

SET I

SEM II

QP 66766

Q1A. Define:

05

- 1) Epidemic disease:  
**The occurrence of a disease in unusually high numbers in a localized population.**
- 2) Phyllosphere:  
**The surface of plants above soil.**
- 3) Buffer:  
**Buffer is a solution which helps to resist change in the pH of the solution. OR  
A buffer solution is an aqueous solution consisting of a mixture of a weak acid  
and its conjugate base, or vice versa.**
- 4) Monochromator:  
**A device used to select radiation/ light of a single wavelength.**
- 5) Bacteriods: **As the rhizobium bacteria proceeds via the infection thread into the  
roots of leguminous plants, each bacteria differentiates into nitrogen fixing form  
called the bacteriod.**

Q1B. State whether the given statement is true or false:

05

- 1) Peristalsis traps microorganisms. **TRUE**
- 2) Electron Microscope uses a beam of visible light for illumination. **FALSE**
- 3) The alkaline pH scale is from 0 to 7. **FALSE**
- 4) Amensalism is defined as the relation in which one organism has adverse effect on  
another organism. **TRUE**
- 5) The fungal partner found in the lichen is referred to as a phycobiont. **FALSE**

Q1C. Give one example of each of following:

05

- 1) Adherence factor of pathogen: **(Tortora, 9<sup>th</sup> ed. pg no 786)**
- 2) Chemical factor present in skin: **Sebum, lysozyme.**
- 3) Type of electrode in a pH meter: **Glass, Combined, Calomel electrode**
- 4) Visible light wavelength: **Any value from 400-700nm**
- 5) Protozoa found in the colon:  
***Trichomonas hominis, Entamoeba hartmanni, Endolimax nana, Lodamoeba  
butschlii***

Q1D. Select the correct alternative and rewrite:

05

- 1) Siderophore help bacteria acquire \_\_\_\_\_ from the environment. **(iron, copper, zinc)**
- 2) Gastric juice is highly \_\_\_\_\_. **(acidic, alkaline, neutral)**
- 3) \_\_\_\_\_ is used in preparation of sample for TEM. **(water, NaCl, glutaraldehyde)**
- 4) Photocell is used in \_\_\_\_\_. **(pH meter, colorimeter, LAF)**
- 5) \_\_\_\_\_ produces pigments which can function like sunscreen, so it can  
survive high levels of UV irradiation occurring on plant surfaces.  
**(Erwinia, Pseudomonas, Sphingomonas)**

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(*Erwinia, Pseudomonas, Sphingomonas*)

**Q2. Answer briefly any two of the following:**

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- 1) Discuss enzymes acting as virulence factors of pathogens. (Tortora, 9<sup>th</sup> ed. pg no 787)
- 2) What are bio-safety cabinets? Explain briefly Class I and Class II cabinets.  
Collins and Lyne 7<sup>th</sup> Edn. Pg no.24-25  
Definition of Bio-safety cabinets 1M HEPA filter 1M Description of Class I and Class II 4M each
- 3) Describe in brief the associations- Cooperation and Parasitism between two living Organisms with appropriate examples. (Prescott and Harley 7<sup>th</sup> Edn pg nos. 726,727,730,731,732)

**Q3A. Answer any three of the following:**

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- 1) Discuss the normal flora of the large intestine and its significance. Prescott and Harley 7<sup>th</sup> Edn; pg nos 738-739
- 2) Write a short note on the rumen ecosystem. Prescott and Harley 7<sup>th</sup> Edn pg no.724
- 3) Justify: Commensalism is a relationship in which the commensal benefits while the host is neither harmed nor helped. Prescott and Harley 7<sup>th</sup> Edn: page nos 729
- 4) Describe with the help of a diagram the process of root nodule formation by Rhizobium. Prescott and Harley 7<sup>th</sup> Edn pg nos. 701-703
- 5) Discuss the classification of Mycorrhizae.  
Prescott and Harley 7<sup>th</sup> Edn pg nos. 697-700
- 6) Describe gnotobiotic animals and their significance.  
Prescott and Harley 7<sup>th</sup> Edn:Pg Nos.734,735

**Q3B. Do as directed any two of the following:**

02

- 1) Name any two signal compounds produced by the plant growth promoting bacteria?  
These bacteria occur in the rhizosphere and they promote plant growth producing chemical signal compounds like auxins, cytokinins, gibberellins, glycolipids etc.
- 2) Why does the stomach usually contains less of viable bacteria?  
Due to acidic pH of gastric contents.
- 3) State one difference between an ectosymbiont and an endosymbiont.  
Ectosymbiont- one organism located on the surface of a larger organism.  
Endosymbiont- One organism is located within another organism.
- 4) Define: Coral bleaching-  
Loss of either the photosynthetic pigments from the corals or expulsion of the zooxanthellae.

**Q4A. Answer any three of the following:**

18

- 1) Discuss microbial and physiological factors responsible for disease. (Pelczar, 5<sup>th</sup> ed, pg no. 704)
- 2) Discuss stages of acute infectious disease. (Brock 11<sup>th</sup> edition pg no 820)

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- 3) Write a short note on physical factors of skin and mucous membrane that are constituting the first line of defense. (Brock 11<sup>th</sup> edition pg no 451)
- 4) Explain in brief how does the lacrimal apparatus protect the eyes against infection? (Brock 11<sup>th</sup> edition pg no 452)
- 5) Discuss various phases of phagocytosis with the help of a diagram. (Pelczar, 5<sup>th</sup> Edition, pg no 709)
- 6) Write briefly about localization of pathogen inside the host. (Tortora 9<sup>th</sup> Edition pg no 786)

**Q4B. Do as directed any two of the following:**

02

- 1) Define : Abscess: **A localized infection with a collection of pus surrounded by an inflamed area.**
- 2) Define : Innate immunity: **Innate immunity refers to defenses that are present at birth. They are always present and available to provide rapid responses to protect us against disease**
- 3) State function of PMN: **Helps in phagocytosis OR Remove allergens.**
- 4) Give significance of reservoir: **Site in which viable infectious agents remain and from which infection of individuals may occur.**

**Q5A Answer any three of the following:**

18

- 1) Explain the working of Transmission electron microscope.  
**Prescott & Harley 7<sup>th</sup> Edn. Pg no.30-31**
- 2) Discuss calibration and standardization of a pH meter.  
**Wilson and Walker, 6<sup>th</sup> Edn. Pg no.20-22**
- 3) State the Beer and Lambert's law and explain how would you verify it.  
**Wilson and Walker, 6<sup>th</sup> Edn. Pg no. 558-560**
- 4) Discuss in brief calibration and validation of Hot air oven.  
**As given in notes**  
**Definition of HAO 1M Calibration 3M Validation 2M**
- 5) Explain Freeze-etching and how is it carried out.  
**Wilson and Walker, 6<sup>th</sup> Edn. Pg.155-156**
- 6) Explain the working of Fluorescent microscope and give its applications.  
**Introduction , Parts 2M, Ray Diagram 2M , applications 2M**  
**Prescott & Harley 7<sup>th</sup> Edn. Pg no.23**

**Q5B Do as directed any two of the following:**

02

- 1) Give the temperature-time regime used for sterilization of glassware by hot air oven.  
**180°C for 30mins/ 160°C for 1 hr/ 140°C for 1.5 hr**
- 2) Give full form of HEPA  
**High Efficiency Particulate Air**

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- 3) State the function of Cuvette  
**Holds sample solution for spectroscopic measurement.**
- 4) Give one application of colorimeter.  
**To determine concentration of known solute in coloured solution.**  
**To monitor the growth of bacterial culture.**