



BRAINWARE UNIVERSITY

Term End Examination 2019 – 20

Programme – Master of Science in Microbiology

Course Name – Virology

Course Code – MMB102

(Semester – 1)

Time allotted: 2 Hours 30 Minutes

Full Marks: 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question)

20 x 1 = 20

1. Answer any *twenty* from the following
 - (i) Bacteriophages that can enter into stable, long-term relationships with their hosts are called _____.

a. Lytic phages	b. Temperate phages
c. virulent phages	d. lazy phages
 - (ii) Cell abnormalities resulting from a viral infection are called _____.

a. Hemagglutination	b. cytopathic effects
c. tumour	d. none of these
 - (iii) Which of these infectious agents do not have nucleic acid?

a. viroids	b. viruses
c. bacteria	d. prions
 - (iv) The causative agent of spindle tuber disease in potato is _____.

a. Viroid	b. Prion
c. Virusoid	d. Plant virus
 - (v) The first virus discovered was

a. Tobacco mosaic virus	b. Poxvirus
c. Coronavirus	d. Adenovirus

- (vi) Which antiviral drug acts as a protease inhibitor?
- | | |
|---------------|---------------|
| a. Amantadine | b. Zidovudine |
| c. Saquinavir | d. Acyclovir |
- (vii) Interferons are also called:
- | | |
|-------------|------------------|
| a. toxins | b. cytokines |
| c. antigens | d. None of these |
- (viii) Bacteriophages undergo replication by
- | | |
|-----------------|--------------------|
| a. Lytic cycle | b. Lysogenic cycle |
| c. Both a and b | d. fragmentation |
- (ix) Structural component that is found in all viruses is:
- | | |
|-----------------|-----------|
| a. Spikes | b. Capsid |
| c. The envelope | d. DNA |
- (x) Which of the following options is a bacteriophage?
- | | |
|-------------|---------------|
| a. Reovirus | b. Adenovirus |
| c. M13 | d. Pox virus |
- (xi) Adenoviruses contain:
- | | |
|------------------------|------------------------|
| a. single-stranded DNA | b. single-stranded RNA |
| c. double-stranded DNA | d. double-stranded RNA |
- (xii) Nomenclature of Viruses was done:
- | | |
|---|------------------------------|
| a. Named after the diseases | b. Host and signs of disease |
| c. Name after the places where the disease first reported | d. All of these |
- (xiii) Identify the most commonly used diagnostic technique in the virus laboratory:
- | | |
|--------------------|------------------------------|
| a. Sequencing | b. Reverse transcriptase PCR |
| c. Immuno-serology | d. Cell culture |
- (xiv) Longest known virus is:
- | | |
|----------------|---------------------------|
| a. T2 | b. <i>Citrus tristeza</i> |
| c. ϕ X174 | d. TMV |
- (xv) In AIDS, HIV kills:
- | | |
|-----------------------|----------------------|
| a. Antibody molecules | b. T-cytotoxic cells |
| c. Bone-marrow cells | d. T-helper cells |
- (xvi) Who crystallized and isolated virus for the first time?
- | | |
|------------|--------------|
| a. Stanley | b. Bawden |
| c. Smith | d. Ivanowski |

- (xvii) Viruses require _____ for growth.
- | | |
|-----------------|-------------|
| a. Living cells | b. animals |
| c. plants | d. bacteria |
- (xviii) Which of the following plants virus has DNA as genetic material?
- | | |
|-------------------------|-----------------------------|
| a. Tobacco Mosaic Virus | b. Tomato Mosaic Virus |
| c. Potato Mosaic Virus | d. Cauliflower Mosaic Virus |
- (xix) Mad Cow disease are caused by:
- | | |
|----------|------------------|
| a. Virus | b. Viroid |
| c. Prion | d. None of these |
- (xx) In agglutination reaction, the antigen is _____.
- | | |
|---------------------|-----------------|
| a. Soluble molecule | b. Whole cell |
| c. protein | d. Both a and b |
- (xxi) Bacteriophages contain:
- | | |
|------------------|-------------|
| a. urease | b. protease |
| c. dehydrogenase | d. lysozyme |
- (xxii) Interferons are very special defence mechanisms which operate by:
- | | |
|-------------------------------------|---|
| a. Binding to viruses | b. Binding to neighbouring cells |
| c. Inhibiting virus induced enzymes | d. Producing a long lasting state of resistance |
- (xxiii) Which of the following viruses is not used in gene therapy?
- | | |
|-------------------------|---------------|
| a. Herpes simplex virus | b. Adenovirus |
| c. Papillomavirus | d. Retrovirus |
- (xxiv) Which is incorrect?
- | | |
|--------------------------------------|-------------------------|
| a. Most plant viruses are RNA virus | b. TMV is a dsRNA virus |
| c. T2 bacteriophage is a dsDNA virus | d. Both b and c |
- (xxv) T2 bacteriophage has
- | | |
|----------|----------|
| a. dsDNA | b. dsRNA |
| c. ssDNA | d. ssRNA |

Group – B

(Short Answer Type Questions)

4 x 5 = 20

Answer any *four* from the following

2. What causes agglutination in viral hemagglutination? Describe the hemagglutination method for virus identification. 1+4
3. What does ICTV stand for? What criteria are used in ICTV classification of viruses? 1+4
4. Differentiate between virulent and temperate phages. What is the importance of lysogenic cycle? What is latent infection? 2+2+1
5. What is generalized transduction? Explain in brief. 5
6. Write a short note on M13 phage vector. 5
7. How are interferons produced? Write down their chemical compositions and classes. 1+4

Group – C

(Long Answer Type Questions)

2 x 10 = 20

Answer any *two* from the following

8. (a) Discuss the possibility of proteins, peptides and DNA as the new vaccine candidates. 6
- (b) Write down the importance of studying modern virology. 4
9. (a) Differentiate between viroids and virusoids? 3
- (b) Discuss the replication process of an enveloped animal virus. 7
10. (a) Describe the techniques used to study the viruses. 5
- (b) Outline the life-cycle of HIV-1. 5
11. (a) Discuss about the lytic and lysogenic cycles of bacteriophage replication. 8
- (b) What is prophage? What is shiga toxin? 1+1