

<b>Name:</b>	
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, December 2021**

**Course:** Introduction to Microbiology  
**Program:** Integrated B.Sc. and M.Sc. Allied Sciences  
**Course Code:** HSCC1021

**Semester: I**  
**Time: 03 hrs.**  
**Max. Marks: 100**

**Instructions: Read question carefully.**

**SECTION A**

S. No.	MCQ's /Fill in the blanks/ T&F (1.5 marks each)	30 Marks	CO
1	A structural component that is found in all viruses is: a. The envelope b. DNA c. Capsid d. Tail fibers e. Spikes	<b>1.5</b>	<b>CO3</b>
2	Positive stranded RNA viruses have which of the following characteristics? a. Their genome RNA can be translated directly as mRNA b. They have to transcribe their genome RNA to a mirror image copy as a mRNA c. This genome is circular d. Their RNA genome is segmented	<b>1.5</b>	<b>CO2</b>
3	Electron microscope gives magnification up to _____ a. 100 X b. 2000 X c. 50,000 X d. 2,00,000 X	<b>1.5</b>	<b>CO2</b>
4	The term bacteriophage was coined by _____ a. De'Herelle b. F.W. Twort c. Beijernick d. Jwanosky	<b>1.5</b>	<b>CO4</b>
5	Tuberculosis is a _____ a. Water borne disease b. Air borne disease c. Food borne disease d. Arthropod borne disease	<b>1.5</b>	<b>CO4</b>
6	Bacterial ribosomes are composed of _____ a. Protein and DNA	<b>1.5</b>	<b>CO4</b>

	<ul style="list-style-type: none"> <li>b. Protein and mRNA</li> <li>c. Protein and rRNA</li> <li>d. Protein and tRNA</li> </ul>		
7	<p><i>Bacillus subtilis</i> is an example of _____</p> <ul style="list-style-type: none"> <li>a. Gram positive bacteria</li> <li>b. Gram negative bacteria</li> <li>c. Virus</li> <li>d. Viroid</li> </ul>	1.5	CO2
8	<p>Gram staining is an example for _____</p> <ul style="list-style-type: none"> <li>a. Simple staining</li> <li>b. Differential staining</li> <li>c. Negative staining</li> <li>d. None of these</li> </ul>	1.5	CO4
9	<p>Rh factor of the blood was discovered by scientist</p> <ul style="list-style-type: none"> <li>a. Louis Pasteur</li> <li>b. Landsteiner and Weiner</li> <li>c. Janskey</li> <li>d. Moss</li> </ul>	1.5	CO5
10	<p>Algae are rich in _____</p> <ul style="list-style-type: none"> <li>a. Carbohydrates</li> <li>b. Proteins</li> <li>c. Vitamins</li> <li>d. All of these</li> </ul>	1.5	CO3
11	<p>Which of the following virus was first observed?</p> <ul style="list-style-type: none"> <li>a. Hepatitis Virus</li> <li>b. Tobacco Mosaic Virus (TMV)</li> <li>c. Cauliflower Mosaic Virus (CMV)</li> <li>d. None of these</li> </ul>	1.5	CO4
12	<p>Which of these is a trace element for bacteria?</p> <ul style="list-style-type: none"> <li>a. Mg<sup>+2</sup></li> <li>b. Na<sup>+</sup></li> <li>c. Ca<sup>+2</sup></li> <li>d. Mn<sup>+2</sup></li> </ul>	1.5	CO4
13	<p>Isolation of microorganisms means _____</p> <ul style="list-style-type: none"> <li>a. purification of culture</li> <li>b. introduction of inoculum</li> <li>c. separation of a single clone</li> <li>d. to grow microorganisms on surfaces</li> </ul>	1.5	CO1
14	<p>Compound microscope was discovered by _____</p> <ul style="list-style-type: none"> <li>a. Antony von</li> <li>b. Pasteur</li> <li>c. Johnsen &amp; Hans</li> <li>d. None of these</li> </ul>	1.5	CO1
15	<p>Antiseptic surgery was discovered by</p> <ul style="list-style-type: none"> <li>a. Joseph Lister</li> <li>b. Ernest Abbe</li> <li>c. Pasteur</li> <li>d. Beijerinck</li> </ul>	1.5	CO1

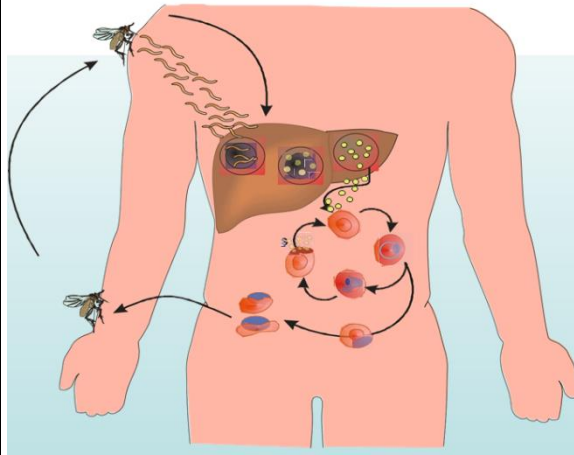
16	In Electron microscope, what material is used as an objective lens? a. Magnetic coils b. Superfine glass c. Aluminium foils d. Electrons	1.5	CO1
17	In Electron Microscope, source of electrons is from a. Mercury lamp b. Tungsten metal c. both a and b d. None of these	1.5	CO1
18	Which of the following organism lack definite cell wall? a. <i>Mycoplasma</i> b. <i>Mycobacterium</i> c. <i>Micrococcus</i> d. <i>Mucor</i>	1.5	CO1
19	Which of the following is not an RNA virus? a. Retrovirus b. Enterovirus c. Rhabdovirus d. Adenovirus e. Rubellavirus	1.5	CO1
20	Example for DNA viruses: a. Adeno virus b. Pox virus c. Herpes virus d. All of the above	1.5	CO3

