BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Sc.(MLT)-2022/B.Sc.(MLT)-2023
Course Name – Clinical Pathology
Course Code - BMLTC301
(Semester III)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Select the observable physical attribute of urine can provide insights into a person's hydration level?

a) Temperature b) Texture
c) Clarity d) Weight

(ii) Identify the medical condition might a significantly reduced urine volume, known as oliguria, be commonly observed?

a) Diabetes insipidus b) Hyperthyroidism
c) Chronic obstructive pulmonary disease (COPD) d) Acute kidney injury

(iii) Interprete the typical range for normal urine specific gravity (SG), and which factor does it depend on?

a) Is it 1.000 to 1.010, depending on age? b) Is it 1.010 to 1.020, depending on gender?
c) Is it 1.003 to 1.030, depending on the state of hydration? d) Is it 1.030 to 1.040, depending on diet?

(iv) A patient's urine has a strong, foul odor. What potential causes should be considered, and what diagnostic steps might you take to determine the underlying issue?

a) Dehydration; perform a urine specific gravity test b) Urinary tract infection; conduct a urine culture and sensitivity test
c) Normal variation; no further action required d) Kidney stones; order a complete blood count (CBC)

(v) In a chemical examination of urine, you are analyzing the levels of specific substances in two different urine samples. Sample A shows a significantly elevated level of protein, while Sample B has a normal protein level. How would you compare these two urine samples?

a) Compare Sample A to Sample B in terms of pH levels b) Compare Sample A to Sample B based on odor

c) Compare Sample A to Sample B regarding the presence of glucose
d) Compare Sample A to Sample B with respect to protein concentration

(vi) During a microscopic examination of urine, you observe two urine samples under a microscope. Sample X contains numerous red blood cells (RBCs), while Sample Y contains white blood cells (WBCs) and crystals. How would you compare these two urine samples?

a) Compare Sample X to Sample Y in terms of their specific gravity
b) Compare Sample X to Sample Y based on odor
c) Compare Sample X to Sample Y regarding the presence of glucose
d) Compare Sample X to Sample Y with respect to cellular elements and crystals

(vii) During the physical examination of urine, you want to demonstrate a specific characteristic. Which of the following findings would demonstrate "hematuria"?

a) A urine sample with a clear and pale yellow color
b) A urine sample that is highly concentrated with a strong odor
c) A urine sample that appears brownish or reddish in color
d) A urine sample with a pH level of 7.0

(viii) What term is commonly used to describe hard, dry, and difficult-to-pass stools?

a) Diarrhea
b) Steatorrhea
c) Constipation
d) Hematochezia

(ix) Interprete the typical range for normal stool specific gravity (SG), and which factor does it depend on?

a) 1.000 to 1.020; Diet
b) 1.010 to 1.040; Hydration
c) 1.025 to 1.050; Medications
d) 1.000 to 1.010; Gastrointestinal Health

(x) which substance is commonly applied as a preservative for stool samples in clinical laboratories?

a) Sodium chloride
b) Formalin (formaldehyde)
c) Potassium hydroxide
d) Ethanol

(xi) Where is cerebrospinal fluid produced in the body?

a) In the liver
b) In the kidneys
c) In the choroid plexus of the brain
d) In the pancreas

(xii) What does AFB stand for in the context of sputum testing?

a) Acid-Free Bacteria
b) Active Fungal Biomarkers
c) Acid-Fast Bacillus
d) Antibiotic-Free Bacteriology

(xiii) What is the expected change in urine specific gravity in response to dehydration compared to proper hydration?

a) Urine specific gravity increases during dehydration and decreases during proper hydration
b) Urine specific gravity decreases during dehydration and increases during proper hydration
c) Urine specific gravity remains the same regardless of hydration status
d) Urine specific gravity fluctuates randomly during dehydration and proper hydration

(xiv) What is the primary purpose of analyzing pericardial fluid in a clinical setting?

a) To assess lung function
b) To evaluate kidney health
c) To diagnose pericarditis and related conditions
d) To measure blood sugar levels

(xv) What is the primary function of synovial fluid in joints?

a) To cushion and lubricate the joint
b) To transmit electrical signals
c) To aid in digestion
d) To transport oxygen to cells

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Define the normal range of urine analysis using physical examination. (3)

3. Differentiate between cyst and precyst of Entamoeba histolytica. (3)
4. Define the collection procedure of synovial fluid. (3)
5. Compare and contrast oliguria and anuria in terms of urine output, underlying causes. (3)
6. Explain the chemical reaction that takes place when benzidine reacts with blood components in the stool. What are the observable changes indicating a positive test result? (3)

OR

How do you interpret the results of a semen analysis when assessing sperm motility? (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Discuss the steps involved in collection of fecal sample along with the precautions. (5)
8. Analyze the color and consistency of sputum and their clinical significance. (5)
9. What are the latest WHO reference values for key semen parameters? (5)
10. Briefly discuss most common helminths present in laboratory examination of stool sample. (5)
11. Analyze the difference between Amebic and bacillary or bacterial dysentery. (5)

12. Investigate the key steps involved in the microscopic examination of urine sediment in a clinical laboratory. Describe how proper sample preparation, centrifugation, and microscopic analysis techniques contribute to accurate results and the identification of various urinary elements. (5)

OR

Compare and contrast the advantages and disadvantages of different urine collection methods, such as clean-catch, catheterization, and 24-hour urine collection, in terms of their accuracy, applicability, and potential for contamination. (5)

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