to assess is the clarity or turbidity of the urine. Turbidity refers to the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eye. While some causes of urine turbidity are benign, others are indicative of pathological conditions that require medical attention.
Among the various reasons for urine to appear turbid, the presence of red blood cells (RBCs) and white blood cells (WBCs) is particularly significant. These cells can enter the urine due to various pathologic conditions. RBCs in the urine, a condition known as hematuria, can be caused by urinary tract infections, kidney stones, tumors, or trauma among other reasons. Similarly, the presence of WBCs, or leukocyturia, often indicates infections such as cystitis or pyelonephritis, or inflammatory diseases affecting the urinary tract.
Bacteria are another common pathological cause of turbidity in urine. A bacterial infection can lead to the appearance of both WBCs and bacteria in the urine, making it cloudy. Such infections might originate in the urinary tract or can be linked to broader systemic infections or diseases affecting other organs. The presence of bacteria in urine typically requires further investigation and treatment, which might include antibiotics.
Other pathological conditions such as fecal contamination can also cause urine turbidity. Fecal contamination is a serious issue as it can introduce a variety of pathogens into the urine sample, complicating the diagnosis and potentially leading to erroneous treatment if not detected.
It is also important to differentiate these pathological causes from non-pathological ones. For instance, some dietary factors, medications, or the presence of non-pathologic substances like amorphous phosphates, carbonates, and urates can also cause urine to appear turbid. These are generally not associated with disease. Therefore, understanding the cause of turbidity is crucial in distinguishing between normal physiological variations and indicators of disease that require medical intervention.

Question: 3

Which of the following is the correct reference range for prothrombin time?

A. 10 – 14 seconds
B. 20 – 45 seconds
C. 75 – 120 seconds
D. 50 – 75 seconds

Answer: A

Explanation:
The correct reference range for prothrombin time (PT) is indeed 10 – 14 seconds. Prothrombin time is a crucial blood test that measures how long it takes blood to clot. This timing is referred to as the PT and is used primarily to check for bleeding problems or the presence of anticoagulants in the blood. Prothrombin, a protein produced by the liver, is integral in the blood clotting process. When the body initiates clotting, prothrombin is converted into thrombin, which then helps to form a blood clot by

converting fibrinogen into fibrin. The PT test evaluates the presence and activity level of various clotting factors, including prothrombin.
The test is particularly significant for patients who are on anticoagulation therapy, specifically with vitamin K antagonists such as warfarin or coumadin. These medications work by inhibiting the vitamin K-dependent synthesis of biologically active forms of the clotting factors, including prothrombin. Monitoring PT helps in adjusting the dosage of these anticoagulants to ensure efficacy while minimizing the risk of excessive bleeding.
In the PT test, thromboplastin—a chemical reagent—is added to the patient's plasma. Thromboplastin initiates the clotting cascade, leading to the formation of a blood clot. The time taken from the addition of thromboplastin to the formation of the clot is measured as the PT. The normal range, as mentioned, is typically between 10 and 14 seconds. However, this can vary slightly depending on the laboratory and the specific reagents used.
It is important to note that different laboratories might use different kinds of thromboplastin or different testing methods, which can affect the PT value. Therefore, each laboratory typically provides its own reference ranges, which should be considered when interpreting PT results.
In summary, the prothrombin time is a critical measure in managing patients who are on certain types of anticoagulant therapies and for diagnosing clotting disorders. The standard reference range of 10 – 14 seconds is a guideline, and individual results should always be interpreted in the context of specific clinical scenarios and laboratory standards.

Question: 4

Which of the following statements about Bombay phenotype is false?

A. The person with Bombay phenotype inherits hh genotype.
B. It types as an O (front and reverse).
C. Persons with Bombay phenotype can be transfused with any type of blood.
D. It has an anti-H capable of activating complement.

Answer: C

Explanation:
The Bombay phenotype is a rare blood group characterized by the absence of A, B, and H antigens on red cells. Individuals with this phenotype have an hh genotype, meaning they lack the enzyme (fucosyltransferase) that adds fucose to the precursor substance, thus failing to produce the H antigen, which is a precursor for the formation of A and B antigens. Therefore, the statement "The person with Bombay phenotype inherits hh genotype" is correct.
Due to the absence of H antigen, individuals with the Bombay phenotype do not produce the A or B antigens irrespective of their genetic disposition for these antigens. Consequently, their blood type does not react with anti-A or anti-B antibodies and thus types as O in both front and reverse typing. However, they have antibodies against A, B, and H antigens, which are present in all other blood types except the Bombay phenotype itself. This makes the statement "It types as an O (front and reverse)" accurate.
Individuals with the Bombay phenotype can only be safely transfused with blood from other Bombay phenotype donors, as their plasma contains antibodies that would react with any blood having A, B, or H antigens. This includes the common blood types O, A, B, and AB, all of which express the H antigen. Therefore, the statement "Persons with Bombay phenotype can be transfused with any type of blood" is

