PLB 101 CBT FULL AND UPDATED PAST QUESTIONS

COLLATED ACCORDING TO SYLLABUS

1998 – 2015

1

The arrangement of microtubules in eukaryotic flagella is referred to as

A) undulating

B) basal

C) 9+2

D) ciliary

2

Which of the following is not a characteristic of prokaryotes?

A) DNA

B) cell membrane

C) cell wall

D) endoplasmic reticulum

3

The term "nuclear envelope" is more correct than the term "nuclear membrane" because

A) the enclosure has pores which membranes do not

B) the enclosure is made up of two membranes

C) the chemical composition is inconsistent with cellular membranes

D) None of the above. The two terms are perfect synonyms.

4

Oxidative metabolism is carried out ____ of mitochondria.

A) in the intermembrane space

B) on the surface of the inner membrane

C) in the inside of the outer membrane

D) in the matrix

5

Ribosomes are made up of ____ subunits.

A) 0 (They are whole.)

B) 2

C) 3

D) 4

6

Proteins synthesized by the rough ER are

A) for internal storage

B) to build more membranes in the cell

C) to digest food in lysosomes

D) for internal regulation

E) exported from the cell

7

Plants differ from animals in that plants have

A) an endoplasmic reticulum

B) a central vacuole

C) Golgi complexes

D) vesicles

E) organelles

8

Passage through pores in the nuclear envelope is restricted primarily to

A) proteins, RNA, and protein-RNA complexes

B) lipids and glycolipids

C) DNA and RNA

D) RNA and protein-carbohydrate complexes

E) marker proteins for the plasma membrane

9.

In bacteria, some of the functions of eukaryotic cells are performed by

A) vesicles

B) lysosomes

C) mitochondria

D) nucleoli

E) the plasma membrane

10

Glycoproteins and glycolipids assembled in Golgi bodies are packaged for distribution in

A) cisternae

B) lysosomes

C) peroxisomes

D) liposomes

E) glyoxysomes

11

Within chloroplasts, light is captured by

A) grana within cisternae

B) thylakoids within grana

C) cisternae within grana

D) grana within thylakoids

E) none of the above

12

The rough ER is so named because it has an abundance of _____ on it.

A) mitochondria

B) lysosomes

C) Golgi bodies

D) ribosomes

E) vesicles

13

With which of the following are basal bodies not associated?

A) animal cells

B) centrioles

C) plant cells

D) tubulin

E) microtubules

14

Depolymerization of microtubules is inhibited by

A) kinesin

B) dyneins

C) actin

D) guanosine triphosphate

E) vimentin

15

Bacteria may be propelled by

A) rotating thread-like flagellum

B) cilia

C) undulating 9+2 type flagellum

D) gel-sol changes in the cytoplasm

E) an undulating thread-like flagellum

16

The bacterial cell wall is composed of

A) a phospholipid matrix

B) a lipoprotein

C) a polymer of sugars

D) chitin

E) a structural protein

17

Unlike those of prokaryotes, eukaryotic cell walls are composed of

A) a carbohydrate matrix cross-linked by short polypeptides

B) glycolipids and protein fibers

C) cellulose fibers embedded in a matrix

D) chitin

E) proteins and histones

18

A gram-negative bacterium is enclosed by

A) a single thick wall

B) a single thin wall

C) a double thick wall

D) a double thin wall

E) no wall, just a plasma membrane

19

The cytoplasm of a bacterium

A) is supported by the cytoskeleton

B) is supported by microtubules

C) is supported by keratin

D) has no internal support structure

E) is supported by folds in the interstitial membrane

20

A gram-positive bacterium is stained _____ by the gram stain

A) pink

B) purple

C) blue

D) green

E) red

21

Clusters of rRNA where ribosomes are assembled are called

A) nuclei

B) cisternae

C) nucleoli

D) Golgi complexes

E) centrioles

22

Mitochondrial enzymes for oxidative metabolism are

A) on or within the surface of cristae

B) located on the outer membrane

C) in the matrix

D) floating freely in intermembrane space

E) in mitochondrial lysosomes

23

The smooth ER is especially abundant in cells that synthesize extensive amounts of

A) toxins

B) proteins

C) enzymes

D) lipids

E) nucleic acids

24

Enzymes embedded in the membrane of the smooth ER

A) synthesize lipids

B) may be used for detoxification

C) synthesize carbohydrates

D) mostly are active only when associated with a membrane

E) all of the above

25

Which of the following organelles is found in plant cells but not in animal cells?

