
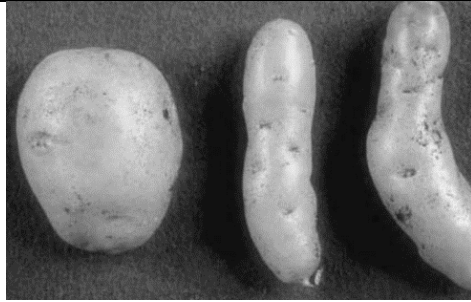


Name:			
Enrolment No:			
<b>UPES</b> <b>End Semester Examination, December 2023</b>			
<b>Course: Virology</b> <b>Program: BSc, BMSc Microbiology</b> <b>Course Code: HSMB 2004</b>		<b>Semester : III</b> <b>Duration : 3 Hours</b> <b>Max. Marks: 100</b>	
<b>Instructions:</b>			
S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
<b>Q 1</b>	Which of the following viruses causes latency? a. Herpes b. Influenza c. Dengue d. Nipah	<b>1.5</b>	<b>CO3</b>
<b>Q 2</b>	----- is a viroid.	<b>1.5</b>	<b>CO3</b>
<b>Q3</b>	Rolling circle mechanism is observed in -----(name one virus)	<b>1.5</b>	<b>CO2</b>
<b>Q4</b>	‘Prions are infectious particles composed of RNA and protein.’ Comment on the statement.	<b>1.5</b>	<b>CO2</b>
<b>Q5</b>	‘Antiviral drugs are also used for prevention and therapy of viral infection.’ Comment on the statement.	<b>1.5</b>	<b>CO3</b>
<b>Q6</b>	‘Vaccines are used for prevention and therapy of viral infection.’ Comment on the statement.	<b>1.5</b>	<b>CO3</b>
<b>Q7</b>	‘Viruses can be crystalized.’ Comment on the statement.	<b>1.5</b>	<b>CO1</b>
<b>Q8</b>	‘Some viruses utilize ribosome of host while others encode their own.’ Comment on the statement.	<b>1.5</b>	<b>CO1</b>
<b>Q9</b>	Which class of viruses upturned central dogma of molecular biology?	<b>1.5</b>	<b>CO1</b>
<b>Q10</b>	‘Human cells encode receptors specific to viruses.’ Comment on the statement - correct or not with reasons.	<b>1.5</b>	<b>CO1</b>
<b>Q11</b>	Why do emerging viruses like Zika and Ebola continue to plague us?  a) These viruses mutate and thus emerge stronger	<b>1.5</b>	<b>CO2</b>

	<ul style="list-style-type: none"> <li>b) Deforestation is the main culprit</li> <li>c) Mosquitoes allow zoonotic infections to happen</li> <li>d) Both a and c</li> </ul>		
<b>Q12</b>	<p>Which part of the plant cell evades attack of viruses?</p> <ul style="list-style-type: none"> <li>a. Golgi</li> <li>b. ER</li> <li>c. Ribosome</li> <li>d. Cell wall</li> </ul>	<b>1.5</b>	<b>CO1</b>
<b>Q13</b>	<p>From which of the following specimens; can Rhinovirus not be isolated?</p> <ul style="list-style-type: none"> <li>a. Sputum</li> <li>b. Throat</li> <li>c. Feces</li> <li>d. Nose</li> </ul>	<b>1.5</b>	<b>CO2</b>
<b>Q14</b>	<p>Which of the following viruses affects liver?</p> <ul style="list-style-type: none"> <li>a. HSV</li> <li>b. EBV</li> <li>c. HAV</li> <li>d. HIV</li> </ul>	<b>1.5</b>	<b>CO2</b>
<b>Q15</b>	<p>‘Hershey and Chase experiment on was done on a virus.’ Could you name the virus and its host?</p>	<b>1.5</b>	<b>CO1</b>
<b>Q16</b>	<p>Enders, Weller and Robbins received nobel prize for:</p> <ul style="list-style-type: none"> <li>a) Discovering retrovirus</li> <li>b) Developing cell culture</li> <li>c) Propagating polio virus in human cell culture</li> <li>d) Developing ELISA</li> </ul>	<b>1.5</b>	<b>CO1</b>
<b>Q17</b>	<p>Define and exemplify metastability in viruses.</p>	<b>1.5</b>	<b>CO1</b>
<b>Q18</b>	<p>Name the antiviral agents produced by human body.</p>	<b>1.5</b>	<b>CO3</b>
<b>Q19</b>	<p>Name a lytic and a lysogenic bacteriophage.</p>	<b>1.5</b>	<b>CO2</b>
<b>Q20</b>	<p>Which of the following virus does not carry its own polymerase:</p> <ul style="list-style-type: none"> <li>a. Polio virus</li> <li>b. Influenza</li> <li>c. Coronaviruses</li> <li>d. Pox viruses</li> </ul>	<b>1.5</b>	<b>CO2</b>

