BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE AND ENGINEERING

AUG 2024

DEPARTMENT: HEALTH SCIENCES

PROGRAMME: Post Graduate Diploma in Infection Prevention and Control

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STUDENT REGISTRATION NUMBER

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COURSE CODE (1): IPC 104 Decontamination and Sterilization

DURATION: 2 HOURS TOTAL MARKS: 90 MARKS

INSTRUCTIONS TO CANDIDATES

Use a BLUE/BLACK pen. Do not write with a pencil.

Answer ALL questions

Section A: Spot test (20 Marks)
Instructions: Each slide will be displayed once for two minutes. You should respond to the questions and write your answer within the two minutes allowed for each slide. Write your answers in the spaces corresponding to each slide and question.

Slide 1 (Instruction slide)

Slide 2: Question 1
The labelling used on package "A" _____

_____

_____

[2 marks]

Slide 3: Question 2

a) "A" is _____

_____ [1 mark]

b) "B" is _____

_____[1 mark]

Slide 4: Question 3

These are _____

_____

_____ [2 marks]

Slide 5: Question 4

This storage area is _____

_____

_____ [2 marks]

Slide 6: Question 5

The picture shows _____

_____

_____ [2 marks]

Slide 7: Question 6

a) The item in the picture is a

_____ [1 mark]

b) One of its disadvantages is _____

_____ [1 marks]

Slide 8: Question 7

a) The items shown in the picture are _____ [1 mark]

b) They are used for _____

_____ [1 mark]

Slide 9: Question 8

a) The instruments show _____ [1 mark]

b) When this is noticed during packing _____

_____ [1 mark]

Slide 10: Question 9

a) The items shown in the picture are _____ [1 mark]

b) They are used for _____ _____ [1 mark]

Slide 11: Question 10

The instrument in the picture can be made safe for reuse by _____

_____

_____

_____ [2 marks]

Section B: Multiple Choice questions (20 marks)

Instructions: Encircle the correct answer. Each question carries one mark.

1. What process kills bacterial spores?
   a) Cleaning
   b) Spraying
   c) Disinfection
   d) Sterilization
   e) Soaking

2. The purpose of a central sterile processing department is:
   a) Storage of clean equipment
   b) Providing sterile equipment to the operating theatre
   c) Storing sterile equipment
   d) Pharmacy of the operating theatre
   e) Packing instruments

3. According to the Spaulding classification urinary catheters are classified as:
   a) High risk
   b) Low risk
   c) Intermediate risk
   d) Risk free
   e) Unknown risk

4. Chemical sterilization methods are used for:
   a) Low risk items
   b) Single use items
   c) Intermediate risk items
   d) High risk items
   e) No risk items

5. The maximum humidity level for sterile storage is:
   a) 80%
   b) 70%
   c) 60%
   d) 50%
   e) 40%

6. Generally, the preferred method of sterilization is:
   a) Steam sterilization
   b) Wet heat
   c) Dry heat
   d) Radiation
   e) Filtration

7. For sterilization to occur, steam must:
   a) Make direct contact with all surfaces
   b) Be superheated
   c) Be flushed into each package
   d) Trap air inside the package
   e) Mixed adequately with air

8. Which items cannot be autoclaved?
   a) Scissors
   b) Forceps
   c) Cotton balls
   d) Urinary catheters
   e) Drapes

9. Validation of sterilizers is performed:
   a) Every week
   b) Once a month
   c) Every quarter
   d) At the beginning of the year
   e) Once after installation of the equipment

10. The advantage of using cotton fabric for packaging is it:
    a) Can be reused
    b) Produces lint
    c) Provides adequate microbial barrier
    d) Does not tear easily
    e) Water resistant

11. The shelf life of sterile packs can be prolonged by:
    a) Storing packs in a cabinet under the sink
    b) Squeezing large packs into tight spaces
    c) Storing packs on window seals
    d) Frequent handling and transportation
    e) Storing packs away from outside walls

12. Whether the device can be steam sterilized or not depends on all these except:
    a) Its ability to withstand pressure and moisture
    b) Its design
    c) Its ease of cleaning
    d) Capacity of the CSSD
    e) Weather conditions

13. Dry heat is NOT suitable for sterilization of:
    a) Glassware
    b) Aqueous liquids
    c) Heat stable powders
    d) Metallic items
    e) Anhydrous liquids

14. Sterilization cannot kill:
    a) Mycobacteria
    b) Bacterial spores
    c) Naked viruses
    d) Fungi
    e) Prions

15. The three parameters of steam sterilization are:
    a) Steam under pressure, time, and temperature
    b) Time, temperature, and concentration
    c) Temperature, time, and humidity
    d) Cleanliness, time, humidity
    e) Concentration, pressure, temperature

16. The minimum exposure time required for wrapped packs sterilized at 134^{0}C is:
    a) 1 minute
    b) 3 minutes
    c) 4 minutes
    d) 10 minutes
    e) 15 minutes

17. The recommended temperature for storing medical devices is:
    a) 10^{0}C
    b) 15 ^{0}C
    c) 20 ^{0}C
    d) 25 ^{0}C
    e) 37 ^{0}C

18. When designing a sterile services department which one of the following statements is true?
    a) There should be two-way movement between dirty and clean areas to improve efficiency
    b) A humidity level over 85% should be maintained
    c) It should not be integrated with operating theatres to enable faster decontamination
    d) Separate entrances to the dirty and clean areas
    e) One gowning room for both clean and dirty areas

19. This is NOT a reason for packaging instruments:
    a) Maintain sterility during sterilization
    b) Maintain sterility during storage
    c) Allow penetration of the sterilization agent
    d) Protect medical devices from sterilants
    e) Allow devices to be removed from packaging aseptically

20. Recalled items should be:
    a) Re-sterilized only
    b) Must be reprocessed completely
    c) Re-packed and sterilized only
    d) Re-labeled once sterilizer is repaired
    e) Investigated secretly

SECTION C: Short answer questions (50 marks)

INSTRUCTIONS: Answer ALL questions

1. Explain the processes of decontamination. _____

[6 marks]

2. Why is cleaning an important step in decontamination? _____

[3 marks]

3. Describe any four (4) factors that should be considered when selecting a method for decontaminating a medical device. _____

[4 marks]

4. Describe the characteristics of an ideal disinfectant.

[4 marks]

5. Outline the key areas that should be considered in the design and work flow of a central sterile sterilization department.

[10 marks]

6. Explain the requirements for effective inspection of instruments.

[4 marks]

7. Describe three (3) types of indicators that can be used to verify if a sterilization was achieved.

[6 marks]

8. Give five (5) reasons why it is important to keep records in the sterile processing department:

_____

_____

_____

_____

_____

_____

[5 marks]

9. What are the two (2) disadvantages and two (2) advantages of ethylene oxide sterilization?

_____

_____

_____

_____

_____

[4 marks]

10. Explain four (4) safety measures that should be implemented in the sterile services department to ensure staff safety. _____

_____

_____

_____

_____

[4 marks]

END OF PAPER