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:APRIL2016

TIME:2HOURS

DATE: Pick DateSelect MonthPick Year

Instructions to Candidates

You should have the following for this examination

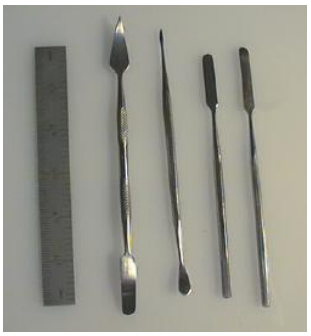
-Answer Booklet, examination pass and student ID

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

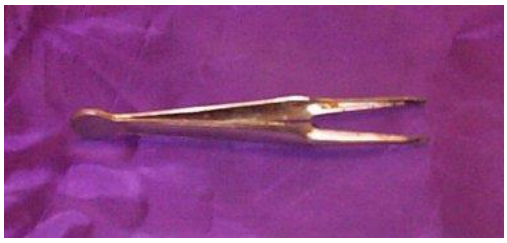


a. Wire loop
b. dropper
c. stir rod
d. Spatula
e. Inoculating needle

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. Filteration
   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?
    a. magnification of object
    b. it is a source of light
    c. brings the rays of light to a common focus on the object to be examined
    d. moving the object slide on the stage
    e.
8. An organism viewed with the low power objective in place would be magnified _____ times.
    a. 10 times
    b. 1000 times
    c. 400 times
    d. 100 times
    e. 100000
9. Oil should be added to a microscopic slide when viewing it with the _____ objective
    a. 4 X
    b. 10 X
    c. 40 X
    d. 100 X
    e. 1000X
10. What piece of laboratory equipment is best-suited for accurately measuring the volume of

    a liquid?
    a. graduated cylinder
    b. beaker
    c. Erlenmeyer flask
    d. Weighing boat
    e. Test tube
11. Which piece of laboratory equipment can be used to prevent aerosol contamination when culturing?
    a. Buret
    b. Evaporating dish
    c. Beaker
    d. Safety cabinet
    e.
12. Magnifying power of a microscope is calculated by
    a. Multiplying the power of objective lens and eye piece
    b. Multiplying the power of objective lens with the distance between the objective lens and the specimen
    c. Adding up the power of objective lens and eye piece
    d. Subtracting the power of objective lens from that of eye piece
    e. Multiplying the power of the condenser lens

13. Which of the following states Beer's Law
    a. Absorbance of a solution is directly proportional to the concentration of the solution
    b. Absorbance of a solution is directly proportional to the thickness of the optical path
    c. Absorbance of a solution is indirectly proportional to the thickness of the optical path
    d. Absorbance of a solution is indirectly proportional to the concentration of the solution
    e. None of the above

14. The following components are found in a colorimeter except?
    a. Cuvette
    b. Light source
    c. Photosensor
    d. Safety valve
    e. Filter
15. The following components are found in an autoclave except?
    a. Basket support
    b. Lid clamps
    c. Air outlet valve
    d. Safety Valve
    e. Monochromator

16. Which of the following microscopes would you use to examine a smear of bacteria stained by Gram stain?

    a. Bright field microscope

    b. Dark field microscope

    c. Dissecting microscope

    d. Fluorescent microscope

    e. Scanning electron microscope

17. Which of the following microscopes would you use to examine a smear stained with a fluorophore

    a. Bright field microscope

    b. Dark field microscope

    c. Polarizing microscope

    d. Scanning electron microscope

    e. Fluorescent microscope

18. Bacteriological culture media are generally sterilized using:

    a. Auto claves

    b. Ovens

    c. Filters

    d. Bunsen burners

    e. Incubators

19. The values of the following substances can be measured using potentiometry

    a. Blood potassium ions

    b. Blood glucose

    c. Urine pus cells

    d. Urine epithelial cells

    e. Creatinine levels

20. When using a X10 eye piece and the X10 objective of a bright field microscope, the total magnification is:

    a. 10

    b. 20

    c. 1000

    d. 100

    e. All of the above

21. Which of the following equipments determines the hydrogen ion concentration of solutions
    a. Deionizer
    b. Distiller
    c. Colorimeter
    d. pH meter
    e. All of the above
22. The following equipment can be used for measuring and dispensing fluids except?
    a. Volumetric flask
    b. Calibrated pipette
    c. Measuring cylinder
    d. Test tube
    e. All of the above

23. Deionization of impure water means
    a. Boiling
    b. Filteration
    c. Exchange cations and anions
    d. None of the above
    e. All of the above
24. The autoclave sterilizes at
    a. 121^0C
    b. 100^0C
    c. 60^0C
    d. 115^0C
    e. 221^0C
25. To detect pH from a solution you need
    a. Micrometer
    b. pH meter
    c. spectrophotometer
    d. incubator
    e. None of the above
26. The following equipment can be used for sterilization except?

    a. Autoclave

    b. Pressure cooker

    c. Hot air oven

    d. Water bath

    e. Bunsen burner

27. The following equipment can be sterilized in an autoclave except?

    a. Test tube

    b. Glass petri dish

    c. Glass syringes

    d. Bijou bottle

    e. Vaccines

28. What kind of filters are made of unglazed porcelain?

    a. Chamberland filter
    b. Seitz filter membrane
    c. Sintered glass filter
    d. Berkefeld filters
    e. Mechanical filters

29. What is the function of the iris diaphragm control
    a. Hold the slide on the stage firmly
    b. Focus light on the slide
    c. Move the slide on the stage
    d. To adjust the amount of light
    e. To magnify the image

30. Which of the following safety cabinets is used when working with specimen suspected to contain ebola virus?

    a. Class 1 biosafety cabinet
    b. Class 2 biosafety cabinet
    c. Class 3 biosafety cabinet
    d. Class 4 biosafety cabinet
    e. Class 5 biosafety cabinet

SECTION B

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