

(i) Printed Pages : 4

Roll No.

(ii) Questions : 9

Sub. Code :

2	5	9	4	5
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Exam. Code :

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M.Sc. Bio-Technology 2nd Semester

(2055)

BIOSAFETY AND BIOETHICS

Paper : MBIO-205

Time Allowed : Three Hours]

[Maximum Marks : 80

Note :— Attempt **FIVE** questions in all by selecting **ONE** question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. Write in brief :

- (1) Define Biosecurity.
- (2) What is BioRAM ?
- (3) Define doffing of PPE.
- (4) What is AMP model ?
- (5) What are BSLs ?
- (6) Define SOP.
- (7) What is BCH in Cartagena protocol ?
- (8) What is the mission of DBT ?

2×8

UNIT—I

2. (a) On basis of AMP how can you manage Biorisk ?
Explain with example. 8
- (b) How is Biorisk assessment carried out ? Mention a strategy for the same. 8
3. (a) How do you identify a risk ? What are some things that you can do to manage these risks ? 8
- (b) How do you know that your risk management is working ? What mitigation strategies you can take related to safety and security ? 8

UNIT—II

4. (a) The first step in Biosafety assessment is to identify the hazards. How do you identify the biological hazards and characterize them on the basis of likelihood and consequences ? Give examples. 8
- (b) Discuss at least two physical and two chemical decontamination methods, their principle and working, factors affecting them. Do these factors act as barriers to decontamination methods ? 8
5. (a) A researcher plans to grow various strains of *Bacillus anthracis* on petriplates, from which he will inoculate individual pure colonies in 500 mls broth in reusable glass

conical flasks in shaker incubator. The cultures will then be transferred to plastic disposable tubes to be spun down in centrifuge. The pellet be then washed and tested for toxin production. These will require use of autopipettes, glass slides, stains and various reagents. The cultures will be lyophilized and kept in cryovials and stored in freezers.

How will be the lab surfaces and reusable materials disinfected and disposable materials disposed off? 8

- (b) Mention the various categories of biological wastes and their final disposal methods. 8

UNIT—III

6. (a) How do engineering controls play role in Biosafety and Biosecurity ? What are primary and secondary containment barriers in engineering controls ? 8
- (b) Discuss the principle and working of BSCs 1, 2 and 3 and mention in which type of Biosafety level labs are they used and why ? 8
7. What is GLWP and its importance ? Discuss in detail the various GLWP to be maintained in a biological lab. What are the barriers of GLWP ? 16

UNIT—IV

8. (a) What role does Administrative control play in Biosafety Management ? Mention the different control mechanisms. 8
- (b) What is Cartagena Protocol ? Why is AIA prepared and discuss the steps and role of AIA ? 8
9. Discuss the role of both National and International institutional committees in Biorisk Management. 16