

- b. bacteremia
- c. toxemia
- d. a secondary infection

✓ 20. Which of the following chemicals is found only in the outer membrane of Gram-negative bacteria?

- A. Plasmid
- B. Teichoic acid ⁺ve
- C. Flagella
- D. Lipopolysaccharide ^{-ve}
- E. Peptidoglycan [⊖]

✓ 21. Identify the FALSE statement.

- A. The cell wall of G+ is much thicker than G-.
- B. In Gram stain, G- are blue (purple) and G+ are pink (red)
- C. G+ and NOT G- contain teichoic acid in their cell wall
- D. In Gram stain, G+ are blue (purple) and G- are pink (red)

✓ 22. All of the following statements are true of gram-positive cells except which one?

- A. Gram positive cells have more peptidoglycan
- B. Gram positive cells have endotoxin
- C. Gram positive cells are sensitive to penicillin
- D. Gram positive cells are decolorized by alcohol-acetone

✓ 23. Which of the following statements are about a gram-negative cell wall is not true?

- A. It has teichoic acids
- B. It contains an endotoxin
- C. It protects the cell from osmotic lysis
- D. It maintains the shape of the cell

✓ 24. Bacterial cell membrane DOES NOT contain:

- A. Phospholipids
- B. Proteins
- C. Glycoproteins
- D. Lipids
- E. Nucleic acids

✓ 25. Which of the following is not a characteristic of a Bacteria?

- A. All are unicellular.
- B. All are pathogenic.
- C. Cell walls are composed of peptidoglycan.
- D. Most possess cell walls

- * ✓ 26. Which of the following is considered an endotoxin?
- A. Teichoic acid
 - B. Lipopolysaccharide
 - C. Periplasm
 - D. Murein
 - E. Peptidoglycan
- ✓ 27. Bacteria differ from viruses because bacteria
- A. Have cells
 - B. Have DNA and RNA
 - C. Can live without a host
 - D. All of these
- ✓ 28. This is not a major bioelement
- A. Sulfur
 - B. Nitrogen
 - C. Hydrogen
 - D. Magnesium
 - E. Phosphate
- ✓ 29. This is not an internal structure of a bacteria
- A. Ribosome
 - B. Plasmid
 - C. Fimbriae
 - D. Nucleoid
- ✓ 30. Which are of microbiology studies fungi?
- A. Mycoology
 - B. Parasitology
 - C. Biotechnology
 - D. Immunology
 - E. Bioremediation
- ✓ 31. Cell division occurs in prokaryotes by:
- A. Budding
 - B. Meiosis
 - C. Binary Fission
 - D. Mitosis
- ✓ 32. What color should a gram-positive organism appear after Gram stain
- A. Pink
 - B. Red
 - C. Green

- D. Purple
- E. Orange

- ✓ 33. Loss of electrons means: (Biochem.)
- A. Phosphorylation
 - B. Reduction
 - C. Oxidation
- ✓ 34. The best definition of biotechnology is:
- A. The use of living organisms to make desired products
 - B. Curing diseases
 - C. The use of microorganisms in sewage treatment
 - D. The development of genetic engineering
- ✓ 35. Which of the following statements about bacteria is not true?
- A. bacteria are essential to the presence of life on Earth
 - B. Everyone has bacteria in and on his body
 - C. Bacteria are used to make some foods
 - D. The only good bacterium is a dead bacterium
- ✓ 36. Cells containing the peptidoglycan layer are susceptible to penicillin. Which part of this molecule does this antibiotic affect?
- A. Formation of peptide bridge
 - B. Synthesis of amino acids
 - C. Synthesis of Muramic acid
 - D. Synthesis of glucoseamine
- ✓ 37. The appearance of gram-negative bacteria after completing Gram stain is:
- A. Red
 - B. Brown
 - C. Purple
 - D. Colorless
- ✓ 38. Assume you have bacterial culture that requires teichoic acid in its growth medium. If teichoic acid is not provided, the bacteria will not be able to make:
- A. Cell wall
 - B. capsule
 - C. cell membrane
 - D. enzymes
- ✓ 39. The most important environmental factor affecting growth is:
- A. moisture
 - B. pH

- C. oxygen
- D. temperature

✓ 40. Which of the following statements is true?