A) ribosomes

B) endoplasmic reticulum

C) mitochondria

D) peroxisomes

E) None of the above

26

Most cells are very small. A typical eukaryotic cell, both plant and animal, will occur in which of the following size ranges?

A) 1 mm to 100 μm

B) 100 μm to 10 μm

C) 10 μm to 1 μm

D) 1 μm to 100 nm

E) 100 nm to 10 nm

27

A cell that measures 200 μm in diameter compared to a cell that measures 20μm will have 100 times the surface area but 1000 times the volume.

A) True

B) False

28

Because they have chloroplasts for energy production, plant cells lack mitochondria.

A) True

B) False

29

Assuming all other factors to be the same, electron microscopes have greater resolving power than light microscopes because.

A) the wavelength of electrons is much longer than the wavelength of visible light

B) electron microscopes have more lenses

C) because the beams in electron microscopes overlap creating a clearer picture

D) because the wavelengths in visible light are longer than with electrons

E) because electron microscopes are compound microscopes

30

Bacterial flagella propel the cell by using

A) a whipping-like motion

B) two flagella that move in opposite directions, like a flutter kick

C) a rotating motion

D) a flicking motion

E) none of the above

31

Which characteristic do eukaryotic and prokaryotic flagella have in common?

A) chemical composition

B) structure

C) location in the cell

D) function

E) source of energy

32

The microtubules of cilia and flagella are organized in a characteristic 9 + 2 pattern, and they slide past one another.

A) True

B) False

33

Proteins lacking a signal peptide sequence will probably be secreted from the cell.

A) True

B) False

34

According to the endosymbiotic theory, the infoldings and specializations of the plasma membrane led to the evolution of the endomembrane system.

A) True

B) False

35

The cytoskeleton includes all of the following except

A) microtubules

B) intermediate filaments

C) myosin filaments

D) actin filaments

E) all of the above are included

36

Ribosomes are found

A) only in the nucleus

B) in the cytoplasm

C) attached to the smooth endoplasmic reticulum

D) only in eukaryotic cells

E) both b and c

37

The Golgi apparatus is involved in

A) transporting proteins that are to be released from the cell

B) packaging proteins into vesicles

C) altering or modifying proteins

D) producing lysosomes

E) all of the above

CONTINUATION:

1. The cell theory is one of the unifying themes of biology. Which of the following statements would be part of the

cell theory?

A) All life is made of cells. B) Cells are the smallest units of life.

C) Cells come from preexisting cells. D) All of the above

2. You are told that the cells on a microscope slide are plant, animal, or bacterial. You look at them through a microscope and see cell walls and membrane-bound organelles. You conclude that the cells

A) are plant cells. B) could be either

plant or bacterial. C) are animal cells.

D) could be plant, animal, or

bacterial. E) are bacteria.

3) All cells

A) are enclosed in a membrane that maintains internal conditions different from the surroundings.

B) can interconvert chemical materials.

C) have DNA as the genetic material.

D) can interconvert

forms of energy.

E) All of the choices are correct.

4) Cells are small because

as cell size increases, the

A) volume and surface area decrease. B) volume increases

faster than the surface area.

C) surface area and volume increase at the same rate.

D) surface area increases faster than the volume.

5) The diameter of most animal

and plant cells ranges from

A) 1.0 to 10 microns. B) 0.01 to 0.1 microns. C) 10 to 100 microns.

D) 100 to 1000 microns. E) 0.1 to 1.0 microns.

