

(8 pages)

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M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2024.

Third Semester

Zoology — Core

MEDICAL LABORATORY TECHNIQUES

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. What color-coded container is typically used for disposing of sharps, such as needles and scalpels, in a medical laboratory?
- (a) Blue (b) Red
(c) Yellow (d) Green

2. What information must be included on the label of a chemical container in the laboratory?
- (a) The chemical's name, concentration, and hazard symbols
(b) Only the chemical's name
(c) The chemical's name and the name of the person who prepared it
(d) The name of the chemical manufacture
3. _____ is the correct protocol for lab.coat use in a medical laboratory.
- (a) Wear the lab coat at all times, even outside the lab
(b) Keep the lab coat in the lab and launder it regularly
(c) Use the lab coat as an all-purpose coat
(d) Share lab coats among colleagues to conserve resources
4. What type of stem cell is responsible for giving rise to all blood cells in the body?
- (a) Mesenchymal stem cell
(b) Hematopoietic stem cell
(c) Neural stem cell
(d) Epithelial stem cell

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5. The typical anticoagulant used in the ESR test is
(a) Heparin (b) EDTA
(c) Sodium citrate (d) Oxalate
6. How long can red blood cells be stored in a blood bank under standard conditions?
(a) 2-4 days (b) 5-7 days
(c) up to 42 days (d) up to 6 months
7. Which diagnostic test is commonly used to identify *Entamoeba histolytica* infection in the stool?
(a) Microscopic examination of stool samples
(b) Blood culture
(c) Urinalysis
(d) Skin biopsy
8. What is the primary principle behind computed tomography (CT) scanning?
(a) Magnetic resonance imaging
(b) Ultrasound waves
(c) X-ray attenuation through different tissues
(d) Electrical impedance

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9. The training of healthcare workers important in biomedical waste management is
(a) To improve job satisfaction
(b) To meet insurance requirements
(c) To comply with administrative policies
(d) To ensure proper handling, segregation, and disposal of biomedical waste
10. At what standard paper speed is an ECG typically recorded?
(a) 5 mm/sec (b) 10 mm/sec
(c) 25 mm/sec (d) 50 mm/sec
11. What is the most appropriate method for collecting a urine sample for a culture?
(a) First-morning urine
(b) Random urine sample
(c) Midstream clean-catch urine
(d) Postprandial urine
12. What is the primary purpose of analyzing cerebrospinal fluid (CSF)?
(a) To assess renal function
(b) To diagnose central nervous system infections and diseases
(c) To evaluate liver function
(d) To measure blood glucose levels

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[P.T.O.]



13. What is the typical thickness of sections cut from paraffin-embedded tissue?

- (a) 1-2 mm (b) 5-10 μ m
(c) 50-100 μ m (d) 0.5-1 cm

14. Which of the following is a commonly used histological stain for highlighting cell nuclei?

- (a) Hematoxylin (b) Eosin
(c) Sudan III (d) Giemsa

15. At what temperature is a cryostat typically operated for frozen sectioning?

- (a) 4°C (b) -20°C
(c) -30°C to -20°C (d) -80°C

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

16. (a) Describe the clinical role of a Medical Laboratory Technician (MLT).

Or

(b) Discuss the safety measures that should be followed in a medical laboratory.

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17. (a) Enumerate the different types of anemia and their characteristics.

Or

(b) Explain the significance of the absolute eosinophil count in blood tests.

18. (a) Examine the significance of Leishmania in human diseases.

Or

(b) Record the physiological effects of alcohol on the body.

19. (a) Explain how pulse regulation affects heart rate.

Or

(b) Justify the key steps of a laboratory technician takes effort to collect sputum sample.

20. (a) Write the different types of microtomes used in histology.

Or

(b) Appraise the common staining methods used in histology.

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PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

21. (a) Discuss the management of biohazardous waste and the importance of biosafety levels in a laboratory setting.

Or

- (b) Describe the physical methods of sterilization used in laboratories.

22. (a) Summarize the methods for determining bleeding time and clotting time in blood tests.

Or

- (b) Illustrate the common bleeding disorders in humans and their characteristics.

23. (a) Explain the principles and uses of Magnetic Resonance Imaging (MRI).

Or

- (b) Interpret the principles and practices of biomedical waste management.

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24. (a) Analyze the techniques involved in collection and processing urine, stool and pus samples.

Or

- (b) Conclude the principles and clinical uses of Electroencephalography (EEG).

25. (a) Compile the proper handling and labeling procedures for histology specimens.

Or

- (b) Explain the frozen section technique and the role of the freezing microtome in histology.

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