**SECTION B (5 marks each question)**

Q	Short Answer Type Question (5 marks each) Scan and Upload 4 questions 5 marks. Word limit (100-120)	20 Marks	CO
1	In which year Whitakers proposed five kingdom of classification? Write the name of five kingdom with examples (1+4).	5	CO2
2	Write the steps involved in the life cycle of a virulent phage. What is Prophage? (4+1).	5	CO3
3	Write the structural organization of a polio virus genome.	5	CO1
4	Write different flagellar arrangement found in eubacteria with examples.	5	CO1

**SECTION C 30 marks**

Q	<b>Two case studies 15 marks each subsection</b>	30 Marks	CO
1	Case Study 1 (Word limit-250-300)	15 (2+2+2+ 2+2+5)	CO1



- Q1:** Identify the disease from the above images.
- Q2:** Name of the causative agent of the disease.
- Q3:** How the disease transmitted to human?
- Q4:** How the infection can be diagnosed?
- Q5:** Mention the available drugs, used to treat the disease?
- Q6:** What are the molecular mechanisms of drug resistance in this pathogen?

2

**Case Study 2 (Word limit- 250-300)**

An 18-year-old girl presents to her pediatrician with her mother for her pre-college check-up. She has no past medical history. She complains of a yellow green malodorous vaginal discharge that started a week ago. She endorses mild pelvic pain. A pelvic exam is performed, and mild cervical tenderness is noted. The cervix is pink, nulliparous, inflamed and is covered by small red punctate spots. A thin yellow green frothy discharge of fishy odor is also detected. Microscopic investigation reveals numerous flagellated trophozoites with undulating membrane.

- Q1:** What could be the causative agent?
- Q2:** What diagnostic procedures are helpful in establishing the etiology of vaginitis?
- Q3:** What could be the source for infection?
- Q4:** What are the virulent factors of this organism?
- Q5:** What are the treatment options for this patient?

**15**  
**(2+3+2+**  
**4+4)**

**CO5**

**SECTION- D 20 marks**

Q

Long Answer type Questions Scan and Upload (10 marks each) Word limit 200-250

**20**  
**Marks**

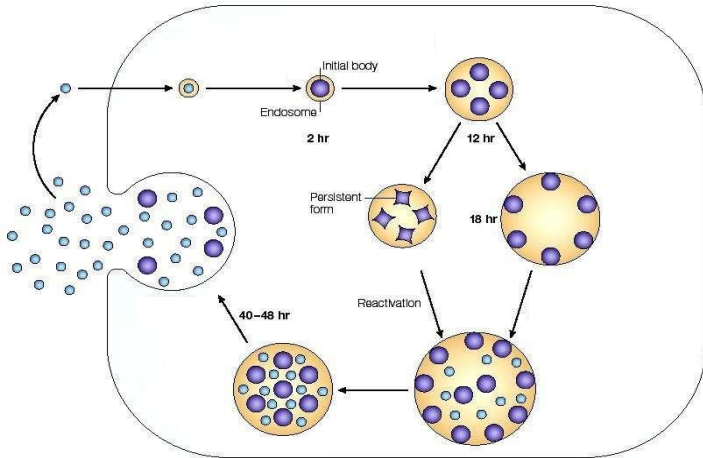
**CO**

1

The below figure represents the life cycle of an intracellular pathogen.

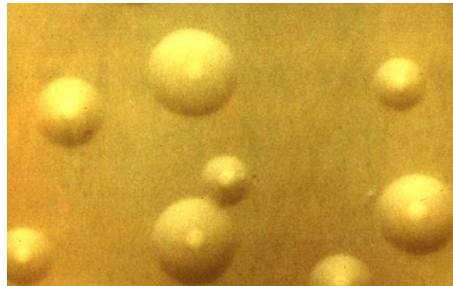
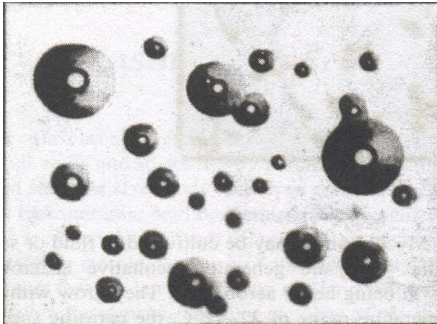
**10**  
**(2+4+2+**  
**2)**

**CO4**



- Q1:** Identify the pathogen and the disease it causes.
- Q2:** Write the steps involved in their life cycle.
- Q3:** Mention symptoms, associated with their infections.
- Q4:** Write the treatment available for the disease?

2 The below image represents the colony morphology of certain pathogen.



- Q1:** Identify the pathogen?
- Q2:** What types of diseases they cause?
- Q3:** Write different symptoms, associated with the disease.
- Q4:** How we can culture the pathogen in laboratory?
- Q5:** what are the diagnostic methods can be used to verify the infection?

10  
(1+1+3+  
2+3) CO3