6) The image on the left is a picture of

a single-celled organism named Euglena. The

specimen was viewed with a(n)

A) Light microscope

B) Fluorescence microscope

C) Transmission electron microscope

D) Scanning electron microscope

E) Dissecting microscope

7) Light microscopes

A) work by reflecting electrons off the surface of an object being studied.

B) can generally magnify objects about 10,000 times without blurring.

C) use light and glass lenses to magnify an image.

D) typically provide more resolution than an electron microscope.

E) All of the choices are correct.

8) A scraping of material from a person

's tooth revealed many b

acteria found on the tooth surface. Such bacteria

remain attached to the tooth surface by structures called

A) pili B) anchoring junctions C) mitochondria D) flagella

9) Rods, spheres and spirals are shapes of cells observed in

A) plants B) animals C) fungi D) bacteria

10) Cells without a membrane-bound nucleus and memb

rane systems in the cytoplasm are _____ cells.

A) prokaryotic B) eukaryotic

C) fungal D) protest E) more

than one answer is correct

11) Most organelles in a eukaryotic cell are found in the

A) cell wall B) cytoplasm C) nucleus D) capsule

12) A bacterial cell's DNA is found in its

A) capsule. B) nucleoid region.

C) nucleus. D) ribosomes.

E) Bacteria do not have DNA

13) Which one of the following is not

found in prokaryotic cells?

A) ribosomes B) a membrane-bound nucleus C) a cell wall

D) a capsule E) pili

14) Bacteria do not have a nucleus. Since the nucleus contains DNA, it can be concluded that bacteria do not

contain DNA.

A) True B) False

15) The nucleus of a cell

A) is the region of the cell

where ribosomes are degraded.

B) contains DNA and controls cell activities

C) is contained inside the nucleolus.

D) is surrounded by a single layer of membrane.

16) Organelles found outside a eukaryotic cell and usually involved in movement of the cell or movement of

substances past the cell are called

A) cilia and flagella B) Cell walls and plasmodesmata

C) Nucleus and nucleolus D) cytoplasm and endoplasm

17) In eukaryotic cells, internal membranes

A) provide additional area where ma

ny metabolic processes occur.

B) form membranous compartments called organelles.

C) contain proteins essential for metabolic processes.

D) greatly increase a cell's total membrane area.

E) All of the choices are correct.

18) The Golgi apparatus stores, modifies, and packages proteins and other products of metabolism.

A) True B) False.

19) When a cell is deprived of oxygen, its lysosomes tend to burst and release their contents into the cell. (This

statement is true.) As a result of this, that cell would be expected to

A) undergo self-digestion and die. B) recycle damaged organelles.

C) produce additional ER. D) undergo cell division.

E) produce replacement lysosomes.

20) Rough endoplasmic reticulum

A) contains ribosomes for protein synthesis.

B) creates an enormous surface area for cell metabolism

C) contains a compartment to transfer

and modify products of metabolism

D) all of the above

21) The function of mitochondria is

A) intracellular transport of proteins. B) photosynthesis. C) intracellular digestion. D) cellular respiration (ATP synthesis) E) lipid synthesis.

22) Insulin is a protein that is produced by certain pancreatic cells and secreted into the bloodstream. (This is true.)

Which of the following choices best describes the route of insulin from its production to its exit from the cell?

A) rough ER, transport vesicles, cell membrane

B) rough ER, transport vesicles, Golgi apparatus, transport vesicles, cell membrane

C) rough ER, lysosomes, transport vesicles, cell membrane

D) rough ER, Golgi apparatus, smooth ER, cell membrane

23) Lysosomes

A) destroy harmful bacteria engulfed by white blood cells.

B) help to digest worn-out or damaged organelles.

C) recycle materials within the cell.

D) fuse with food vacuoles to expose nutrients to lysosomal enzymes.

E) All of the choices are correct.

24) The function of chloroplasts is

A) intracellular transport of proteins. B) intr

acellular digestion. C) lipid synthesis.

D) photosynthesis. E) cellular respiration.

25) The cytoskeleton is a system of ___ in ___ cells.