<b>Section B</b> <b>(4Qx5M=20 Marks)</b>			
<b>Q 1</b>	Describe the Fraenkel-Conrat experiment.	<b>5</b>	<b>CO2</b>
<b>Q2</b>	Enlist the basic differences in modes of replication and general life cycle of DNA and RNA viruses with examples.	<b>5</b>	<b>CO2</b>
<b>Q3</b>	What are fusion proteins in viruses; what are their types? Give an example of virus where they are present.	<b>5</b>	<b>CO1</b>
<b>Q4</b>	Describe cytopathic effects and give examples.	<b>5</b>	<b>CO1</b>
<b>Section C</b> <b>(2Qx15M=30 Marks)</b>			
<b>Q 1</b>	<p>‘Rotavirus is a reovirus; an Oral vaccine for which was conceptualized and prepared in India. A child died upon administration of vaccine due to diarrhea and mutant virus was isolated from feces.’</p> <p>Based on this answer the following:</p> <ul style="list-style-type: none"> <li>(i) Which class of viruses is Reovirus in Baltimore scheme and what type of genome do they have? (1)</li> <li>(ii) Which type of vaccine do you think was administered to the child that it died? (2)</li> <li>(iii) What precautions are taken with such vaccines such as Oral polio vaccine and Rotavirus vaccines? (2)</li> <li>(iv) What are different types of viral vaccines? Give examples (7)</li> <li>(v) Pfizer BioNtech and Moderna recently developed a type of vaccine for COVID-19. What type was it and what are its advantages. (2)</li> <li>(vi) Define herd immunity. (1)</li> </ul>	<b>15</b>	<b>CO3</b>
<b>Q2</b>	Image below shows healthy versus diseased potato. A filterable agent was causing this disease. Based on the image answer the following:	<b>15</b>	<b>CO2</b>



**a**                      **b**                      **c**

- a) Which is the disease being talked about? (1)
- b) What is the infectious agent responsible for this disease? (1)
- c) Name at least one more infectious agent of this kind. (1)
- d) Sap from diseased plant; when rubbed onto healthy potato plant also induced disease in healthy plant. Why and how do you think it happened. (2)
- e) How do they agents disseminate into entire plant body? (1)
- f) What is unique about this infectious agent and what are the different modes of its replication? (6)
- g) What are various ways to prevent this disease? (2)
- h) Any human counterparts of this agent that you are aware of? (1)

**Section D**  
**(2Qx10M=20 Marks)**

<b>Q 1</b>	Define selectivity of antiviral drugs. (1) Why is selectivity needed at all in the case of antivirals? (1) Enlist some antiviral drugs with their mode of action.	<b>10</b>	<b>CO3</b>
<b>Q2</b>	Enlist a few methods of viral diagnosis. Describe any one. (7)  Define Prions and name a disease caused by them in animals and one disease in humans. (3)	<b>10</b>	<b>CO1</b>