

**SARDAR PATEL UNIVERSITY**  
**BSc. (III-Sem.) EXAMINATION**  
**Thursday, 27<sup>th</sup> December, 2012**  
**2.30 - 5.30 pm**

**US03CMIC02 : FUNDAMENTAL MICROBIOLOGY**

Total Marks : 70

- Note : (i) Attempt all questions.  
(ii) Marks are indicated on the right hand side.

Q.1 Attempt the following multiple choice questions. (10)

1. Present day classification in biology was established by the work of \_\_\_\_\_  
(i) E.H. Haeckel (ii) R.H. Whittaker  
(iii) Carolus Linnaeus (iv) Felix D Herelle
2. According to Bergey's Manual of Systematic bacteriology Tenericutes includes \_\_\_\_\_.  
(i) Prokaryotes that lack a cell wall.  
(ii) Prokaryotes with cell wall structure characteristic of gram negative bacteria.  
(iii) Prokaryotes with cell wall structure characteristic of gram positive bacteria.  
(iv) None of the above.
3. In Latin, *micrococcus luteus* means \_\_\_\_\_.  
(i) yellow berry (ii) red berry  
(iii) blueberry (iv) None of the above
4. In taxonomic grouping a family is \_\_\_\_\_.  
(i) a group of similar orders. (ii) a group of similar genera.  
(iii) a group of similar species. (iv) a group of similar classes.
5. The organisms which can reduce inorganic compounds as electron donors are called \_\_\_\_\_.  
(i) Chemotrophs (ii) heterotrophs  
(iii) lithotrophs (iv) autotrophs
6. The organisms which are able to grow at 0°C or lower are called \_\_\_\_\_.  
(i) mesophile (ii) psychrophile  
(iii) thermophile (iv) facultative thermophile
7. Microorganisms which are pathogenic for humans and other warm blooded of animals grow best at about \_\_\_\_\_.  
(i) 25°C (ii) 45°C  
(iii) 37°C (iv) 30°C
8. The time interval required for each cell to divide is known as the \_\_\_\_\_.  
(i) growth rate (ii) generation time  
(iii) balanced growth (iv) none of the above
9. Which term is not descriptive of types of bacteriophages ?  
(i) lytic (ii) temperate  
(iii) avirulent (iv) lysogenic
10. When the virulent phage infects a bacterial cell which of the following does not occur ?  
(i) Infected cell produces a large number of virion.  
(ii) The host cell bursts or lyses.  
(iii) New phages are released to infect other cells.  
(iv) The phage DNA integrates with the host chromosome.

- Q.2 Attempt **Any Six** out of the following. (12)
1. (a) Define classification.
  - (b) \_\_\_\_\_ coined the term bacteriophage.
  2. Explain Haeckel's classification system.
  3. Define the following :
    - (a) Species
    - (b) type strain
  4. Enlist various types of media on the basis of application and functions.
  5. Define the following :
    - (a) heterotrophs
    - (b) obligate parasites
  6. What are the four physiological groups of micro-organisms based on the response to gaseous oxygen ?
  7. (a) The reciprocal of the generation time is known as the \_\_\_\_\_ which may be described as the number of \_\_\_\_\_ per hour.
  - (b) Define synchronous growth.
  8. Describe the chemical composition and function of the envelopes in a typical animal virion.
- Q.3(a) Write a short note on Whittakers classification. (04)
- (b) Explain microscopic and chemical characteristics of micro-organisms in classification. (04)
- OR**
- Q.3(a) Explain cultural and genetic characteristics of micro-organisms in classification. (05)
- (b) Describe general characteristics of bacteriophages. (03)
- Q.4 Discuss the role of nucleic acid homology in bacterial taxonomy. (08)
- OR**
- Q.4(a) Explain numerical taxonomy . (05)
- (b) Enlist the principles incorporated in the International code of nomenclature of bacteria. (03)
- Q.5 Describe the common ingredients of culture media. (08)
- OR**
- Q.5 Describe the nutritional requirements of bacteria. (08)
- Q.6 Write a note on the methods used for preservation of pure cultures. (08)
- OR**
- Q.6 Describe the methods used for isolation of pure culture. (08)
- Q.7 Describe the various phases of a typical growth curve of bacteria. (08)
- OR**
- Q.7 Describe any three techniques used for the quantitative measurement of bacterial growth.
- Q.8 Describe the methods used for the cultivation of animal viruses. (08)
- OR**
- Q.8 Describe the lytic cycle in bacteriophages. (08)

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