1. Methods typically employed to sterilize or __ objects are too harsh for safe application to live tissue. A milder treatment, for skin cleansing, for example, employs __ to achieve microbial control.
   A. disinfect, antiseptics
   B. disintegrate, germicides

2. In a __ synthesis reaction a water molecule is __, while in a __ reaction water is released.
   A. condensation, used, hydrolysis
   B. hydrolysis, split, condensation

3. Protists are unicellular or colonial organisms, typified by __ and __.
   A. algae, protozoa
   B. bacteria, fungi

4. A __ is a device used to automatically count bacterial cells.
   A. electronic flow cytometer
   B. chemostat

5. Nitrogen is a vital component of __ and __.
   A. amino acids, nucleotides
   B. fatty acids, carbohydrates

6. In redox reactions, the substrate that loses electrons is __ and the substrate that accepts electrons is __.
   A. reduced, oxidized
   B. oxidized, reduced

7. Quick tests are often based upon antigen-antibody reactions typical of __ analysis.
   A. genetic probe
   B. serological

8. Bacteria of which shape are more likely to be motile?
   A. cocci
   B. bacilli
9. Boiling water or steam are forms of ___ heat that are more efficient antimicrobically than heated dry air, except perhaps, for ___.
   A. moist, incineration
   B. chemical, exothermal reaction

10. Most fungi are saprobes, thus they are also ___ but not necessarily ___.
    A. parasitic, heterotrophic
    B. heterotrophic, parasitic

11. Basic cell shapes of bacteria are:
    A. diplococci, tetrad, & sarcinae
    B. coccus, bacillus & spirillum

12. A bacterial ribosome is made up of a 30S portion and a 50S part, and when combined the subunits form a ___ whole.
    A. 70S
    B. 80S

13. The Gram stain derives its name from:
    A. original slides weighing a gram
    B. the inventor

14. Enzymes, organic catalysts, are reused since they:
    A. increase reactivity
    B. bind reactants
    C. are released intact
    D. facilitate certain reactions
    E. all of these

15. Typically, ___ enzymes are always present, while ___ enzymes are formed on demand.
    A. aerobic, anaerobic
    B. constitutive, induced

16. Macronutrients like carbohydrate, fat and protein, undergo large, rapid turnover but certain chemicals are needed only in minute amounts, hence they are called ___ nutrients.
    A. micro-
    B. trace-
17. Physiological or biochemical tests are based upon the presence or absence of:
   A. metabolic enzymes
   B. protein, polysaccharide digestion
   C. acid, alkali, gas production
   D. sugar fermentation
   E. sensitivity to antibiotics

18. Free-living microbes that promote decay are ___, whereas chemoheterotrophs that derive nutrients from live hosts are ___.
   A. scavengers, opportunists
   B. saprobic, parasitic

19. In the bacterial cell wall, ___ comprises long, parallel chains and ___ bonds cross link the peptidoglycan molecule.
   A. peptide, glycan
   B. glycan, peptide

20. Glycolysis is an anaerobic process in which:
   A. a molecule glucose is broken down
   B. 4 molecules of pyruvic acid are formed for every glucose molecule
   C. 4 NADH molecules are made for every glucose molecule
   D. 4 ATP molecules are produced for every glucose molecule
   E. all of these

21. A virus is essentially some ___ material enclosed in a protein covering, and is sometimes regarded as a noncellular ___ particle.
   A. hereditary, parasitic
   B. infectious, dormant

22. Biosynthetic pathways can be controlled by an accumulation of ___.
   A. substrate
   B. product
   C. salt
   D. enzyme
   E. pH

23. T F Gram-negative bacteria owe their greater resistance to antimicrobial drugs and non-alcohol disinfectants to a thicker peptidoglycan wall than that seen in gram-positive bacteria.
24. The initial phase of growth of a bacterial culture is called
   A. exponential phase
   B. stationary phase
   C. lag phase
   D. death phase

25. Aside from plants and algae, this is yet another group of photosynthetic organisms:
   A. fungi
   B. cyanobacteria

26. Pick the more primitive, less complex cell type.
   A. monera
   B. protista

27. Standard microbial identification methods entail the compilation of which data?
   A. morphological
   B. cultural
   C. biochemical
   D. genetic
   E. all of these

