

Name: \_\_\_\_\_

Honor Pledge: \_\_\_\_\_  
(Signature)

ENVR 176 - First Exam - February, 2002

This is a closed book exam. Please write your answers on these pages. If you need more room, write on the back of these pages.

1. Define any five (5) of the following terms in a sentence or two

(i) Hazard

(ii) Risk

(iii) Quantitative microbial risk assessment

(iv) Antigenic Shift

(v) Reservoir

(vi) Vehicle

(vii) Mechanical Vectors

(viii) Biological Vectors

(ix) Secondary Transmission

(x) Epidemic

(xi) Endemic Illness

2. Describe and briefly define the four essential elements in the National Academy of Sciences (National Research Council and US Environmental Protection Agency quantitative risk assessment process. You may answer the question using an annotated diagram.

3. Briefly explain how the essential elements of NAS-NRC and EPA risk assessment process compare or correspond to those of the International Life Sciences Institute (ILSI) and US Environmental Protection Agency (EPA). Again, you may use an annotated diagram in answering the question.

4. Of the properties listed below, indicate which apply to chemical © risks, which apply to microbial (M) risks and which apply to both (B)

- (i) Secondary transmission\_\_\_\_\_
- (ii) Ability to multiply or propagate\_\_\_\_\_
- (iii) Probability or magnitude of risk increases with dose or exposure\_\_\_\_\_
- (iv) Effects can become manifest within minutes of acute exposure\_\_\_\_\_
- (v) Effects can become manifest after years of exposure
- (vi) Immune response\_\_\_\_\_
- (vii) Wide range and variable health effects or diseases\_\_\_\_\_

5. Of the properties listed below indicate which to major microbial pathogen group listed they apply:

- a. Viruses
- b. Protozoa's
- c. Helminthes
- d. Bacteria

(i) Simple cell cellular organization, no organelles, about 1 micrometer in size: \_\_\_\_\_

(ii) Multicellular animals that produce ova: \_\_\_\_\_

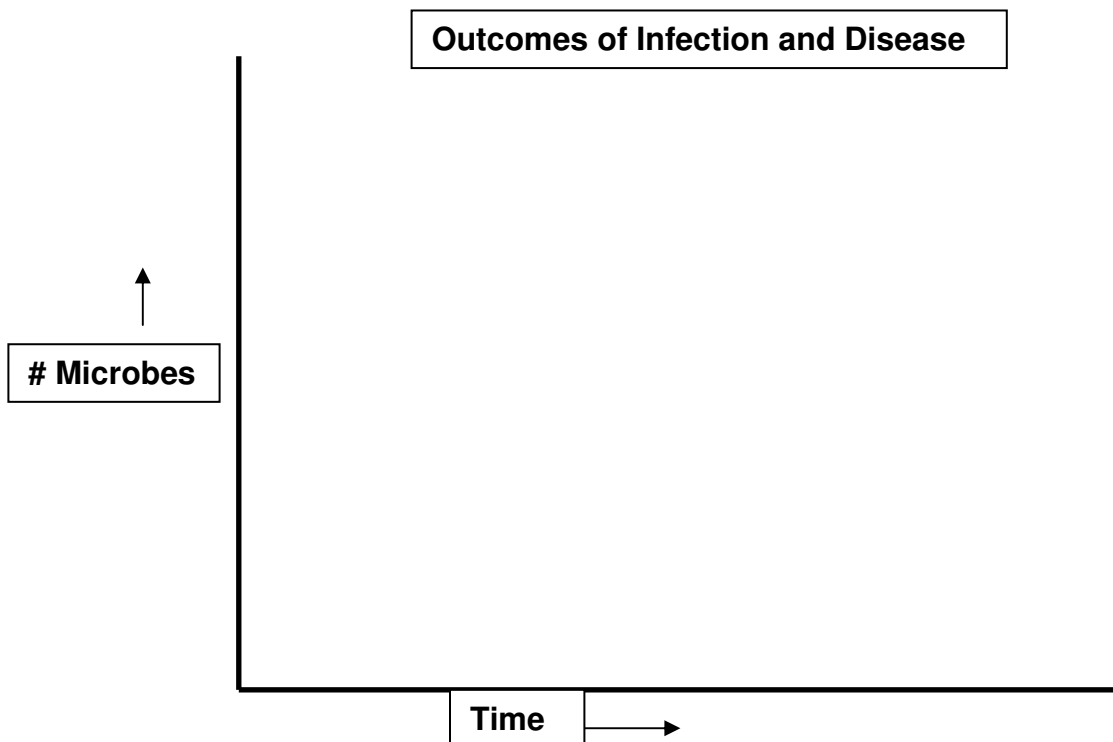
(iii) Obligate intracellular parasites, small size (as small as 0.02 :m) and a simple composition (protein coat and nucleic acid genome): \_\_\_\_\_

(iv) Cellular organisms with complex organization and organelles; wide range of sizes: \_\_\_\_\_

6. List four (4) mechanistic or functional transmission routes of microbial exposure and entry into the body

- (i)
- (ii)
- (iii)
- (iv)

7. Complete the diagram below to show the key relationships between microbial multiplication in a host and the clinical outcomes if infection and disease. Include explanatory text to explain:



8. List and/or briefly describe three (3) factors or elements included in hazard identification:

- 1.
- 2.
- 3.

9. List and/or briefly describe three (3) factors or elements included in pathogen occurrence

- 1.
- 2.
- 3.

10. List and/or briefly describe three (3) factors or elements included in exposure characterization for pathogens

- 1.
- 2.
- 3.

11. List and/or briefly describe three (3) factors or elements included in pathogen characterization

- 1.
- 2.
- 3.

12. List and/or briefly describe three (3) factors or elements included in host characterization

- 1.
- 2.
- 3.

13. List and/or briefly describe three (3) factors or elements included in human health effects

- 1.
- 2.
- 3.

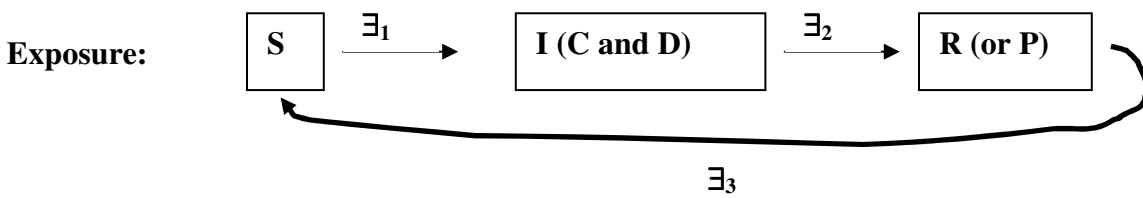
14. List and/or briefly describe three (3) factors or elements included in dose-response analysis

- 1.
- 2.
- 3.

14. List and/or briefly describe three (3) factors or elements included in risk characterization

- 1.
- 2.
- 3.

15. Using the diagram shown below for microbial pathogen (infectious disease) transmission, define the terms and briefly explain the events or elements of the processes involved.



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