Define microbiology, microorganism or microbe, and "animalcules".

State the contributions of Anton van Leeuwenhoek to microbiology.

Distinguish between spontaneous generation and biogenesis.

State what occurred during the Golden Age of Microbiology.

State the contributions of Louis Pasteur to microbiology.

State how the field of microbiology changed after spontaneous generation was disproved.

Define the germ theory of disease.

List Koch’s postulates and state their importance to microbiology.

Describe how living organisms are classified.

List the categories of classification in order from the broadest and most general to the most specific.

Define binomial nomenclature.

Describe the difference between the genus and species names and how they are written.

List and describe the three characteristics used to divide organisms into Kingdoms.

List the five Kingdoms of living organisms and state the major characteristics of each Kingdom.

List and describe the three shapes of bacteria.

List and describe various patterns or arrangements found among the three shapes of bacteria.

State which type of bacteria does not have a cell wall.

List the functions of the cell wall.

List the two groups of bacteria determined by the chemical and physical differences in their cell walls.

Describe the cell wall of gram positive and gram negative bacteria.

State which shape of bacteria have a capsule, glycocalyx, or slime layer.

Describe and state the functions of the capsule, glycocalyx, or slime layer.

Describe and state the functions of the cell or plasma membrane, mesosome, flagella, pili, fimbriae, and axial filaments.

State which shape of bacteria have flagella or axial filaments.

Describe and state the functions of the cytoplasm, nuclear region or nucleoid, plasmids, ribosomes, and inclusions.

Describe the differences between the bacterial chromosome and those found in eukaryotic cells.

State the effect of antibiotics on the bacterial ribosomes.

Define endospore, state their function, and describe their formation or sporulation.

List two important genera of bacteria that produce endospores and the diseases they produce.
30. Define obligate intracellular parasite and state three major examples.
31. List the characteristics of Rickettsiae and Chlamydiae and how they differ from other bacteria.
32. State where Rickettsiae are found and how they are transmitted to humans.
33. Describe the life cycle of Chlamydiae.
34. Describe the characteristics of viruses.
35. Define bacteriophage, capsid, capsomere, nucleocapsid, enveloped virus, non-enveloped or naked virus, virion.
36. Describe replication in viruses.
37. Define and describe viroids and prions.
38. Describe the morphology of protozoa.
39. State how protozoa are divided into phyla.
40. List the four phyla of protozoa, state the characteristics and give examples of each.
41. Describe the morphology of fungi.
42. State how fungi are divided into divisions.
43. List the four divisions of fungi, state their characteristics and give examples of each.
44. List the types of asexual and sexual spores in the Divisions of fungi.
45. Describe the characteristics of helminths.
46. State how helminths are divided into two groups, state their characteristics and give examples of each.
47. List and describe the characteristics of the two groups of Platyhelminthes and give examples of each.
48. List and describe the four nutritional patterns of living organisms and give examples of each.
49. Define saprophytic, holozoic, parasite, aerobe, and anaerobe.
50. Define binary fission, budding, and generation or doubling time.
51. List and define the four phases of growth in a bacterial culture.
52. Define bacterial genetics, mutations, and genetic recombination.
53. List and describe the three types of genetic recombination.
54. Describe R factors and the role they play in infectious drug resistance.
55. Define bacterial transporons and discuss their importance.
56. Define genetic engineering, describe the methods involved, and state its significance.
57. List substances produced through genetic engineering.