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[14/A-2]

SARDAR PATEL UNIVERSITY

M. Sc. Integrated Biotechnology, Fourth Semester Examination

Saturday, 29th October, 2016

Time: 10.00 am to 1.00 pm

PS04CIGB06: Virology

Note:

1. **Figures to the right indicate marks.**
2. **Draw neat and labeled diagram, wherever necessary**

Total Marks: 70

Q – 1 Choose the most appropriate alternative for the following: **(08)**

1. A structural component that is found in all viruses is_____ .
   a) DNA b) The envelope
   c) Capsid d) Tail fibers
2. Bacteriophage are readily counted by the process of _____.
   a) Immunoassays b) ELISA
   c) Plaque assays d) Tissue cell culture
3. M13 vector is having _____ as genetic material.
   a) ss RNA b) ds RNA
   c) ss DNA d) None of these
4. Φx 174 DNA molecule was first completed sequenced by _____.
   a) Robert Koch b) Sanger
   c) Louis Pasteur d) William Bentick
5. _____ gene in virus is responsible for undergoing lytic cycle.
   a) cI b) Cro
   c) a) and b) d) alpha
6. When a bacteriophage is integrated into a cellular genome it is called as _____.
   a) Virulent virus b) Lytic virus
   c) Prophage d) Transducing virus
7. Cosmid can clone DNA inserts of upto _____.
   a) 400 kb b) 40 kb
   c) 300 kb d) 30 kb
8. _____ vector is known as multipurpose vector.
   a) Cosmid b) Phagemid
   c) Phasmid d) M13

P.T.O.

Q – 2 Attempt ANY SEVEN from the following: **(14)**

1. Define: viruses and bacteriophage
2. Explain helical morphology of viruses with suitable example.
3. Explain structure T7 phage.
4. Write importance Mu phage.
5. Give difference between lytic cycle and lysogeny cycle.
6. What is eclipse and latent period?
7. Enlist ideal characteristics of a vector.
8. What is complementation phenomenon? Give example.
9. What is host induced mutation? Give its suitable example.

Q – 3 (a) Explain any two methods for quantification of bacteriophage in detail. **(06)**

(b) Explain general structure and properties of viruses. **(06)**

OR

(b) Discuss the techniques used for purification of viruses. **(06)**

Q – 4 (a) Describe the life cycle of M13 bacteriophage with its applications. **(06)**

(b) Write a short note on ss RNA bacteriophage MS2. **(06)**

OR

(b) Give an overview single stranded icosahedral DNA bacteriophage **(06)**

Q – 5 (a) Depict on one step growth experiment used to study viruses. **(06)**

(b) Give an account on viral based vaccines. **(06)**

OR

(b) Explain lytic cycle with suitable example in detail. **(06)**

Q – 6 (a) Write a brief note on λ phage as a vector. **(06)**

(b) Briefly discuss phenotypic mixing mechanism with appropriate examples. **(06)**

OR

(b) What is phagemid? Discuss the characteristics of phagemid in detail. **(06)**

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