

KATHMANDU UNIVERSITY
End Semester Examination
September 2024

Marks Scored:

Level : B.Tech..

Year : I

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : BIOT 102

Semester : II

F. M. : 20

Date : 20 SEP 2024

SECTION "A"

[10Q. × 1 = 10 marks]

Choose and encircle the most appropriate answer. Symbols have their usual meanings.

- The international biohazard warning symbol and sign must be displayed on the doors of
 - BSL1, 2, 3 and 4
 - BSL 2, 3, and 4
 - BSL 3 and 4
 - BSL 4 only
- What is TRUE about hypodermic needles and syringes?
 - They can be used as substitutes for pipetting devices.
 - They can be used for parenteral injection or aspiration of fluids from laboratory animals.
 - After use, hypodermic needles should be recapped, clipped or removed from disposable syringes and discarded.
 - After use, syringes and needles must be separated and placed in sharp disposal containers.
- The Oncovirus that cause Burkitt lymphoma is
 - Epstein Barr virus
 - Cytomegalovirus
 - Varicella-zoster virus
 - HIV virus
- A double-ended autoclave or a pass-through airlock must be provided in a
 - ABSL-1
 - ABSL-2
 - ABSL-3
 - ABSL-4
- Which biosafety cabinet is recommended in a BSL 4 cabinet laboratory?
 - Class I
 - Class II
 - Class III
 - Class IV
- What percentage of the air recirculates through the supply HEPA filter into the work zone in a normal Class II type A1 biological safety cabinet?
 - 100
 - 70
 - 30
 - 0
- Which class of immunoglobulins bind to allergens and triggers histamine release from mast cells and basophils?
 - A
 - D
 - E
 - G
- What is used to neutralize the formaldehyde?
 - Potassium hydroxide
 - Sodium chloride
 - Ammonium bicarbonate
 - Aluminium oxide

9. Chloramine
- is strong and fast-acting germicide, disinfectant and oxidizer
 - solutions are highly inactivated by organic matter than hypochlorites
 - releases chlorine faster than hypochlorites
 - solutions are virtually odour-free
10. Which of the followings is suitable for disinfecting heat-sensitive medical/dental devices?
- Hydrogen peroxide
 - Iodine
 - Bleach
 - Formaldehyde

SECTION "B"
[10Q. × 1 = 10 marks]

Fill in the blanks.

11. GMT in biosafety stands for _____.
12. A laboratory _____ is the person who has immediate responsibility for the laboratory.
13. A _____ is a misfolded protein that can transmit its misfoldedness to normal variants of the same protein and trigger cellular death.
14. The cells in the animal cell culture are obtained by enzymatic action like _____ or mechanically by mincing or chopping.
15. _____ can be generated when a liquid is dropped from a pipette on to a work surface, when cultures are mixed by alternate sucking and blowing, and when the last drop is blown out of a pipette.
16. _____ is the liquid part of the blood that remains after blood cells and clotting proteins have been removed.
17. While working with invertebrates _____ facilities should be provided to reduce where necessary, the activity of invertebrates.
18. In class I BSC, air passes over the work surface and is discharged from the cabinet through the _____.
19. Dengue fever is caused by _____ viridae.
20. Fumigation should be conducted at an ambient temperature of at least _____ °C and a relative humidity of _____%.

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20 SEP 2024

SECTION "C"

[11Q. × 5 = 55 marks]

Attempt *ANY ELEVEN* questions.

1. Describe LAIs. Write the good microbiological practice and procedures that are important in all biosafety laboratories.
2. How are risk group 1, 2, 3 and 4 organisms classified?
3. Give reasons
 - a. A person previously infected with dengue virus should be careful not to get subsequent reinfection.
 - b. It is important to get a flu vaccine every year.
4. Name four bacteria infecting humans and having threats of spread in laboratories. Describe any one of them in brief.
5. List three parasites to which laboratorians and health care workers could be exposed. Write their route of exposures and protective measures.
6. Summarize animal facility containment levels.
7. What are the additional features and requirements for containment laboratories over basic laboratories?
8. Describe the design, safety features and uses of Class III biological safety cabinet.
9. Write the uses and hazards corrected by Negative-pressure flexible-film isolators and loop micro incinerators.
10. What are the risks associated with the handling of animal cell cultures? Write the preventive measures to be followed in cell culture laboratories.
11. What are ampoules? How are they open and stored?
12. Sodium hypochlorite solutions, as domestic bleach, contain 50 g/l available chlorine. What volume of the bleach would you mix with water to prepare 500 ml (final volume) of diluted solution required for the disinfection of laboratory surfaces in
 - a. clean conditions?
 - b. dirty conditions?
13. Define sterilization. Describe the various sterilization techniques used in laboratories.

