



TECHNICAL UNIVERSITY OF MOMBASA

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.

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 μm
- b. 0.25 μm
- c. 0.025 μm
- d. 0.0025 μm
- 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. 121⁰C
- b. 100⁰C
- c. 160⁰C
- d. 115⁰C
- e. 1000⁰C

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)