Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

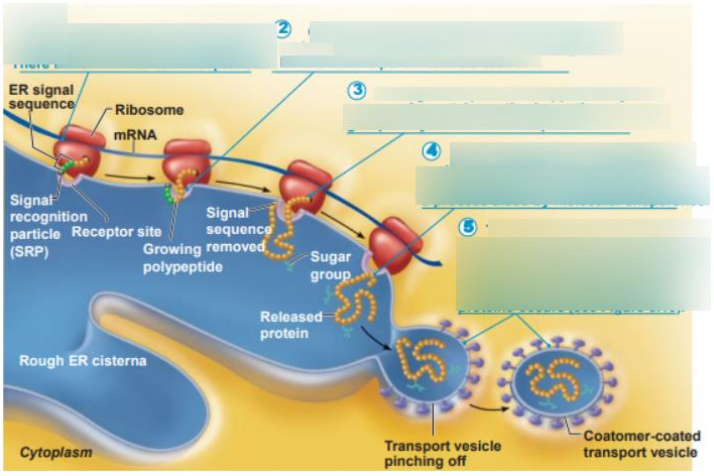
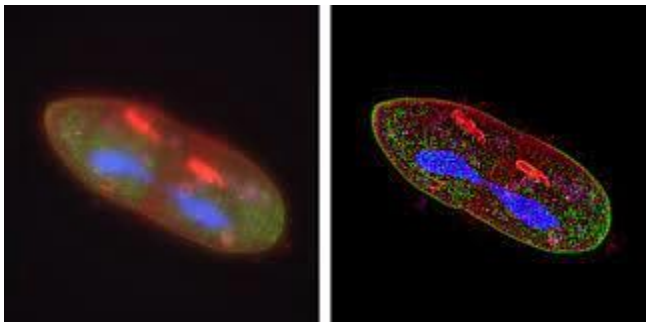
Course: Principles of Microbiology **Semester : I**
Program: M.Sc. Microbiology **Duration : 3 Hours**
Course Code: HSMB7001 **Max. Marks: 100**
Instructions:

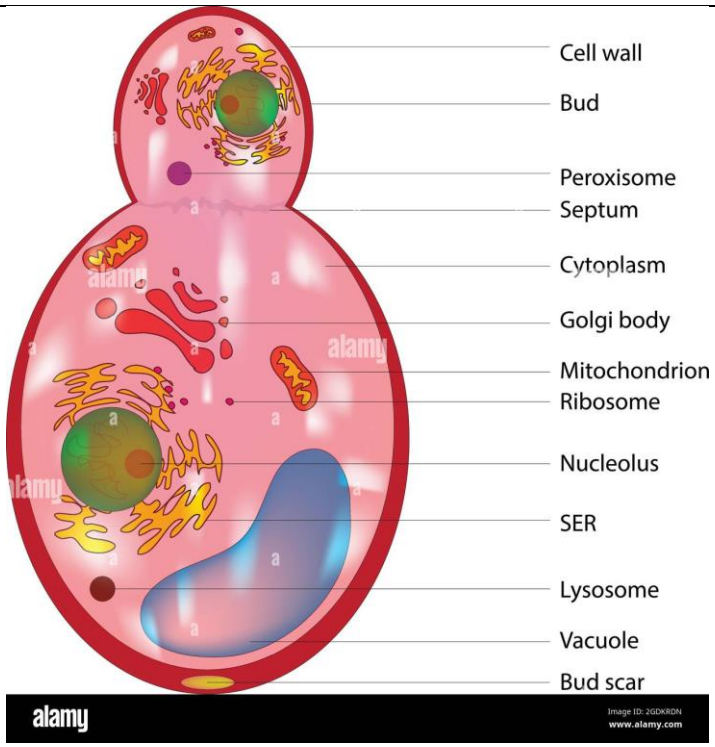
S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	Paul Ehrlich was jointly awarded the 1908 Nobel Prize in Physiology or Medicine "in recognition of their work on immunity" along with a renewed scientist – A. Louis Pasteur B. Antonie van leeuwenhoek C. Élie Metchnikoff D. Robert Cook	**1.5**	**CO1**
Q 2	In 1757, an 8-year-old boy was inoculated with smallpox in Gloucester, who was the scientist successfully inoculated for the first time. A. Alexander Fleming B. Edward Jenner C. Robert Koch D. William Harvey	**1.5**	**CO1**
Q 3	The cantilever tip is a component of - A. Atomic Force Microscope B. Compound Microscope C. Confocal Microscope D. Optical Microscope	**1.5**	**CO4**
Q 4	Well defined membrane bound cell organelles are present in A. Eukaryotic Cell B. Prokaryotic Cell C. Both D. None of the above	**1.5**	**CO3**
Q 5	Viruses spread by droplet transmission A. Influenza virus B. Rhinovirus	**1.5**	**CO3**

