



THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. / B. Ed. DEGREE PROGRAMME - LEVEL 04
BTU 2104 / BTE 4104 / BTI 4104 – PRINCIPLES OF MICROBIOLOGY
ASSESSMENT TEST (NO BOOK TEST) - 2009/2010

DURATION – ONE (01) HOUR

Reg. No.

Date: 24. 10. 2009

Time: 11.00 am – 12.00 noon

Answer All Questions.

Answers should be written in the space provided.

01. The questions (a) – (f) are based on Figure 1 which shows a bacterial cell surrounded by DNA fragments of a closely related species.

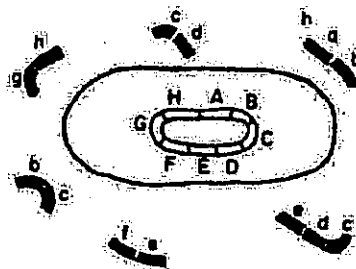


Figure 1



a. Draw and label the major steps involved in the possible mechanism of gene transfer?

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b. What is the above mechanism referred to as?

.....

c. What happens if the DNA fragments belong to a different and distantly related bacterial species?

.....

d. Name a technique that can be employed to carry out successful gene transfer in the situation mentioned in part (c).

.....

e. What are the other two mechanisms of gene transfer in bacteria?

i.

ii.

f. How does each of them differ from the mechanism drawn in part (a)?

i.

ii.

g. What is the simplest method of asexual reproduction in bacteria?

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02. a. 'The knowledge of common methods of controlling microorganisms is important for everybody'. Why?

.....

.....

b. Distinguish between microbistatic and microbicidal agents.

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.....

c. Give **four (04)** different modes of action of antibacterial agents on bacteria.

i.....

ii.....

iii.....

iv.....

d. Explain what is meant by 'logarithmic death phase' of a bacterial population.

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.....
.....

e. Sketch the logarithmic death curve of a bacterial population when exposed to a bacteriocidal agent at constant temperature.

f. Objects should be thoroughly cleaned before sterilizing in the laboratory. Why?

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03. Briefly explain the mode of action of liquefied chlorine in water purification.

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04. The questions (a) – (f) are based on chemical substances used to cure diseases.

a. Give **two (02)** essential features of an ideal antimicrobial chemical agent.

i.

ii.

b. What is meant by the following?

i. Chemotherapeutic index

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.....

ii. Minimum inhibitory concentration

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.....

iii. Interferons

.....
.....

c. Differentiate between narrow spectrum and broad spectrum antibiotics.

Narrow spectrum antibiotics

Broad spectrum antibiotics

.....
.....
.....
.....

d. List **three (03)** side effects of antibiotics on the host.

i.

ii.

iii.

e. Give **two (02)** important non medical uses of antibiotics.

i.

ii.

f. Give **one (01)** example for each of the following.

i. A fungal species that produces antibiotics -

ii. A semi-synthetic Penicillin -

iii. An antibiotic produced by *Streptomyces* -

iv. A plant used to extract an anti-cancer agent -

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