

# Medical Professional MT

Medical Technologist Examination (MT)

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## Question: 1

Lipids from carbohydrate and alcohol sources are

- A. Anions
- B. Triglycerides
- C. Cholesterol
- D. Eluent

**Answer: B**

Explanation:

Anions are negatively charged ions of chloride and bicarbonate. Cholesterol is lipids from animal sources that climb after a fatty meal. An eluent is a solvent used for chromatography.

## Question: 2

When serum proteins indicate disease, the doctor usually follows up with

- A. Total protein, albumin, and globulin
- B. Ascites
- C. Protein electrophoresis
- D. Bilirubin

**Answer: C**

Explanation:

The serum proteins test includes total protein, albumin, and globulin. Ascites is swelling of the abdomen from extra fluid in the peritoneum, resulting from end-stage diseases of the heart, kidney, liver, ovary, and pancreas. When serum proteins make the doctor suspect one of these diseases, the doctor follows up with protein electrophoresis. Four globulin fractionations are added to the total protein and albumin alpha-1 globulin, alpha-2 globulin, beta globulin, and gamma globulin. Electrophoresis patterns and the patient's history of drug use help pinpoint the diagnosis, which may extend to rheumatoid arthritis, muscle tumors, and immune deficiencies. Bilirubin is the brownish-red bile pigment from broken down blood cells in the liver.

## Question: 3

Elevated creatine phosphokinase (CPK) could mean myocardial infarction, but could also mean

- A. Alcoholism, hypothyroidism, cardioversion, or clofibrate use

- B. Aspirin, burns, warfarin, or sickle cell anemia
- C. Lung disease or congestive heart failure
- D. Crushing injury, bowel infarction, or opiate use

**Answer: A**

Explanation:

Cardiac enzymes elevate soon after a heart attack, but that is not the only possible root cause. CPK elevates in alcoholism; cardiac catheterization; stroke; clofibrate use; electric shock applied during resuscitation; low thyroid hormone and high thyroid stimulating hormone; and after surgery. B and D refer to situations that cause AST enzyme to rise. C refers to situations that cause LDH enzyme to rise.

### Question: 4

A patient whose cortisol level is high at both 8:00 AM and 4:00 PM likely has

- A. Addison's disease
- B. Natriuretic factor
- C. Diabetes insipidus
- D. Cushing syndrome

**Answer: D**

Explanation:

Cortisol is an adrenal stress hormone that is normally higher around 800 in the morning (6 to 28 mcg/dL) and lower at 400 in the afternoon (2 to 12 mcg/dL). The fluctuation is a normal diurnal variation. Cushing syndrome patients have sustained high cortisol. Addison's disease patients have chronically low cortisol levels, diagnosed by a 24-hour urine test for 17-hydroxycorticosteroids. Abnormal cortisol levels also appear in thyroid and pituitary gland disease, obesity, and cancer, and when steroids, diuretics, or birth control pills are used, but it is not the same pattern as Cushing syndrome. B refers to atrial natriuretic factor (ANF), produced by the heads atria during volume overload and high blood pressure.

### Question: 5

Decreased sodium in the blood is

- A. Hypernatremia, often from diabetes, burns, or Cushing syndrome
- B. Hyponatremia, often from vomiting and diarrhea, furosemide, or Addison's disease
- C. Hyperkalemia, often from acidosis, spironolactone, or kidney failure
- D. Hypokalemia, often from alkalosis, stomach cancer, or eating too much licorice

**Answer: B**

Explanation:

Hyponatremia results from too much water and not enough salt in the bloodstream.

Hyponatremia often presents as a urine sample with a specific gravity (SG) lower than the normal 1.015 to 1.025 and closer to the SG of water (1.000). Hypernatremia refers to too much salt in the bloodstream, which increases SG above 1.025. Hyperkalemia and hypokalemia refer to the level of potassium, not sodium.

### Question: 6

CPK in a patient with a myocardial infarction will

- A. Rise 6 hours after heart attack, peak in 18 hours, and return to baseline in 3 days
- B. Rise 6 to 10 hours after heart attack, peak at 12 to 48 hours, and return to baseline in 4 days
- C. Rise 24 to 72 hours after heart attack peak in 4 days, and return to baseline in 14 days
- D. Cause a corresponding rise in alpha-fetoprotein

**Answer: A**

Explanation:

CPK is the first enzyme to rise following a heart attack so doctors measure it before the other cardiac enzymes. If creatine kinase-MB (CK-MB) rises, it means the heart sustained severe damage. B refers to the response of AST to a heart attack. C refers to the response of LDH to a heart attack. D does not apply because alpha-fetoprotein (AFP) is used to find liver disease, testicular cancer, and birth defects.

### Question: 7

The panic value for blood pH is

- A. 7.35
- B. Less than 7.20
- C. 80 to 100 torr
- D. 4.0 to 8.0 mcg/L

**Answer: B**

Explanation:

pH stands for percentage of hydrogen. A blood pH test is performed with arterial blood gasses to determine if the patient has acidosis or alkalosis. The blood must be kept in a narrow range of pH from 7.35 to 7.45, so answer A would be low normal. Answer C, 80 to 100 torr, refers to normal percentage of oxygen. D is incorrect because an abnormal PSA result for prostate cancer is unrelated to blood PH.

### Question: 8

When performing a sweat test for cystic fibrosis, the MT ensures

- A. The current never exceeds 4 mA for 5 min and 25 volts.
- B. The current is 10 mA for 30 min and 10 volts.
- C. The current does not pass the patients trunk.
- D. Both a and c are correct

**Answer: D**

Explanation:

When performing a sweat test for cystic fibrosis, the technologist must avoid burning the patient or causing depolarization of the heart. The technologist uses only a battery-powered iontophoretic current and it cannot exceed 4 mA for 5 minutes. The technologist uses only the patient's arm or leg for sweat collection and ensures the electrodes do not cross over the patient's trunk. The technologist never performs iontophoresis near an open oxygen source, but asks the nurse to give the patient a face mask or nasal cannula during the test.

### Question: 9

If the doctor suspects the patient has Hodgkin's disease, then the correct stain for the smear is

- A. Periodic acid-Schiff (PAS)
- B. Sudan black B (SBB)
- C. Leukocyte alkaline phosphatase (LAP)
- D. Lactophenol cotton blue (LPCB)

**Answer: C**

Explanation:

Hematologists use LAP stain to highlight neutrophils when the patient has many white blood cells but not leukemia (leukemic reaction). Microbiologists use periodic acid-Schiff (PAS) to stain carbohydrates, collagen, fibrin, and mucin purple. Sudan black B (SBB) is specifically for acute leukemia patients: it helps to differentiate between immature cells by staining lipids in myeloid leukemia that are absent in lymphoid leukemia. LPCB is mixed with 10% potassium hydroxide (KOH) to identify fungus.

### Question: 10

A battlement scan is preferable to a wedge scan for studying bone marrow because

- A. Battlement technique distributes cells evenly across the slide.
- B. Lymphocytes concentrate in the feather.
- C. Wedge technique causes leukocytes to pool in different sections of the slide.
- D. Both A and C

**Answer: D**

**Explanation:**

Make a bone marrow slide with a battlement technique so the review is standardized, with even cell distribution. Wedge push technique (feathered end) causes the white cells to pool unevenly on the slide. On the side edges and in the feather of a wedge push slide, concentrated pockets of eosinophils, monocytes, and segmented neutrophils will be found. Small lymphocytes concentrate in the center of the slide.

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