1.	A millimeter is equivalent to how many nanometers?
A)	1,000
B)	10,000
C)	100,000
D)	1,000,000

2.	Assume that a pinhead is 1 mm in diameter. How many spherical bacteria (cocci), lined up side-by-side, would fit across the pinhead. (Hint: Use information from Table 2-1.)
A)	100
B)	1,000
C)	10,000
D)	100,000

3.	What is the length of an average rod-shaped bacterium (bacillus)?
A)	3 μm
B)	3 nm
C)	0.3 mm
D)	0.03 mm

4.	What is the total magnification when using the high-power (high-dry) objective of a compound light microscope equipped with a × 10 ocular lens?
A)	40
B)	50
C)	100
D)	400

5.	How many times better is the resolution of the transmission electron microscope than the resolution of the unaided human eye?
A)	1,000
B)	10,000
C)	100,000

D)	1,000,000

6.	How many times better is the resolution of the transmission electron microscope than the resolution of the compound light microscope?
A)	100
B)	1,000
C)	10,000
D)	100,000

7.	How many times better is the resolution of the transmission electron microscope than the resolution of the scanning electron microscope?
A)	100
B)	1,000
C)	10,000
D)	100,000

8.	The limiting factor of any compound light microscope (i.e., the thing that limits its resolution to 0.2 μm) is the:
A)	number of condenser lenses it has.
B)	number of magnifying lenses it has.
C)	number of ocular lenses it has.
D)	wavelength of visible light.

9.	Which one of the following individuals is given credit for developing the first compound microscope?
A)	Anton van Leeuwenhoek
B)	Hans Jansen
C)	Louis Pasteur
D)	Robert Hooke

10.	A compound light microscope differs from a simple microscope in that the compound light microscope contains more than one:
A)	condenser lens.
B)	magnifying lens.
C)	objective lens.
D)	ocular lens.

Use the following to answer questions 11-15:

Match the following items with the correct phrases.

a. 10
b. 100
c. 1,000
d. 1,000,000
e. 1,000,000,000

11.	The number of nanometers in a micrometer.

12.	The resolving power of the compound light microscope is _____ times better than the resolving power of the unaided eye.

13.	The number of micrometers in a millimeter.

14.	The resolving power of the transmission electron microscope is _____ times better than the resolving power of the scanning electron microscope.

15.	The resolving power of the transmission electron microscope is _____ times better than the resolving power of the unaided eye.

Use the following to answer questions 16-20:

Match the following items with the correct phrases.

a. 0.2 nm
b. 20 nm
c. 0.2 µm
d. 1 µm
e. 0.2 mm

16.	The width of a typical coccus.
17.	The resolving power of the unaided eye.
18.	The resolving power of the scanning electron microscope.
19.	The resolving power of the transmission electron microscope.
20.	The resolving power of the compound light microscope.

21.	Anton van Leeuwenhoek is given credit for developing the first compound light microscope.
A)	True
B)	False

22.	The wavelength of visible light limits the size of objects that can be seen with the compound light microscope.
A)	True
B)	False

23.	The resolving power of compound light microscopes can be improved by adding additional magnifying lenses.
A)	True
B)	False

24.	A brightfield microscope can be converted to a darkfield microscope by replacing the condenser on a brightfield microscope with a darkfield condenser.
A)	True
B)	False

25.	Transmission electron microscopes are used to study surface features.
A)	True
B)	False

26.	Primary syphilis is usually diagnosed in the clinical microbiology laboratory by the use of a scanning electron microscope.
A)	True
B)	False

27.	A magnifying glass could be considered a simple microscope.
A)	True
B)	False

28.	The total magnification achieved when the oil immersion lens is used is 1,000 ×.
A)	True
B)	False

29.	Fluorescence microscopy is often used in immunology laboratories.

A)	True
B)	False

30.	The resolving power of electron microscopes is much better than that of compound light microscopes because the wavelength of electrons is much longer than that of visible light.
A)	True
B)	False

31.	The approximate resolving power of the unaided human eye is:
A)	0.2 cm.
B)	0.2 mm.
C)	0.2 μm.
D)	0.2 nm.

32.	The approximate resolving power of the compound light microscope is:
A)	0.2 cm.
B)	0.2 mm.
C)	0.2 μm.
D)	0.2 nm.

33.	The reason that better resolution cannot be achieved with the compound light microscopes used in the lab (i.e., the limiting factor of the compound light microscope) is the:
A)	"high-tech" capabilities of the company that we purchased them from.
B)	manner in which the objective lenses were ground.
C)	fact that the eyepiece (ocular) magnification is only ×10.
D)	wavelength of visible light.

34.	The total magnification achieved in the laboratory when using the high-power (high-dry) objective of the compound light microscope is:
A)	40×.
B)	100×.
C)	400×.
D)	1,000×.

35.	The total magnification achieved in the laboratory when using the oil immersion objective of the compound light microscope is:
A)	40×.
B)	100×.
C)	400×.
D)	1,000×.

36.	Which one of the following statements is *not* true?
A)	The scanning electron microscope is used to examine the surfaces of various objects and its resolving power is approximately 20 nm.
B)	The transmission electron microscope is used to examine very thin sections of various specimens and its resolving power is approximately 1,000 times better than the resolving power of the unaided human eye.
C)	0.5 mm = 500 μm = 500,000 nm.
D)	Better resolution can be achieved using transmission electron microscopes than can be achieved using scanning electron microscopes.

37.	The unit of measure usually used to describe bacterial size is:
A)	millimeters.
B)	micrometers.

C)	nanometers.
D)	angstroms.

Answer Key

1.	D
2.	B
3.	A
4.	D
5.	D
6.	B
7.	A
8.	D
9.	B
10.	B
11.	c
12.	c
13.	c
14.	b
15.	d
16.	d
17.	e
18.	b
19.	a
20.	c
21.	B
22.	A
23.	B
24.	A
25.	B
26.	B
27.	A
28.	A
29.	A
30.	B
31.	B
32.	C
33.	D
34.	C

35.	D
36.	B
37.	B