false. This is the correct answer to the question regarding which statement is false about the Bombay phenotype.
The correct management of blood transfusion for Bombay phenotype individuals typically involves using autologous blood (self-donation) or receiving donations from other individuals with the same phenotype, often siblings, as it is generally inherited. This makes the statement "Persons with Bombay phenotype can only be transfused with Bombay type blood. Many times it is collected as autologous or from siblings who are also Bombay type" true.
Lastly, individuals with the Bombay phenotype produce anti-H antibodies in addition to anti-A and anti-B. These anti-H antibodies can activate the complement system, which is part of the immune system that helps antibodies clear pathogens. This makes the statement "It has an anti-H capable of activating complement" true. In conclusion, the false statement concerning the Bombay phenotype is that "Persons with Bombay phenotype can be transfused with any type of blood." This is not correct, as they require specific blood that lacks H, A, and B antigens.

Question: 5

In terms of electrochemistry what is the term for the force produced in a substance when there is an excess of electrons on one end and an electron deficit on the other end?

A. direct current
B. electromotive force
C. alternating current
D. electron theory

Answer: B

Explanation:
Electromotive force, often abbreviated as EMF, refers to the voltage developed across any electrical device when no current is flowing. This can occur in various contexts within electrochemistry and physics, but it essentially measures the energy provided per charge that passes through a device. EMF is a fundamental concept in the study of electrochemical cells and batteries.
The scenario where there is an excess of electrons on one end and a deficit on the other typically describes the conditions in a voltaic or galvanic cell, a type of electrochemical cell. In such a cell, a chemical reaction produces an electron surplus at the negative electrode (cathode) and an electron deficit at the positive electrode (anode). This separation of charges creates an electric potential difference—this is the electromotive force. The magnitude of the EMF of a cell depends on specific factors including the nature of the reactants, their concentration, and the temperature at which the cell operates.
In practical terms, EMF is critical because it drives the flow of electrons through an external circuit, allowing electrical devices to do work. When a device like a battery is connected in a circuit, the EMF attempts to push electrons from the negative side (where there are excess electrons) to the positive side (where there is a deficit). This flow of electrons is what we observe as electrical current. It's important to distinguish EMF from voltage under load conditions (when current is flowing); the latter can be affected by internal resistance and is usually less than the EMF.
Direct current (DC) and alternating current (AC) are terms related to the flow of electrical charge, but they are not directly comparable to EMF. DC refers to the unidirectional flow of electric charge, often

resulting from an EMF in a simple circuit. AC, on the other hand, refers to the flow of electric charge that periodically reverses direction, typically generated by alternating mechanisms in generators.
Hence, understanding electromotive force is crucial for comprehending how batteries and other electrochemical cells work, how they can store energy, and how this energy can be harnessed to power various electrical devices. This concept is foundational in both electrochemistry and electrical engineering.

Question: 6

Which of the following blood group systems has an antibody class of IgG/IgM?

A. Kell
B. Duffy
C. Kidd
D. Lutheran

Answer: D

Explanation:
The Lutheran blood group system, identified by the presence of specific antigens on the red blood cell surface, can stimulate the production of antibodies in certain individuals, particularly when exposed to red blood cells of another type, such as through transfusion or pregnancy. In the context of blood group systems, the type of antibody produced in response to foreign antigens is critical for understanding both immune response and compatibility in transfusions.
The antibodies associated with the Lutheran blood group system can be of two classes: IgG and IgM. This is noteworthy because the type of antibody influences how the immune system reacts. IgM antibodies are typically produced first when an antigen is encountered; they are larger in size and are primarily effective in the bloodstream, leading to the agglutination (clumping) of foreign cells and activating the complement system, which can destroy these cells. IgG antibodies, on the other hand, are smaller, can cross the placenta, and are generally involved in longer-term immunity and secondary immune responses. They are adept at opsonization, where pathogens are marked for destruction, and in activating other components of the immune system.
In contrast, other blood group systems, such as Kell, Duffy, and Kidd, primarily involve IgG antibodies. These antibodies do not typically cause agglutination but are more involved in the opsonization and destruction of foreign red blood cells. This difference is crucial in transfusion medicine and in managing pregnancies where the mother and fetus have incompatible blood types. IgG-mediated responses can lead to hemolytic disease of the newborn if not properly managed.
Understanding that the Lutheran blood group system can involve both IgG and IgM antibodies helps in multiple medical scenarios. For example, in blood transfusions, knowing the antibody types involved aids in predicting and managing potential reactions. Similarly, in prenatal care, recognizing the presence of these antibodies can prompt early interventions to prevent complications from hemolytic disease of the fetus and newborn. Thus, the dual nature of the antibody response in the Lutheran system adds an important layer to clinical decision-making in transfusion and obstetric medicine.

