



## **MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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### **University Examinations 2024/2025**

#### **SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF MEDICAL MICROBIOLOGY**

#### **HMM 3212: LABORATORY PRACTICE AND MANAGEMENT**

**DATE: JANUARY 2025**

**TIME: 3 HOURS**

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#### **INSTRUCTIONS:**

Answer *All* questions

Ensure that all your answers are properly numbered

Part I multiple Choice Questions (MCQ): Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark

Part II: Short Answer Questions – Answer questions following each other on the answer booklet

Part III: Long Answer Questions – Answer each question on the answer booklet

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#### **SECTION A: MULTIPLE CHOICE QUESTIONS (20 marks)**

1. What is the primary dedication of clinical laboratory personnel according to the code of conduct?
  - a) To earn the highest salary possible
  - b) To benefit mankind through clinical laboratory science
  - c) To gain recognition in their field
  - d) To work independently without accountability
2. During the manufacturing process, what does QC study to assess product quality?
  - a) The extent of quality deviation in a product
  - b) The number of units produced

- c) The time taken for production
  - d) The aesthetic appeal of the product
3. Which of the following best describes the overall goal of the Quality Management Cycle?
- a) To increase costs without improving quality
  - b) To create a continuous improvement process for quality
  - c) To focus only on customer complaints
  - d) To standardize all processes without flexibility
4. Total Quality Management (TQM) primarily emphasizes:
- a) Cost reduction
  - b) Continuous improvement and customer satisfaction
  - c) Strict adherence to processes
  - d) Individual employee performance
5. Which of the following principles is NOT part of the Total Quality Management (TQM) approach?
- a) Customer focus
  - b) Continuous improvement
  - c) Top-down management
  - d) Employee involvement
6. What is a primary focus of internal audits?
- a) To review customer feedback
  - b) To assess compliance with internal policies and procedures
  - c) To minimize staff involvement
  - d) To determine market trends
7. When deciding between purchasing or leasing equipment, what factor should be considered?
- a) The size of the laboratory
  - b) The criteria for selection
  - c) Budget constraints and long-term needs
  - d) The age of existing equipment

8. What is the primary responsibility of trial facility management regarding Good Clinical Laboratory Practice (GCLP)?
  - a) To ensure profit maximization
  - b) To ensure compliance with GCLP principles
  - c) To hire as many staff as possible
  - d) To minimize the use of equipment
9. Which of the following should be included in the title of an SOP?
  - a) The date of publication only
  - b) The specific procedure being described
  - c) The author's personal information
  - d) The company's logo
10. What is the significance of the references section in an SOP?
  - a) To include unrelated documents
  - b) To provide sources that support the procedure and offer additional guidance
  - c) To document employee attendance
  - d) To list competitor information
11. Which of the following is a possible outcome of undetected laboratory errors?
  - a) Faster treatment options
  - b) Undetected communicable disease outbreaks
  - c) Increased trust in laboratory results
  - d) Improved public awareness of health issues
12. What is one of the primary responsibilities of a laboratory director regarding staffing?
  - a) Hire the maximum number of staff regardless of workload
  - b) Hire an appropriate number of staff to cover the workload
  - c) Hire only temporary staff
  - d) Delegate hiring decisions entirely to HR
13. Why is orientation important for new employees, even if they have credible backgrounds?
  - a) To discuss personal interests
  - b) To ensure they are familiar with the specific laboratory environment and practices
  - c) To shorten the onboarding process

- d) To introduce them to upper management only
14. What is one key difference between accreditation and licensure?
- a) Accreditation is mandatory, licensure is voluntary
  - b) Licensure is required by law, accreditation is a voluntary certification process
  - c) Licensure improves employee satisfaction, accreditation does not
  - d) Accreditation focuses on staff management, while licensure focuses on patient care
15. When should the initial competency assessment be conducted for an employee?
- a) After they have worked for several years
  - b) During their first performance review
  - c) At the beginning of their employment
  - d) Only if a problem arises
16. What is an important aspect of sample disposal?
- a) Disposing of samples without following guidelines
  - b) Establishing procedures that comply with regulations
  - c) Allowing anyone to dispose of samples
  - d) Keeping samples indefinitely
17. What is the primary reason for maintaining an inventory system for laboratory reagents and supplies?
- a) To keep track of employee attendance
  - b) To maintain an uninterrupted flow of needed materials
  - c) To increase the workload of laboratory staff
  - d) To reduce the number of reagents in the laboratory
18. How does proper inventory management affect laboratory efficiency?
- a) It decreases efficiency by creating more administrative tasks
  - b) It increases efficiency and effectiveness by ensuring an uninterrupted flow of needed materials
  - c) It has no impact on efficiency
  - d) It focuses solely on managing finances
19. Why is training staff in QC procedures important?
- a) To familiarize staff with laboratory rules

- b) To ensure staff know how to properly follow QC policies and procedures
  - c) To avoid unnecessary paperwork
  - d) To reduce the need for QC monitoring
20. What should be done after identifying hazards in a risk assessment?
- a) Conduct laboratory tests to verify hazards
  - b) Ignore low-risk hazards
  - c) Analyze the risks and implement control measures to mitigate them
  - d) Postpone any decisions until a follow-up review

### **SECTION B: SHORT ANSWER ALL QUESTIONS (40 MARKS)**

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|---------------------------------------------------------------|------|
| 1. State key components in an inventory record                | 6mks |
| 2. Outline key areas for auditing in the laboratory           | 6mks |
| 3. Design a level three laboratory                            | 6mks |
| 4. Explain the role of a laboratory manager                   | 6mks |
| 5. State steps when implementing quality control program      | 6mks |
| 6. Outline steps in developing equipment management program   | 5mks |
| 7. Outline steps in implementing inventory management program | 5mks |

### **SECTION C: LONG ANSWER TWO QUESTIONS (40 MARKS)**

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| a) i. Describe 5 characteristics of accreditation                                                                                                                                                                                                                                                                                                                                                                                            | 10mks |
| ii. Describe 5 criteria for Selection a lab for accreditation                                                                                                                                                                                                                                                                                                                                                                                | 10mks |
| b) i. Explain 10 principles of Good Clinical Laboratory Practice                                                                                                                                                                                                                                                                                                                                                                             | 10mks |
| ii. Discuss 5 Competence assessment methods                                                                                                                                                                                                                                                                                                                                                                                                  | 10mks |
| c) i. A clinical laboratory, has been facing challenges with inventory management. These include frequent stock outs of essential reagents, excess inventory of non-essential items, and difficulties in tracking expiration dates. To address these issues, management has decided to implement a new inventory management program. What are the key steps management should take to effectively implement an inventory management program? | 12mks |

ii. Describe Program considerations in equipment management

6mks