Test bank Jawtez
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1. Which one of the following terms characterizes the interaction between herpes simplex virus and a human?

(A) Parasitism
(B) Symbiosis
(C) Endosymbiosis
(D) Endoparasitism
(E) Consortia

Ans:a

2. Which one of the following agents lacks nucleic acid?

(A) Bacteria
(B) Viruses
(C) Viroids
(D) Prions
(E) Protozoa

Ans:d

3. Which one of the following is a prokaryote?

(A) Bacteria
(B) Algae
(C) Protozoa
(D) Fungi
(E) Slime molds

Ans:a
4. Which one of the following agents simultaneously contains both DNA and RNA?

(A) Bacteria
(B) Viruses
(C) Viroids
(D) Prions
(E) Plasmids

Ans:a

5. Which of the following cannot be infected by viruses?

(A) Bacteria
(B) Protozoa
(C) Human cells
(D) Viruses
(E) None of the above

Ans:e
2. Chloramphenicol, an antibiotic that inhibits bacterial protein synthesis, will also affect which of the following eukaryotic organelles?
(A) Mitochondria
(B) Golgi complex
(C) Microtubules
(D) Endoplasmic reticulum
(E) Nuclear membrane

Ans:a

3. Which of the following structures is not part of the bacterial cell envelope?
(A) Peptidoglycan
(B) Lipopolysaccharide
(C) Capsule
(D) Gas vacuole
(E) S-layer

Ans:d
5. Which of the following components is present in Gram-negative bacteria but not in Gram-positive bacteria?

(A) Peptidoglycan
(B) Lipid A
(C) Capsule
(D) Flagella
(E) Pili

Ans:b

6. Group A streptococci are the most common bacterial cause of pharyngitis in school-age children 5–15 years of age. The most important cell component involved in adherence of this bacteria to fibronectin, which covers the epithelial surface of the nasopharynx is:

(A) Capsule
(B) Lipoteichoic acid
(C) Flagella
(D) Lipoprotein
(E) O-antigen

Ans:b
8. Which of the following terms does NOT describe the bacterial chromosome?

(A) Haploid
(B) Diploid
(C) Circular
(D) Nucleoid
(E) Feulgen positive

Ans:b

1. A 23-year-old woman has 10 E. coli introduced into her bladder while having sex. This organism has a generation time of 20 minutes. After a lag of 20 minutes, the E. coli enter the logarithmic phase of growth. After 3 hours, the total number of cells is

(A) 2056
(B) 5012
(C) 90
(D) 1028
(E) 1,000,000

Ans:a
2. A 73-year-old woman is admitted to the hospital for intravenous treatment of an abscess caused by Staphylococcus aureus. Subsequent to her treatment and discharge from the hospital, it is necessary to disinfect the hospital room. One thousand of the S. aureus cells are exposed to a disinfectant. After 10 minutes, 90% of the cells are killed. How many cells remain viable after 20 minutes?

(A) 500
(B) 100
(C) 10
(D) 1
(E) 0

Ans: c

3. The action of which of the following agents or processes on non-spore forming bacteria can be reversed?

(A) A disinfectant
(B) A bactericidal agent
(C) A bacteriostatic agent
(D) Autoclaving at 121°C for 15 minutes
(E) Dry heat at 160–170°C for 1 hour

Ans: c
4. The growth rate of bacteria during the exponential (log) phase of growth is
(A) Zero
(B) Increasing
(C) Constant
(D) Decreasing
(E) Negative

Ans: c

8. Your superior requests that you sterilize some surgical instruments. Which one of the following agents would you use?
(A) Benzoic acid (2%)
(B) Isopropyl alcohol (2%)
(C) Glutaraldehyde (2%)
(D) Hydrogen peroxide (2%)
(E) Quaternary ammonium compound (2%)

Ans: c
9. The growth rate of bacteria during the maximum stationary phase of growth is
(A) Zero
(B) Increasing
(C) Constant
(D) Decreasing
(E) Negative

Ans:a

10. Chemical agents can interfere with the normal reaction between a specific enzyme and its substrate (chemical antagonism). Which one of the following inhibits energy-yielding cellular processes?
(A) 5-Methyltryptophan
(B) Cyanide
(C) Hydrogen peroxide
(D) Ethanol
(E) Lysozyme

Ans:b
11. Which of the following is the most resistant to destruction by chemicals and heat?