Question: 7

The type of syphilis that produces symptoms 2 – 30 years after the initial infection is which of the following?

A. tertiary syphilis
B. secondary syphilis
C. primary syphilis
D. congenital syphilis

Answer: A

Explanation:
The question asks about the form of syphilis that manifests symptoms anywhere from 2 to 30 years after the initial infection. The correct answer is tertiary syphilis.
Tertiary syphilis is the third and most severe stage of the sexually transmitted infection caused by the bacterium Treponema pallidum. Unlike the earlier stages of syphilis (primary and secondary), which may present with more recognizable symptoms like sores and rashes, tertiary syphilis can remain dormant for decades before showing any outward signs.
The latent period between the initial infection and the onset of tertiary symptoms can vary greatly, ranging from 2 to 30 years. During this time, the bacteria can silently damage the internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints. This stage of the disease is particularly dangerous because the symptoms are not only delayed but also potentially life-threatening.
Common complications of tertiary syphilis include syphilitic aortitis, which is an inflammation of the aorta that can lead to aortic valve insufficiency (where the heart's aortic valve does not close tightly) and thoracic aneurysms (a dangerous swelling of the aorta in the chest). Other severe effects can include neurosyphilis (where the infection invades the nervous system), gummatous syphilis (characterized by the formation of soft, tumor-like balls of inflammation called gummas), and ocular syphilis (affecting the eyes, potentially leading to blindness).
Diagnosis of tertiary syphilis typically involves a combination of physical examinations, blood tests, and imaging studies to assess the extent of organ damage. Treatment usually requires a prolonged course of antibiotics, often intravenous, and management of any organ damage that has occurred.
It is important to diagnose and treat syphilis in its earlier stages to prevent progression to tertiary syphilis. Regular screening and early intervention are key strategies in managing and preventing the severe consequences of this late stage of syphilis.

Question: 8

Centrifuges accelerate gravitational separation of substances differeing in their masses. Which type of centrifuge is commonly used to separate lipoproteins and may require many hours or days, so the chamber must be refrigerated?

A. Horizontal centrifuge
B. Fixed angle centrifuge
C. Swinging bucket centrifuge
D. Ultracentrifuge

Answer: D

Explanation:
Ultracentrifuges are specialized centrifuges specifically designed to operate at extremely high speeds, capable of generating forces tens of thousands of times greater than gravity. These high forces are crucial for separating substances of very small differences in mass, such as proteins, nucleic acids, viruses, and lipoproteins.
Lipoproteins, which are complexes of lipids and proteins, play critical roles in the transport of cholesterol and other fats through the bloodstream. Due to their varying densities and sizes, separating these lipoproteins for analysis can be challenging and requires precise manipulation of gravitational forces, which is achievable through ultracentrifugation.
The process of ultracentrifugation for separating lipoproteins is often a prolonged one, potentially taking several hours to days depending on the sample and the level of resolution required. During this lengthy period, the sample must be maintained at a stable temperature to prevent degradation or denaturation of the lipoproteins. This necessity is why ultracentrifuges are typically equipped with refrigeration systems that keep the chamber at a controlled, low temperature throughout the operation.
The design of an ultracentrifuge includes features such as a vacuum chamber that reduces air resistance and friction, thereby allowing for smoother and more efficient operation at high speeds. Additionally, the rotors can be of different types, such as fixed-angle or swinging-bucket, each suitable for specific types of separation tasks and sample volumes.
In summary, when it comes to separating complex mixtures like lipoproteins where precision and care are paramount, ultracentrifuges are the equipment of choice. Their ability to operate at high speeds combined with refrigeration capabilities makes them ideal for the task, ensuring that biological samples remain intact and properly separated over the duration of the centrifugation process.

Question: 9

Which of the following organisms is a gram negative cocci?

