

Chemical Examination of Urine

Medical Laboratory Science · Answer Key · 30 Questions

1. Which urine parameters are reported qualitatively, except for pH and SG?

- A) Protein and Glucose**
- B) Bilirubin and Ketones
- C) All parameters are reported qualitatively
- D) Urobilinogen and Ketones

2. How is 'TRACE' reported for urine tests?

- A) Negative
- B) Positive
- C) +/-**
- D) TRACED

3. What is the normal range for urobilinogen in mg/dL?

- A) 0.2 to 1.0**
- B) 1.0 to 2.0
- C) 0.0 to 0.2
- D) Greater than 1.0

4. What is considered an abnormal concentration of urobilinogen?

- A) Less than 0.2 mg/dL
- B) Exactly 1.0 mg/dL
- C) Greater than 1.0 mg/dL**
- D) 0.2 to 1.0 mg/dL

5. Which of the following is NOT a learning outcome for the chemical examination of urine session?

- A) Identify tests for protein, sugars, bilirubin, ketones, and urobilinogen.
- B) Explain the principles behind the tests.
- C) Analyze how these tests support reagent strip testing.
- D) Perform venipuncture for urine collection.**

6. Ascorbic acid is known to interfere with which reagent strip parameters by causing false negatives?

- A) Glucose and Blood
- B) Nitrite and Bilirubin
- C) Leukocyte, Glucose, Blood, Nitrite, and Bilirubin**
- D) Ketones and Urobilinogen

7. What is the detection limit for ascorbic acid in reagent strip testing?

A) 10 mg/dL

B) 20 mg/dL

C) 5 mg/dL

D) 50 mg/dL

8. Which of the following tests is used for the early diagnosis of diabetic nephropathy?

A) Heat and Acetic Acid Test

B) Sulfosalicylic Acid Precipitation Test

C) Microalbumin Test

D) Microalbumin-Creatinine Ratio

9. In the Micral Test for microalbumin, a darker bottom band indicates what result?

A) Positive

B) Borderline

C) Negative

D) High concentration

10. What is the principle behind the ImmunoDip Test for microalbumin?

A) Heat precipitation

B) Chemical reaction with nitroprusside

C) Immunochromatography

D) Reduction of copper sulfate

11. The Albumin:Creatinine Ratio is computed by an analyzer using which two pads?

A) Albumin and Glucose pads

B) Albumin and Creatinine pads

C) Creatinine and Bilirubin pads

D) Albumin and Ketone pads

12. Which test involves adding 3 mL of 3% SSA to 3 mL of urine, performed on centrifuged specimens?

A) Heat and Acetic Acid Test

B) Sulfosalicylic Acid (SSA) Test

C) Cold Precipitation Test

D) Microalbumin Test

13. The Heat and Acetic Acid Test is used to detect what in urine?

- A) Protein**
- B) Ketones
- C) Reducing Sugars
- D) Bilirubin

14. Which test uses Seliwanoff's Reagent (Fructose Resorcinol Test) to detect reducing sugars?

- A) Galactose Mucic Acid Test
- B) Rubner's Test
- C) Fructose Resorcinol Test**
- D) Benedict's Test

15. Hereditary Fructose Intolerance is associated with a deficiency in which enzyme?

- A) Galactose-1-phosphate uridyl transferase
- B) Galactokinase
- C) Aldolase B (F1P Aldolase)**
- D) Lactase

16. The Mucic Acid Test (Nitric Acid) is used to detect which reducing sugar?

- A) Fructose
- B) Galactose**
- C) Lactose
- D) Glucose

17. Galactosemia Type I is associated with a deficiency of which enzyme?

- A) Galactokinase
- B) Galactose-1-phosphate uridyl transferase**
- C) Aldolase B
- D) Lactase

18. Rubner's Test (Lead Acetate + NH₄OH) is used to detect which reducing sugar?

- A) Fructose
- B) Galactose
- C) Lactose**
- D) Glucose

19. Which test is based on Benedict's Test principle and detects reducing sugars?

- A) Clinitest**
- B) Acetest
- C) Ictotest
- D) Watson-Schwartz Test

20. What is the reaction occurring in Benedict's Test (and Clinitest)?

- A) Oxidation of reducing sugar by copper sulfate
- B) Reduction of copper sulfate to cuprous oxide with alkali and heat**
- C) Reaction of diazo salt with reducing sugar
- D) Precipitation of protein by SSA

21. The 'Pass-through Phenomenon' in Clinitest involves the color changing from orange back to green-brown, indicating what?

- A) Low concentration of reducing substances**
- B) High concentration of reducing substances
- C) Presence of protein
- D) Absence of reducing substances

22. Which test is a tablet nitroprusside reaction utilized for urine samples that are highly pigmented?

- A) Ictotest
- B) Acetest**
- C) Clinitest
- D) Watson-Schwartz Test

23. What is the primary purpose of lactose and glycine in the Acetest tablet?

- A) To detect ketones
- B) To improve color differentiation**
- C) To act as a catalyst
- D) To precipitate protein

24. Which test is a confirmatory test for bilirubin and contains p-nitrobenzenediazonium-p-toluenesulfonate?

- A) Acetest
- B) Ictotest**
- C) Clinitest
- D) Hoesch Test

25. The Ictotest tablet can detect bilirubin at concentrations as low as:

- A) 0.05 to 0.1 mg/dL**
- B) 0.1 to 0.2 mg/dL
- C) 0.2 to 0.5 mg/dL
- D) Greater than 0.5 mg/dL

26. Which test differentiates urobilinogen from porphobilinogen by exploiting their solubility in chloroform and butanol?

A) Hoesch Test

B) Watson-Schwartz Test

C) Blondheim's Test

D) Prussian Blue Stain

27. According to the Watson-Schwartz Test, urobilinogen is soluble in both chloroform and butanol, while porphobilinogen is:

A) Soluble in both

B) Soluble in chloroform but not butanol

C) Insoluble to both chloroform and butanol

D) Insoluble to butanol but soluble to chloroform

28. The Hoesch Test is used to screen for which substance, indicated by the appearance of a red color?

A) Urobilinogen

B) Porphobilinogen

C) Hemosiderin

D) Myoglobin

29. What is the approximate detection limit of the Hoesch Test for porphobilinogen?

A) 2 mg/dL

B) 5 mg/dL

C) 10 mg/dL

D) 20 mg/dL

30. Which of the following is NOT listed as a reference for urinalysis and body fluid analysis?

A) Fundamentals of Urine & Body Fluid Analysis 5th Edition by Brunzel

B) Henry's Clinical Diagnosis and Management by Laboratory Methods 22nd Edition by McPherson and Pincus

C) Urinalysis and Body Fluids 7th Edition by Strasinger

D) The Merck Manual of Diagnosis and Therapy