



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

**UNIVERSITY EXAMINATION FOR:**

**BACHELORS OF MEDICAL LABORATORY SCIENCES**

**AML 4102: INTRODUCTION 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 Choose Nochoose Sect/Quest. Attempt Choose instruction.

**Circle the correct answer in section A.**

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## Section A

1. Which of the following describes how an autoclave works?
  - a. It creates steam and then superheats the steam
  - b. It uses dry heat
  - c. It uses cold sterilization
  - d. It uses disinfectants at a high temperature
  - e. It freezes microorganisms
2. The condition required for autoclave
  - a. 121°C temp. and 15 lbs. pressure for 15 min.
  - b. 120°C temperature and 20 lbs. pressure for 30 min
  - c. 150°C temperature for 1 hour
  - d. 130°C temperature for 2 hour
  - e. 1000 °C temperature for 1 hour
3. Temperature used for hot air oven is
  - a. 100°C for 1 hour
  - b. 120°C for 1 hour
  - c. 160°C for 1 hour

- d. 60°C for 1 hour
  - e. 1000 °C for 1 hour
4. A blank contains the \_\_\_ but not the dissolved chemical
- a. Solvent
  - b. Solute
  - c. Filter
  - d. Absorption spectrum
  - e. Solution
5. Which part of the spectrophotometer is adjusted to select the desired wavelength?
- a. Photodetector
  - b. Sample
  - c. Filter
  - d. Light source
  - e. None of the above
6. Which of the following is the function of the photodetector?
- a. It adjusts the intensity of the light source.
  - b. It converts light energy into electrical energy.
  - c. It displays the amount of light absorbed in absorbance values.
  - d. It displays the amount of light absorbed in potential values.
  - e. None of the above
7. What is the name given to the distance between the front lens of the objective and the object slide when the image is in focus?
- a. magnification
  - b. illumination
  - c. resolving power
  - d. working distance
  - e. focal distance
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 times
9. What piece of laboratory equipment is best-suited for sterilization of unused culture plates?
- a. Bunsen burner
  - b. Hot air oven
  - c. Autoclave
  - d. Incinerator
  - e. Incubator
10. The following laboratory equipment/instrument can be used for protecting the laboratory worker from aerosol contamination except?
- a. Face mask
  - b. Safety cabinet
  - c. Incubator
  - d. Goggles
  - e. Laboratory coat

11. How many types of lenses are there in a compound microscope ?
- 2
  - 1
  - 3
  - 4
  - 10
12. What should be used to hold laboratory culture media before weighing it?
- Weighing boat
  - Culture plate
  - Writing paper
  - Insulation tape
  - None of the above
13. What part of the microscope is used to change from one objective lens to the next?
- diaphragm
  - Coarse focusing dial
  - Fine focusing dial
  - Rotating nose
  - condenser
14. The following components are found in an autoclave except?
- basket
  - Drainage tap
  - bucket
  - Air outlet valve
  - Boiler
15. Which of the following microscopes would you use to examine live red blood cells?
- Bright field microscope
  - Dissecting microscope
  - Fluorescent microscope
  - Dark field microscope
  - Phase contrast microscope
16. Which of the following microscopes is capable of giving the highest magnification?
- Bright field microscope
  - Polarizing microscope
  - Electron microscope
  - Fluorescent microscope
  - Dark field microscope

17. Which of the following equipment may be used to sterilize spatulas?

- a. The incubator
- b. Filters
- c. Spirit lamp
- d. Micropipette
- e. Water bath

18. What is the maximum resolving power of a good medical laboratory microscope?

- a. 2.0  $\mu\text{m}$
- b. 0.25 $\mu\text{m}$
- c. 0.025  $\mu\text{m}$
- d. 0.0025  $\mu\text{m}$
- e. 25 mm

19. When using a X10 eye piece and the X40 objective of a bright field microscope, the total magnification is:

- a. 10
- b. 20
- c. 1000
- d. 400
- e. 100000

20. Which of the following equipments is used to demineralize water?

- a. Deionizer
- b. centrifuge
- c. pH meter
- d. Colorimeter
- e. spectrophotometer

21. Which of the following equipment can be used for measuring and dispensing fluids

- a. Universal bottle

- b. Bijou bottle
- c. erlenmeyer flask
- d. Culture plate
- e. Wire loop

22. Deionization of impure water means

- a. Boiling
- b. Filtration
- c. Exchange cations and anions
- d. None of the above
- e. All of the above

23. The hot air oven sterilizes at

- a. 121<sup>0</sup>C
- b. 100<sup>0</sup>C
- c. 160<sup>0</sup>C
- d. 115<sup>0</sup>C
- e. 1000<sup>0</sup>C

24. Which of the following microscopes can be used in demonstration of live red blood cells is

- a. light microscope
- b. ultra-violet microscope
- c. scanning electron microscope
- d. dark field microscope
- e. Transmission electron microscope

25. Which of the following equipment can be used for sterilization

- a. Incubator
- b. Pressure cooker
- c. biosafety cabinet
- d. centrifuge
- e. None of the above

26. The following can be sterilized by flaming except?

- a. Spatula
- b. Glass petri dish
- c. Glass syringes
- d. Bijou bottle
- e. Culture media

27. The following microscopes use light as a source of illumination except

- a. Bright field microscope
  - b. Dark field microscope
  - c. Phase contrast microscope
  - d. Fluorescence microscope
  - e. Scanning electron microscope
  - f.
28. The following include types of filters used in microbiology except?
- a. Seitz filter membrane
  - b. Sintered glass filter
  - c. Chamberland filter
  - d. Berkefeld filters
  - e. Mcfarland filters
29. Which of the following centrifuges is refrigerated?
- a. Ultracentrifuge
  - b. Angle-head centrifuge
  - c. Horizontal-head centrifuge
  - d. Vertical head centrifuge
  - e. Supercentrifuge
30. What is the function of the mechanical stage 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

## Section B

31. Describe the following equipment
- a. The hot air oven as an equipment for sterilization (10 marks)
  - b. Class 1 biosafety cabinets (10 marks)
- 32.
- a. Draw and label the components of a spectrophotometer (10 marks)
  - b. Describe the preparation of deionized water (10 marks)