A. Viridans streptococcus
B. Moraxella catarrhalis
C. Enterococcus faecalis
D. Streptococcus pneumoniae

Answer: B

Explanation:
The question inquires about which organism among the listed options is a gram-negative cocci. The correct answer is Moraxella catarrhalis. To understand why, it's important to first understand the characteristics of the organisms listed and the basis of Gram staining.
Gram staining is a method used in microbiology to classify bacteria into two groups: Gram-positive and Gram-negative, based on the physical properties of their cell walls. Gram-positive bacteria retain the crystal violet stain used in the method, appearing blue or purple under a microscope, due to their thick peptidoglycan layer. Gram-negative bacteria, on the other hand, do not retain the violet stain and are counterstained red or pink by safranin due to their thinner peptidoglycan layer and an outer membrane containing lipopolysaccharides.
Now looking at the options provided: 1. **Viridans streptococcus** - This is a group of Gram-positive cocci. They are part of the normal flora of the human mouth and upper respiratory tract and are

important in the formation of dental plaque and certain types of infections like endocarditis. 2. **Moraxella catarrhalis** - This organism is a Gram-negative cocci. It is less common than other respiratory flora but is an important cause of respiratory tract infections like bronchitis and sinusitis, especially in children and the elderly. It is known for its resistance to penicillin due to the production of β-lactamase. 3. **Enterococcus faecalis** - This is a Gram-positive cocci, commonly found in the human gastrointestinal tract but can also be a cause of nosocomial infections including urinary tract infections, bacteremia, and endocarditis. 4. **Streptococcus pneumoniae** - Another example of Gram-positive cocci, this bacterium is a significant human pathogenic bacterium known for causing pneumonia, otitis media, meningitis, and various other infections.
Given these descriptions, **Moraxella catarrhalis** is clearly the only Gram-negative cocci among the options. It is important to recognize its role as normal flora of the upper respiratory tract and its pathogenic potential, especially in terms of antibiotic resistance, making it a notable organism in clinical microbiology.

Question: 10

Which of the following forms of normal hemoglobin is indicated by: hemoglobin + HbO2 = HbCO?

A. deoxyhemoglobin
B. oxyhemoglobin
C. carboxyhemoglobin
D. sulfhemoglobin

Answer: C

Explanation:
The equation "hemoglobin + HbO2 = HbCO" depicted in the question is a bit misleading and seems to be incorrect as it combines terms that typically do not interact directly in such a manner. To clarify, "HbO2" represents oxyhemoglobin, which is hemoglobin bound to oxygen, and "HbCO" denotes carboxyhemoglobin, which is hemoglobin bound to carbon monoxide. Therefore, the chemical interaction implied by the equation does not accurately represent the physiological or biochemical processes involving these forms of hemoglobin.
To understand this, it's important to know that hemoglobin (Hb) can exist in several forms depending on what molecule is bound to it. The primary forms are: - **Deoxyhemoglobin (Hb)**: This is the form of hemoglobin without any oxygen bound to it. It is typically found in the venous blood returning to the lungs, where it will release carbon dioxide and pick up oxygen. - **Oxyhemoglobin (HbO2)**: This form occurs when hemoglobin binds with oxygen in the lungs. It is bright red and carries oxygen to tissues and organs through the arterial blood. - **Carboxyhemoglobin (HbCO)**: This form results when hemoglobin binds with carbon monoxide (CO) instead of oxygen. Carbon monoxide has a higher affinity for hemoglobin than oxygen, which can prevent oxygen from binding and being transported to tissues, potentially leading to serious health effects like tissue damage or death.
The misunderstanding in the question seems to arise from the assumption that oxyhemoglobin directly transforms into carboxyhemoglobin, which is not the case. In reality, the presence of carbon monoxide (CO) in the environment can lead to the formation of carboxyhemoglobin if CO is inhaled. CO competes with oxygen for the binding sites on the hemoglobin molecule. When hemoglobin binds with CO, it forms carboxyhemoglobin, which impairs the oxygen-carrying capacity of the blood.

Therefore, the correct answer to the question would be to identify which form of hemoglobin is referred to by "HbCO," and the answer is carboxyhemoglobin. This form is indeed seen in the arterial circulation if carbon monoxide is present and has bound to hemoglobin, displacing oxygen and forming HbCO. The equation should perhaps more accurately reflect the competitive process between CO and O2 for hemoglobin, rather than a direct transformation from HbO2 to HbCO.

For More Information – **Visit link below:**

https://www.testsexpert.com/

16$ Discount Coupon: 9M2GK4NW

Features:

- Money Back Guarantee……..……...…. 

- 100% Course Coverage…… 

- 90 Days Free Updates…… 

- Instant Email Delivery after Order……