- A. endospores are for reproduction
- B. a cell can produce many endospores
- C. endospores allow cell to survive environmental changes
- D. a cell produces one endospore and keeps growing
- E. endospores are easily stained in Gram stain

✓ ✗ 41. Which of the following is not related to bacterial cell wall?

- A. made of peptidoglycan
- B. controls water balance → *Permeability*
- C. not all bacteria have cell wall → *some bacteria are Gram-negative and do not have a cell wall*
- D. preserve shape of bacteria
- E. all of these are related to bacterial cell wall

✓ 42. Which of these organisms would not be able to grow in water that has oxygen pumped into it (aerated)?

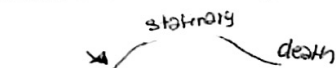
- A. Obligate aerobe
- B. Facultative aerobe
- C. Obligate anaerobe
- D. Aerotolerant anaerobe

✓ 43. Which of these microbes is most problematic to humans?

- A. Psychrophile < 10
- B. Psychrotroph
- C. Mesophile 20-40
- D. Thermophile > 60

✓ 44. At which stage of bacterial growth is cell division the most rapid?

- A. Lag
- B. Log
- C. Stationary
- D. Death



✓ 45. Which of the following is a limitation of the autoclave?

- A. Requires a long time to achieve sterilization.
- B. Cannot inactivate viruses.
- C. Cannot kill endospores.
- D. Cannot be used with heat-sensitive materials.

Handwritten notes:
 Autoclave is used for sterilization of heat-stable materials. It is not used for heat-sensitive materials. It cannot kill endospores.

46. In the disk-diffusion method, a _____ zone of inhibition around a filter soaked with a chemical indicates that the test bacteria is resistant to the chemical.

- A. small
- B. large
- C. colored
- D. clear

✓ 47. Which of the following is not used to preserve foods?

- A. Desiccation
- B. Ionizing radiation
- C. Microwaves
- D. osmotic pressure

organic acid → Sorbic
→ Benzoic Acid

✓ 48. All media needs to be free of microbes, so you need to _____ media before you use it.

- A. sterilize
- B. disinfect
- C. sanitize
- D. degerm

✓ 49. Commercial sterilization involves heat treatment to destroy _____ of bacteria.

- A. the plasma membrane
- B. peptidoglycan
- C. endospores
- D. the outer membrane

✓ 50. A sequence of DNA nucleotides which provides genetic information for a functional product is a _____.

- A. chromosome
- B. plasmid
- C. gene
- D. base pair

GENERAL MICROBIOLOGY – FIRST EXAM
2010 - 2011

7. 1) Advantages of sterilisation by ionising radiation include
- A. short sterilisation time
 - B. reliability of sterilisation
 - C. negligible rise in temperature
 - D. ability to sterilise equipment made of heat-sensitive materials, e.g. polystyrene
 - E. no deleterious effects on glassware or textile fibres
- 2) Ethylene oxide is commonly used for the sterilisation of
- A. fibre-optic endoscopes
 - B. glassware
 - C. rubber tubings and catheters
 - D. prosthetic cardiac valves
 - E. respiratory ventilators
- 3) Methicillin-resistant *Staphylococcus aureus* (MRSA)
- A. is usually sensitive to vancomycin ~
 - B. is more likely to cause deep-seated infection
 - C. is often resistant to many antistaphylococcal antibiotics
 - D. may cause asymptomatic colonisation
 - E. may be phage-typed for epidemiological purposes
- 4) Aminoglycoside antibiotics such as gentamicin ~ve
- A. act on the bacterial cell wall
 - B. are active against staphylococci ~ve
 - C. are effective in the treatment of anaerobic myositis
 - D. are contra-indicated in patients with renal impairment
 - E. may cause loss of visual acuity in the elderly
- 5) The time between inoculation and the beginning of growth is usually called the
- a) death phase
 - b) lag phase
 - c) log phase
 - d) dormant phase
6. Which of the following structures contains genes for enzymes and antibiotic resistance?
- A. Plasmid
 - B. Pilus
 - C. Capsule
 - D. Plasma Membrane
- Heart-lung machine -