(A) Spores of Aspergillus fumigatus
(B) Mycobacterium tuberculosis
(C) Ebola virus
(D) E. coli
(E) Spores of Bacillus anthracis

Ans:e

1. Mutations in bacteria can occur by which of the following mechanisms?

(A) Base substitutions
(B) Deletions
(C) Insertions
(D) Rearrangements
(E) All of the above

Ans:e
2. The form of genetic exchange in which donor DNA is introduced to the recipient by a bacterial virus is
(A) Transformation
(B) Conjugation
(C) Transfection
(D) Transduction
(E) Horizontal transfer

Ans:d

3. The enzyme DNAse degrades naked DNA. If two strains of bacteria from the same species were mixed in the presence of DNAse, which method of gene transfer would be the most likely inhibited?
(A) Conjugation
(B) Transduction
(C) Transformation
(D) Transposition
(E) All of the above

Ans:c
5. The formation of a mating pair during the process of conjugation in E. coli requires
   (A) Lysis of the donor
   (B) A sex pilus
   (C) Transfer of both strands of DNA
   (D) A restriction endonuclease
   (E) Integration of a transposon

Ans:b

2. An 11-year-old boy develops a mild fever and pain in his upper arm. A radiograph of his arm shows a lytic lesion (dissolution) in the upper part of the humerus with periosteal elevation over the lesion. The patient is taken to surgery, where the lesion is debrided (dead bone and pus removed). Culture from the lesion yields Gram-positive cocci. A test shows that the organism is a Staphylococcus and not a Streptococcus. Based on this information, you know the organism is
   (A) Susceptible to nafcillin
   (B) β-Lactamase positive
   (C) A producer of protein A
   (D) Encapsulated
   (E) Catalase positive

Ans:e
3. A 36-year-old male patient has an abscess with a strain of S. aureus that is β-lactamase positive. This indicates that the organism is resistant to which of the following antibiotics?
(A) Penicillin G, ampicillin, and piperacillin
(B) Trimethoprim-sulfamethoxazole
(C) Erythromycin, clarithromycin, and azithromycin
(D) Vancomycin
(E) Cefazolin and ceftriaxone

Ans:a

7. A 16-year-old bone marrow transplant patient has a central venous line that has been in place for 2 weeks. He also has a urinary tract catheter, which has been in place for 2 weeks as well. He develops fever while his white blood cell count is very low and before the transplant has engrafted. Three blood cultures are done, and all grow S. epidermidis. Which one of the following statements is correct?
(A) The S. epidermidis organisms are likely to be susceptible to penicillin G.
(B) The S. epidermidis organisms are likely to be from the surface of the urinary tract catheter.
(C) The S. epidermidis organisms are likely to be resistant to vancomycin.
(D) The S. epidermidis organisms are likely to be from a skin source.
(E) The S. epidermidis organisms are likely to be in a biofilm on the central venous catheter surface.

Ans:e
9. Antimicrobial resistance has become a significant problem. Which one of the following is of major concern worldwide?

(A) Nafcillin resistance in S. aureus

(B) Penicillin resistance in Streptococcus pneumoniae

(C) Penicillin resistance in Neisseria gonorrhoeae

(D) Vancomycin resistance in S. aureus

(E) Tobramycin resistance in Escherichia coli

Ans:d

11. Which of the following statements regarding the role of protein A in the pathogenesis of infections caused by S. aureus is correct?

(A) It is responsible for the rash in toxic shock syndrome.

(B) It converts hydrogen peroxide into water and oxygen.

(C) It is a potent enterotoxin.

(D) It is directly responsible for lysis of neutrophils.

(E) It is a bacterial surface protein that binds to the Fc portion of IgG1.

Ans:e
1. A 48-year-old alcoholic man is admitted to a hospital because of stupor. He is unkempt and homeless and lives in an encampment with other homeless people, who called the authorities when he could not be easily aroused. His temperature is 38.5°C, and his blood pressure 125/80 mm Hg. He moans when attempts are made to arouse him. He has positive Kernig and Brudzinski signs, suggesting meningeal irritation. Physical examination and chest radiography show evidence of left lower lobe lung consolidation. An endotracheal aspirate yields rust-colored sputum. Examination of a Gram-stained sputum smear shows numerous polymorphonuclear cells and numerous Gram-positive lancet-shaped diplococci. On lumbar puncture, the cerebrospinal fluid is cloudy and has a white blood cell count of 570/µL with 95% polymorphonuclear cells; Gram-stain shows numerous Gram-positive diplococci. Based on this information, the likely diagnosis is

(A) Pneumonia and meningitis caused by S. aureus
(B) Pneumonia and meningitis caused by S. pyogenes
(C) Pneumonia and meningitis caused by S. pneumonieae
(D) Pneumonia and meningitis caused by E. faecalis
(E) Pneumonia and meningitis caused by Neisseria Meningitides

Ans:c
6. An 8-year-old boy develops a severe sore throat. On examination, a grayish-white exudate is seen on the tonsils and pharynx. The differential diagnosis includes group A streptococcal infection, Epstein-Barr virus infection, severe adenovirus infection, and diphtheria. (Neisseria gonorrhoeae pharyngitis would also be included, but the patient has not been sexually abused.) The cause of the boy’s pharyngitis is most likely
(A) A catalase-negative Gram-positive coccus that grows in chains
(B) A single-stranded positive-sense RNA virus
(C) A catalase-positive Gram-positive coccus that grows in clusters
(D) A catalase-negative Gram-positive bacillus
(E) A double-stranded RNA virus

Ans:a

9. Important methods for classifying and speciating streptococci are
(A) Agglutination using antisera against the cell wall groupspecific substance
(B) Biochemical testing
(C) Hemolytic properties (α-, β-, nonhemolytic)
(D) Capsular swelling (quellung) reaction
(E) All of the above

Ans:e
12. Enterococci can be distinguished from nonenterococcal group D streptococci on the basis of which of the following characteristics?