28. Some microbes cannot make vitamins such as special amino acids. These compounds are called
    ___ or ___ factors.
    A. essential, growth
    B. coenzymes, replacement

29. Microscopic morphology data includes:
   A. cell shape, size
   B. capsules, spores, granules
   C. flagella, pili, cell wall, fimbriae
   D. staining characteristics
   E. all of these

30. Bacterial cytoplasm is enclosed by a cell envelope comprised of these layers:
   A. polytrichous flagella & pili
   B. glycocalyx, capsule & cell wall
   C. glycocalyx, slime layer & capsule
   D. slime layer, pili & cell membrane
   E. cell membrane, wall & glycocalyx
31. Because they lack a cell wall, mycoplasmas rely on a cell membrane reinforced by ____ to resist lysis.
   A. gelatin
   B. sterols
   C. glycerol
   D. amino acids
   E. long chain fatty acids

32. The area of science that entails classification, naming, and identification of microbes:
   A. taxonomy
   B. genetics
   C. physiology
   D. ecology
   E. morphology

33. The listed features all contribute to bacterial spore hardness with the exception of:
   A. negative chemotaxis
   B. dipicolinic acid, cortex
   C. dormancy, dehydration
   D. multilayer coats
   E. calcium concentrates

34. Which cell type envelope is comprised of two cell membranes and a thinner peptidoglycan layer?
   A. gram-positive
   B. gram-negative

35. There are about ____ different types of microbial pathogens that infect humans.
   A. 2 thousand
   B. 13 million
   C. 28 million
   D. half billion
   E. 10 billion

36. To denote bacterial genus the first name is ____ but ____ is used to indicate species.
   A. lower case, capitalized
   B. capitalized, lower case

37. T F Eucaryotes are all multicellular and all procaryotes are unicellular.
38. Roomier periplasmic space and endotoxic outer membrane are traits of __ bacteria.
   A. gram-positive
   B. gram-negative

39. Unlike autotrophs that synthesize their own organic molecules from __ and carbonates, heterotrophs obtain their carbon from __ of other organisms.
   A. CO₂, macromolecules
   B. photosynthesis, metabolism

40. Treatment lethal to endospores when applied for at least 20 minutes:
   A. boiling water (100°C)
   B. live steam at 121°C

41. Some __ protozoa feed upon the cells of living hosts, but most protozoans are __ and secure their nutrients from remains of spent organisms.
   A. free-living, parasitic
   B. parasitic, free-living

42. Which is the broadest category in those listed?
   A. class
   B. genus
   C. family
   D. order
   E. phylum

43. The site of protein synthesis is the:
   A. glycocalyx
   B. inclusion
   C. ribosome
   D. chromosome
   E. mesosome

44. Which group of organisms is not usually included in microbiology?
   A. bacteria
   B. viruses
   C. plantae
   D. fungi
   E. protozoa
45. An extremophile not only ___ harshness and withstands brief exposure, some can ___ and even thrive in the hostility that would inhibit or kill __ microbes.
   A. tempers, neutralize, lesser
   B. tolerates, endure, temperate

46. Though tedious, this calibrated slide preparation provides a total count of microbes:
   A. Gram stain
   B. hemacytometer
   C. oil-immersion
   D. hanging drop
   E. negative stain

47. In aerobic respiration, electrons from the TCA cycle are moved through the ___ system, which is responsible for ___ phosphorylation.
   A. electron transport, oxidative
   B. feedback, reductive

48. Microbes that make use of solar energy for biosynthesis are called __, while those that extract chemical bond energy are known as __.
   A. heterophiles, chemophiles
   B. phototrophs, chemotrophs

49. The biological forms or organisms most resistant to microbial control are (the):
   A. vegetative cells
   B. bacterial and fungal spores
   C. enveloped viruses
   D. trophozoites and cysts
   E. gram positive bacteria

50. Petri plate or test tube inspection provides ___ cultural morphology.
   A. microscopic
   B. macroscopic