

THE OPEN UNIVERSITY OF SRI LANKA  
B.Sc. /B.Ed. DEGREE PROGRAMME – BOTANY – LEVEL 04  
ASSESSMENT TEST (OPEN BOOK TEST)  
BOU2103 – PRINCIPLES OF MICROBIOLOGY – 2010/2011  
DURATION : ONE (01) HOUR



DATE : 10<sup>th</sup> September 2010

TIME: 11.00 a.m. – 12.00 noon

Registration No.....

ANSWER ALL QUESTIONS ON THE SPACE PROVIDED.

01. Name the scientist who is most associated with each of the following.

- a) Germ theory of fermentation .....
- b) "wee animalcules" .....
- c) Antiseptic surgery.....

(06 marks)

02. Give one (01) basic use of each of the following in microbiology.

- a) Cell cultures  
.....
- b) Antibiotics  
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- c) Stock cultures  
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- d) Autoclave  
.....
- e) Chemostat  
.....

(15 marks)

03. Fill in the blanks with the most appropriate term/s.

- a) In a typical growth culture system, the cells in the (1) ..... phase exhibit a balanced growth.

- b) (2)..... and (3)..... are agents incorporated into culture media to inhibit specific groups of microorganisms.
- c) The metabolically inert state of viruses, when outside living cells, are known as (4).....
- d) Most disease producing bacteria require complex food, and are therefore referred to as (5).....
- e) The time taken for a *Staphylococcus* population to double is termed as (6).....
- f) Organisms with high temperature optima are called (7).....
- g) The most widely used technique for the isolation and propagation of viruses from clinical material is (8).....
- h) (9)..... is one species of microorganisms used to assay the presence of pantothenic acid.
- i) (10)..... are used to transmit plant viruses which cannot be transmitted either mechanically or by grafting.
- j) The scientist (11)..... provided evidence for the existence of exceptionally heat resistant forms of bacteria.
- k) (12)..... demonstrate connectivity of many diseases to their causative agent.
- l) (13)..... are constructed of capsomeres through self-assembly.
- m) (14)..... is important to distinguish between different strains of closely related bacteria such as *Salmonella typhi* and *Staphylococcus aureus*.
- n) In viruses, the two primary shapes, (15)..... and (16)..... correspond with the two primary kinds of symmetry, (17)..... and (18)....., respectively.

- o) A group of bacteria known as (19)..... which tends to form a mycelium additionally form of structurally distinct (20)..... which typically extends away from the substratum.

(40 marks)

04. Briefly explain the following statements:

- a) Bacteriophages form 'plaques' on a lawn of bacterial growth.

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- b) The autoclaving of some media often produce insoluble 'flocs'.

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- c) There is no evolution of oxygen as a result of photosynthesis in phototrophic bacteria.

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(12 marks)

05. Differentiate between each of the following sets of terms.

- a) Batch cultures and continuous cultures.

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b) Temperate phages and virulent phages.

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c) Natural media and synthetic media.

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(15 marks)

6. a) If a bacterial culture is found to have a long lag phase, what could be the nature of its inoculum?

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(04 marks)

b) Suppose the generation time of a bacterium is 60 minutes and the initial number of cells is 1000 cells at the start of the log phase, how many bacterial cells will there be after 8 hours of exponential growth?

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(08 marks)

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