7. Which of the following is the most important structure related to microbial attachment to cells?

- A. Flagellum
- B. Plasmid
- C. Peptidoglycan
- D. Glycocalyx

8. Which of the following is not a gram-negative bug?

- A. *Clostridium perfringens*
- B. *Vibrio cholerae* ✓
- C. *Escherichia coli* ✓
- D. *Bordetella pertussis* ✓

9. Which of the following is not true related to endotoxins?

- A. Endotoxins are secreted from cells.
- B. Can be linked to Meningococemia
- C. Produced by gram negative microorganisms
- D. Can cause fever

10. Which of the following microorganisms stain well?

- + A. *Escherichia coli*
- B. *Legionella pneumophila*
- C. *Treponema*
- D. *Chlamydia*

11. Which of the following is not true concerning *Staphylococcus aureus*?

- A. *S. aureus* is related to inflammation. (sinusitis, conjunctivitis, pneumonia, meningitis, osteomyelitis)
- B. *S. aureus* can cause pneumonia ✓
- C. *S. aureus* can lead to acute bacterial endocarditis ✓
- D. *S. aureus* does not make coagulase. ✓

12. During the lag phase of bacterial growth curve there is :

- * a. Increase in number
- b. Increase in size
- c. Increased metabolic rate
- d. Decreased metabolic rate

13. Which of the following bacteria can grow in very wide range of temperatures:

- a. *Pseudomonas*
- b. *Gonococcus*
- c. *Pneumococcus*

d. Spirochactes

- * 14. What is lyophilisation ?
- a. Means of destroying bacteria
 - b. A method of sterilization
 - c. Freeze drying of bacteria
 - d. Powdering of bacteria

- * 15. Following are sterilized by hot air oven except:
- a. Glassware
 - b. Swabs
 - c. Liquid paraffin
 - d. Vaccines

16. In pasteurization by holder method the temperature used is :
- a. 63.c for 30 min
 - b. 72.c for 15 seconds
 - c. 100.c for 20 minutes
 - d. 120. c for 15 minutes

- * 17. Ultraviolet rays are used for sterilizing:
- a. Operation rooms
 - b. Beds
 - c. Hospital waste
 - d. All of the above

- * 18. Disposable syringes are best sterilized by
- a. Autoclaving
 - b. Hotair oven
 - c. Chemicals
 - d. Gamma ray
- Note: hot air oven is not used for syringes as it is not a dry heat.*

19. To be effective as an antiseptic alcohol concentration used is :

- a. 100%
- b. 95%
- c. 70% - 90%
- d. 50%

- Formaldehyde 3% } Sterilization
- 2% Aqueous Glutaldehyde } 92%
- Aqueous Iodine 3-5% } Antiseptic

20. Which of the following is the most widespread method of genetic transfer among bacteria

- ? →
- a. Transformation +ve
 - b. Transduction +ve & -ve equally.
 - c. Lysogenic conversion
 - d. Conjugation -ve

21. Prokaryotic cells use _____ for locomotion.

- a) pili
- b) mitochondria
- c) flagella
- d) endospores
- e) capsules

22. Prokaryotic cells transfer genetic information to other prokaryotic cells by the use of:

- a) pili
- b) mitochondria
- c) flagella
- d) endospores
- e) capsules

23. Organisms that grow well at 55°C and have optimum growth temperatures of 70°C or higher are called:

- ? a) psychrotrophs ²⁰
- b) psychrophiles ^{<10}
- c) mesophiles ⁽²⁰⁻⁴⁰⁾
- d) thermophiles ²⁵
- ? e) microaerophiles

24. A bacterium with a single polar flagellum is called:

- a) monotrichous
- b) lophotrichous
- c) peritrichous
- d) amphitrichous
- e) spiral

25. Sporulation is initiated by the lack of nutrients in the media.

- a) true
- b) false

26. All microorganisms are best defined as organisms that:

- A. cause human disease
- B. lack a nucleus