



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELORS OF MEDICAL LABORATORY SCIENCES

**AML 4102: TO INSTRUMENTATION IN MEDICAL IN MEDICAL
LABORATORY SCIENCES**

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt **ALL** questions.

Circle the correct answer in section A.

Section A

1. Identify the following instrument shown



- a. Wire loop
- b. dropper
- c. stir rod
- d. Spatula**
- e. Inoculating needle

2. Identify the following glassware shown



- a. volumetric flask
- b. erlenmeyer flask
- c. graduated cylinder
- d. beaker
- e. test tube

3. Identify the following instrument shown



- a. graduated cylinder
- b. volumetric flask
- c. Forceps
- d. erlenmeyer flask
- e. goggles

4. Differential centrifugation is a process that:

- a. separates different components of the cell that function differently.
- b. separates components of the cell that have a different chemical makeup.
- c. analyzes the chemical components of the cell.
- d. separates components of the cell that have different densities
- e. Measures pH of fluids

5. Which of the following methods is suitable for sterilizing the plasma?

- a. Autoclaving
- b. Incineration
- c. Boiling
- d. Filtration
- e. Flaming

6. The following are physical methods of sterilization except?

- a. Flaming
- b. Radiation
- c. Filtration
- d. Tyndalization
- e. Use Ethylene oxide

7. Which of the following describes the function of the condenser in a microscope?
- magnification of object
 - it is a source of light
 - brings the rays of light to a common focus on the object to be examined
 - moving the object slide on the stage
 - e.
8. An organism viewed with the low power objective in place would be magnified _____ times.
- 10 times
 - 1000 times
 - 400 times
 - 100 times
 - 100000
9. Oil should be added to a microscopic slide when viewing it with the _____ objective
- 4 X
 - 10 X
 - 40 X
 - 100 X
 - 1000X
10. What piece of laboratory equipment is best-suited for accurately measuring the volume of
a liquid?
- graduated cylinder
 - beaker
 - Erlenmeyer flask
 - Weighing boat
 - Test tube
11. Which piece of laboratory equipment can be used to prevent aerosol contamination when culturing?
- Buret
 - Evaporating dish
 - Beaker
 - Safety cabinet
 - e.
12. Magnifying power of a microscope is calculated by
- Multiplying the power of objective lens and eye piece
 - Multiplying the power of objective lens with the distance between the objective lens and the specimen
 - Adding up the power of objective lens and eye piece
 - Subtracting the power of objective lens from that of eye piece
 - Multiplying the power of the condenser lens

13. Which of the following states Beer's Law
- Absorbance of a solution is directly proportional to the concentration of the solution
 - Absorbance of a solution is directly proportional to the thickness of the optical path
 - Absorbance of a solution is indirectly proportional to the thickness of the optical path
 - Absorbance of a solution is indirectly proportional to the concentration of the solution
 - None of the above
14. The following components are found in a colorimeter except?
- Cuvette
 - Light source
 - Photosensor
 - Safety valve
 - Filter
15. The following components are found in an autoclave except?
- Basket support
 - Lid clamps
 - Air outlet valve
 - Safety Valve
 - Monochromator
16. Which of the following microscopes would you use to examine a smear of bacteria stained by Gram stain?
- Bright field microscope
 - Dark field microscope
 - Dissecting microscope
 - Fluorescent microscope
 - Scanning electron microscope
17. Which of the following microscopes would you use to examine a smear stained with a fluorophore
- Bright field microscope
 - Dark field microscope
 - Polarizing microscope
 - Scanning electron microscope
 - Fluorescent microscope

18. Bacteriological culture media are generally sterilized using:
- Auto claves
 - Ovens
 - Filters
 - Bunsen burners
 - Incubators
19. The values of the following substances can be measured using potentiometry
- Blood potassium ions
 - Blood glucose
 - Urine pus cells
 - Urine epithelial cells
 - Creatinine levels
20. When using a X10 eye piece and the X10 objective of a bright field microscope, the total magnification is:
- 10
 - 20
 - 1000
 - 100
 - All of the above
21. Which of the following equipments determines the hydrogen ion concentration of solutions
- Deionizer
 - Distiller
 - Colorimeter
 - pH meter
 - All of the above
22. The following equipment can be used for measuring and dispensing fluids except?
- Volumetric flask
 - Calibrated pipette
 - Measuring cylinder
 - Test tube
 - All of the above

23. Deionization of impure water means
- Boiling
 - Filtration
 - Exchange cations and anions
 - None of the above
 - All of the above
24. The autoclave sterilizes at
- 121⁰C
 - 100⁰C
 - 60⁰C
 - 115⁰C
 - 221⁰C
25. To detect pH from a solution you need
- Micrometer
 - pH meter
 - spectrophotometer
 - incubator
 - None of the above
26. The following equipment can be used for sterilization except?
- Autoclave
 - Pressure cooker
 - Hot air oven
 - Water bath
 - Bunsen burner
27. The following equipment can be sterilized in an autoclave except?
- Test tube
 - Glass petri dish
 - Glass syringes
 - Bijou bottle
 - Vaccines

28. What kind of filters are made of unglazed porcelain?
- Chamberland filter
 - Seitz filter membrane
 - Sintered glass filter
 - Berkefeld filters
 - Mechanical filters
29. What is the function of the iris diaphragm control
- Hold the slide on the stage firmly
 - Focus light on the slide
 - Move the slide on the stage
 - To adjust the amount of light
 - To magnify the image
30. Which of the following safety cabinets is used when working with specimen suspected to contain ebola virus?
- Class 1 biosafety cabinet
 - Class 2 biosafety cabinet
 - Class 3 biosafety cabinet
 - Class 4 biosafety cabinet
 - Class 5 biosafety cabinet

SECTION B

31. Describe the following
- Resolving power (2 marks)
 - Working distance (2 marks)
 - Diaphragm (2 marks)
 - Condenser (2 marks)
 - Micrometer (2 marks)
32. Outline the following
- The physical methods of sterilization (2 marks)
 - The disadvantages of using a hot air oven for sterilization (4 marks)
 - The safety measures when autoclaving (4 marks)
33. Describe the following
- Two types of centrifuges used in the laboratory (10 marks)
 - Class 3 safety cabinet (10 marks)