	C. Enterovirus, D. All of the above		
Q 6	Lysogenic conversion has shown to enable biofilm formation in - A. Extreme halophiles B. Geobacter C. Extreme thermophiles D. Bacillus anthracis	**1.5**	**CO3**
Q 7	The oldest living organisms on earth is A. *Corynebacterium* B. Eubacteria C. *Archaebacteria* D. Mycobacterium	**1.5**	**CO2**
Q 8	Aplanospores are produced by - A. Algae B. Fungi C. Algae and fungi D. Virus, Algae and Fungi	**1.5**	**CO3**
Q 9	The aquatic habitat that has been responsible for a worldwide decline in amphibian populations is A. Clostridium botulinum B. Yersinia pestis C. Batrachochytrium dendrobatidis D. Candida albicans	**1.5**	**CO3**
Q 10	*Paramecium is* A. eukaryotic, multicellular virus, commonly studied as a representative of the ciliate group B. eukaryotic, unicellular ciliates, commonly studied as a representative of the ciliate group C. prokaryotic, unicellular virus, commonly studied as a representative of the ciliate group D. prokaryotic, unicellular ciliates, commonly studied as a representative of the virus group	**1.5**	**CO3**
Q 11	The "seeds of disease" theory which was proposed by ……..as a predecessor to Germ theory of disease - A. Christian Gram B. Girolamo Fracastoro C. Rudolf Virchow D. Robert Langer	**1.5**	**CO1**
Q 12	Which years are considered as the golden age of microbiology	**1.5**	**CO1**

	A. 1516-1590 B. 1850 - 1915 C. 1700-1750 D.1314-1413		
Q 13	The resolving power of TEM originated from A. Electrons B. Sample C. Glass D. Ocular system	**1.5**	**CO4**
Q 14	Five kingdom classification was proposed by - A. Carl woese B. Robert Harding Whittaker C. David Baltimore D. None of the above	**1.5**	**CO2**
Q 15	Micro-organisms having optimum temperature for growth below 15°C are called - A. Psychrophiles B. Thermophiles C. Extreme thermophiles D. None of the above	**1.5**	**CO3**
Q 16	The genome of Poliovirus is – A. RNA B. DNA C. Both RNA and DNA D. ss DNA	**1.5**	**CO3**
Q 17	Chlamydiae are responsible for A. Sexually transmitted disease B. Fungal infection C. Melanosomal biogenesis D. None of the above	**1.5**	**CO3**
Q 18	Microtubule-organising centres (MTOCs) are present in - A. Capsid of viruses B. Cell wall of bacteria C. Histon proteins of eukaryotes D. Flagellated green algae	**1.5**	**CO3**
Q 19	Cell wall of fungi is made up of - A. STIM and ORAI proteins B. Calcium, potassium and silicon C. Glucans, chitin and glycoproteins. D. None of the above	**1.5**	**CO1**
Q 20	The sexual cycle of *Plasmodium* occurs in	**1.5**	**CO3**

	A. Stomach of the host B. The gut of mosquito C. RBC of the host D. Salivary glands of the mosquito		
Section B (4Qx5M=20 Marks)			
Q 1	Discuss the concept of biogenesis?	**5**	**CO1**
Q 2	Elucidate the beam path of confocal microscopy? Discuss the principle of fluorescence?	**5**	**CO4**
Q 3	Classify fungal hyphae? Discuss the role of mycelium in decomposition of plant materials?	**5**	**CO2**
Q 4	Describe sexual and asexual reproduction in algae?	**5**	**CO3**
Section C (2Qx15M=30 Marks)			
Q 1	**Case 1 – A new-born is having blood stream infections. The mother of new-born went to the doctor and Doctor suggested that the baby may have bacterial infection.** **1. Which kind of bacterial infection baby can probably have?** **2. What approaches are recommended to identify these bacteria?** **3. Which could be the best approach for their identification in the clinical laboratory in timely manner?**	**(5+5+5)**	**CO5**
Q2	**Case 2 – A scientist husband of a home maker wife identifies a kind of infection in nails. He has examined infection and isolated the unknown organisms causing damage to the skin. He saw a kind of thallus structure in the microscope.** **1. Which kind of infection she can probably have?** **2. Give schematic representation of that thallus structure?** **Is it a prokaryotic or eukaryotic cellular structure? Define?**	**(4+7+4)**	**CO5**
Section D (2Qx10M=20 Marks)			

Q 1	 **Q1.1 Discuss the above process in detail?**  **Q1.2 The above diagram shows two indicative images of types of two different microscopy. Why the second image in the above diagram is relatively clear?**	**(5+5)**	**CO3**

Q2	 **Discuss the above structural diagram of a type of microorganism? Is this diagram a prokaryotic cell or eukaryotic cell structure, Differentiate between them?**	**10**	**CO3**