(A) γ-Hemolysis

(B) Esculin hydrolysis

(C) Growth in 6.5% NaCl

(D) Growth in the presence of bile

(E) Gram-stain morphology

Ans:c

3. A 17-year-old girl with cystic fibrosis has a slight increase in her frequent cough and production of mucoid sputum. A sputum specimen is obtained and plated on routine culture media. The predominant growths are Gram-negative bacilli that form very mucoid colonies after 48 hours of incubation. These bacilli are oxidase positive, grow at 42°C, and have a grapelike odor. These Gram-negative bacilli are which of the following?

(A) K. pneumoniae

(B) P. aeruginosa

(C) Staphylococcus aureus

(D) Streptococcus pneumoniae

(E) B. cepacia

Ans:b
6. A 37-year-old firefighter sustains smoke inhalation and is hospitalized for ventilatory support. He has a severe cough and begins to expectorate purulent sputum. Gram-stain of his sputum specimen shows numerous polymorphonuclear cells and numerous Gram-negative rods. Sputum culture grows numerous Gram-negative rods that are oxidase positive. They grow well at 42°C. On clear agar medium, they produce a green color in the agar. The agar where the green color is located fluoresces when exposed to ultraviolet light. The organism causing the patient’s infection is

(A) P. aeruginosa
(B) K. pneumoniae
(C) Escherichia coli
(D) B. cepacia
(E) B. pseudomallei

Ans: a

7. The mechanism of action of exotoxin A of P. aeruginosa is

(A) To activate acetylcholine esterase
(B) To block elongation factor 2
(C) To form pores in white blood cells and increase cation permeability
(D) To increase intracellular cyclic adenosine monophosphate
(E) To split lecithin into phosphorylcholine and diacylglycerol

Ans: b
11. A 3-month-old infant is brought to the pediatric emergency department in severe respiratory distress. The child appears dehydrated, and there is a prominent peripheral lymphocytosis. The chest radiograph reveals perihilar infiltrates. The child’s grandmother, who watches the infant now that the mother has returned to work, has had a dry hacking cough for about 2 weeks. The most likely causative agent is

(A) H. influenzae type b  
(B) B. pertussis  
(C) Streptococcus agalactiae  
(D) C. pneumoniae  
(E) B. bronchiseptica

Ans:b

14. Which of the following is not a recognized virulence factor of B. pertussis?

(A) Heat-labile toxin  
(B) Filamentous hemagglutinin  
(C) Tracheal cytotoxin  
(D) Pertussis toxin  
(E) Dermonecrotic toxin

Ans:a
9. Which of the following cell components produced by N. gonorrhoeae is responsible for attachment to host cells?

(A) Lipooligosaccharide
(B) Pili (fimbriae)
(C) IgA1 protease
(D) Outer membrane porin protein
(E) Iron-binding protein

Ans:b

12. A 25-year-old woman presents with septic arthritis of the knee. The fluid aspirate grows a Gram-negative diplococcus on chocolate agar after 48 hours of incubation. The isolate is oxidase positive and oxidizes glucose but not maltose, lactose, or sucrose. You suspect infection with

(A) N. meningitidis
(B) N. lactamica
(C) M. catarrhalis
(D) N. gonorrhoeae
(E) None of the above

Ans:d
7. Which one of the following groups of antimicrobial agents acts on microorganisms by inhibiting protein synthesis?
(A) Fluoroquinolones
(B) Aminoglycosides
(C) Penicillins
(D) Glycopeptides (eg, vancomycin)
(E) Polymyxins

Ans:b

14. All of the following are common mechanisms of resistance to the penicillins except
(A) Production of β-lactamases
(B) Alterations in target receptors (PBPs)
(C) Inability to activate autolytic enzymes
(D) Failure to synthesize peptidoglycans
(E) Methylation of ribosomal RNA

Ans:e
1. A mother states that she has observed her 4-year-old son scratching his anal area frequently. The most likely cause of this condition is
(A) T. vaginalis
(B) E. vermicularis
(C) A. lumbricoides
(D) N. americanus
(E) E. histolytica
Ans:b

10. A 32-year-old male tourist traveled to Senegal for 1 month. During the trip, he swam in the Gambia River. Two months after his return, he began complaining of intermittent lower abdominal pain with dysuria. Laboratory results of ova and parasites revealed eggs with a terminal spine. Which of the following parasites is the cause of the patient’s symptoms?
(A) T. gondii
(B) S. mansoni
(C) S. haematobium
(D) A. lumbricoides
(E) T. solium
Ans:c
11. What type of specimen was collected for laboratory analysis based on the answer in the previous question?
(A) Thick blood smear
(B) Stool sample
(C) Urine sample
(D) Blood for serology
(E) Sputum sample

Ans:c