KAMARAJ COLLEGE (Autonomous)

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(4 Pages) **Reg. No:……**

Question Code: 26E01508 **Course Code : 24UEMB31**

UG Degree - End Semester Examinations, April 2026

Third Semester

B.Sc., MICROBIOLOGY

Clinical Laboratory Technology

(For those who joined in July 2024 onwards)

Time : 3Hours **Maximum : 75 Marks**

PART – A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer :

CO:1 K:1 1. Identify the primary role of a medical laboratory technician.

(a) Conducting surgeries (b) Diagnosing patient illnesses directly

(c) Performing laboratory tests and reporting results (d) Prescribing medicines

CO:1 K:2 2. Why are standard precautions necessary in a clinical laboratory?

(a) To reduce reagent consumption (b) To prevent infections and ensure safety of personnel

(c) To speed up laboratory testing (d) To avoid accreditation inspections

CO:2 K:1 3. State the specimen required for cerebrospinal fluid (CSF) analysis

(a) Lumbar puncture fluid (b) Venous blood

(c) Saliva (d) Pleural fluid

CO:2 K:1 4. Select the anticoagulant used in EDTA tubes for blood collection.

(a) Sodium citrate (b) Sodium fluoride

(c) Heparin (d) Potassium EDTA

CO:3 K:1 5. Name the process of removing water from tissue before embedding.

(a) Sectioning (b) Fixation

(c) Dehydration (d) Clearing

CO:3 K:1 6. Which clearing agent is commonly used in tissue processing?

(a) Xylene (b) Ether

(c) Chloroform (d) Acetone

CO:4 K:1 7. Name the deficient clotting factor in Hemophilia A.

(a) Factor XI (b) Factor IX

(c) Factor (d) Factor VIII

CO:4 K:1 8. What is the normal range of plasma fibrinogen concentration in healthy adults?

(a) 20–40 g/dL (b) 20–40 mg/dL

(c) 200–400 mg/dL (d) 2000–4000 mg/dL

CO:5 K:1 9. Which accreditation body in India provides recognition to clinical laboratories?

(a) CAP (b) NABL

(c) ISO (d) COLA

CO:5 K:2 10. Which combination ensures precision and accuracy in a laboratory?

(a) Accreditation + patient satisfaction (b) Low-cost reagents + SOPs

(c) Calibrated equipment + quality control (d) Technician skill only

PART – B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

CO:1 K:2 11. (a) List and briefly describe the basic principles followed in a clinical laboratory.

(OR)

(b) Illustrate how safety measures are implemented to prevent clinical laboratory accidents.

CO:2 K:2 12. (a) Demonstrate the correct procedure for urine specimen collection to minimize the contamination.

(OR)

(b) Write a note on preservation methods used for stool specimens.

CO:3 13. (a) Illustrate the importance of dehydration in tissue processing with an example.

K:2

(OR)

(b) Explain why proper labelling of specimens is essential during tissue processing.

CO:4 14. (a) Discuss the laboratory approach for diagnosing Haemophilia.

K:3

(OR)

(b) Compare partial thromboplastin time (PTT) and activated partial thromboplastin time (aPTT) in the context of coagulation disorders.

CO:5 15. (a) Explain the importance of quality assessment in clinical laboratories.

K:3

(OR)

(b) Assess why ISO certification is important for laboratory performance and credibility.

PART – C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 500 words.

CO:1 16. (a) Describe the organization of a clinical laboratory and discuss how effective management ensures accurate results.

K:4

(OR)

(b) Examine the steps involved in patient assessment and history taken before specimen collection and justify their significance in laboratory diagnosis.

CO:2 17. (a) Explain the procedures for collecting and handling blood samples in a clinical laboratory and analyse how the proper specimen management contributes to accurate diagnosis of haematological disorders?

K:4

(OR)

(b) Describe the collection and handling of cerebrospinal fluid (CSF) specimens and list out its importance in the diagnosis of central nervous system disorders.

CO:3 18. (a) Describe the classification and properties of fixatives used in histopathology.

K:3

(OR)

(b) Explain the sequential steps involved in tissue processing.

CO:4 K:3 19. (a) Describe the routine laboratory methods used to investigate coagulation disorders.

(OR)

(b) Evaluate the methods for fibrinogen estimation in clinical laboratory technology.

CO:5 K:4 20. (a) Describe the development and implementation of quality standards in clinical laboratories. How do they ensure accurate and reliable results?

(OR)

(b) Discuss the procedures for performing quality assessment in pre-analytical, analytical and post-analytical phases.