A) proteins – prokaryotic B) proteins – eukaryotic

C) DNA – prokaryotic D) DNA – eukaryotic

D) more than one answer is correct

26) Microtubules, microfilaments and intermediate filaments are components of the

A) cell wall in plants B) plasma membrane in prokaryotes

C) chromosome in eukaryotes

D) chromosome in prokaryotes

D) cytoskeleton

27) Which of the following functions could be assigned to the cytoskeleton?

A) chromosome movement during mitosis.

B) change in shape of an amoeba.

C) movement (streaming) of cytoplasm in plant cells

D) A & B

E) A, B & C

28) Eukaryotic cells have transport vesicles, endoplasmic reticulum, Golgi apparatus and a nuclear envelope.

Taken together, all these membranes represent the

A) transfer system B) nuclear system

C) endomembrane system

D) cytoskeletal system

29) The membranous compartmentalization of a cell

A) allows different metabolic processes to occur simultaneously.

B) divides the cell into two equal-sized halves.

C) requires the presence of a cell wall.

D) is common in prokaryotes and eukaryotes.

E) requires the presence of

a large central vacuole.

30) Unlike animal cells, plant cells have _____ and _____ and _____.

A) chloroplasts . . . cell walls... mitochondria.

B) centrioles . . . cell walls... glycocalyx

C) chloroplasts . . . cell walls... vacuoles

D) centrioles . . . chloroplasts... vacuoles

E) chloroplasts . . . cell walls... nucleoplasm

31) The functions of the central vacuole of plant cells include _____

A) storing pigments that will help attract pollinating insects.

B) storing poisons.

C) storing products of metabolism (e.g. sugar in sugar beet root cell vacuoles)

D) helping increase the size of cells by absorbing wa

ter and producing pressure (turgor) against the wall.

E) All of the choices are correct.

32) The fluid mosaic model describes the plasma membrane as consisting of

A) two layers of phospholipids with protein sandwiched between them.

B) a protein bilayer with embedded phospholipids.

C) a phospholipid single layer with embedded proteins

D) a phospholipid bilayer with embedded proteins

33) Membrane phospholipids

A) have hydrophilic heads that face outward and are exposed to water.

B) have hydrophobic tails that face inward and are shielded from water.

C) Both A & B are correct

D) None of the choices are correct.

34) The cholesterol associated with cell membranes

A) is attached to membrane proteins and extends into the watery environment surrounding the cell.

B) helps to stabilize the cell membrane at higher or lower temperature.

C) is an abnormality resulting from

a diet high in cholesterol.

D) makes the cell membrane fluid at room temperature.

E) None of the choices are correct.

35) Low density lipoproteins (LDL's or bad cholesterol) are taken up "in-bulk" into the cytoplasm of a cell. This process is an example of

A) endocytosis. B) exocytosis

C) molecular transport. D) osmosis. E) diffusion.

36) Diffusion does not require the cell to expend ATP. Therefore, diffusion is considered a type of

A) endocytosis. B) exocytosis. C) ac

tive transport. D)

passive transport.

37) Which of the following is not a true

statement about diffusion? Diffusion

A) occurs from a high to a low concentration B) occurs from a low to a high concentration

38) A major function of glycoproteins and glycolipids in the cell membrane is to

A) allow the cells to recognize each other. B) help the cell retain its shape.

C) help the cell resist swelling. D) glue cells together to form

tissues. E) attach the cell membrane to the cytoskeleton.

39) The act of a white blood

cell engulfing a bacterium is

A) endocytosis B) exocytosis. C) osmosis. D) diffusion.

40) Which one of the following is not a function of the plasma membrane? The plasma membrane

A) has receptors for chemical messages.

B) plays a role in signal transduction.

C) is involved in self-recognition. D) is the control center of the cell.

E) forms a selective barrier around the cell.

41) Which one of the following is

Not a function of membrane proteins? Membrane proteins

A) provide cellular identification tags. B) attach the membrane to the cytoskeleton.

C) serve as enzymes.

D) form junctions between cells.

E) All of the choices are membrane protein functions.