# Human Anatomy 8th Edition Marieb Test Bank

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.



# Figure 2.1

Use the diagram above to answer the following questions.

1) Which letter indic	ates the rough endoplasmic	reticulum?		
A) A	B) B	C) C	D) D	E) E
Answer: C				
2) Which letter indic	ates the nucleolus?			
A) A	B) B	C) C	D) D	E) E
Answer: A				
3) Which letter indicates the plasma membrane?				
A) A	B) B	C) C	D) D	E) E
Answer: B				
4) Which letter indic	ates the mitochondrion?			
A) A	B) B	C) C	D) D	E) E
Answer: E				
5) Which letter indic	ates the Golgi apparatus?			
A) A	B) B	C) C	D) D	E) E
Answer: D				

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Use the diagram above to answer the following questions.

6) Which letter indic	cates the DNA molecule	?		
A) A	B) B	C) C	D) D	E) E
Answer: A				
7) Which letter india	cates the chromatid?			
A) A	B) B	C) C	D) D	E) E
Answer: D				
8) Which letter india	cates a nucleosome?			
A) A	B) B	C) C	D) D	E) E
Answer: C				
9) Which letter indic	cates histones?			
A) A	B) B	C) C	D) D	E) E
Answer: B				

10) Which letter indicates the metaphase chromosome?

- A) A B) B C) C D) D E) E
- Answer: E
- 11) This organelle is involved in production of cellular energy.
  - A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome

Answer: D

12) This organelle is characterized by folded membranes called cristae.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: D

13) When a phagocytic white blood cell ingests a foreign bacterial cell, the vesicle fuses with this organelle.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: B

14) This membranous organelle is the site of protein synthesis for proteins that are secreted by the cell.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: C

15) This organelle detoxifies a number of toxic substances.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome
- Answer: E

16) Cisternae of this organelle are continuous with the nuclear envelope.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: C

17) This organelle has both a cis and a trans face.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: A

18) This membranous organelle contains oxidase and catalase enzymes.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: E

19) These organelles are often called the "demolition crew" of the cell.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: B

- 20) This organelle primarily modifies products from the rough ER, and it resembles a stack of hollow saucers, one cupped inside the next.
  - A) Golgi apparatus
  - B) lysosome
  - C) rough endoplasmic reticulum
  - D) mitochondria
  - E) peroxisome

Answer: A

21) This organelle is primarily a sac of powerful digestive enzymes called acid hydrolases.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: B

22) This organelle is defective in the inherited disorder Tay-Sachs disease.

- A) Golgi apparatus
- B) lysosome
- C) rough endoplasmic reticulum
- D) mitochondria
- E) peroxisome

Answer: B

23) This organelle is numerous in liver and kidney cells. A) Golgi apparatus B) lysosome C) rough endoplasmic reticulum D) mitochondria E) peroxisome Answer: E 24) This organelle produces ATP molecules. A) Golgi apparatus B) lysosome C) rough endoplasmic reticulum D) mitochondria E) peroxisome Answer: D 25) This organelle contains a single DNA molecule and is capable of self-replication. A) Golgi apparatus B) lysosome C) rough endoplasmic reticulum D) mitochondria E) peroxisome Answer: D 26) Mitosis refers only to nuclear division. Separation of the entire cell following mitosis is B) karyokinesis. C) meiosis. D) telophase. A) cytokinesis. Answer: A 27) Phospholipids of the plasma membrane are arranged A) as a bilayer with their nonpolar tails sandwiched between the polar heads. B) around a central layer of cholesterol. C) in a single layer with polar heads facing outwards. D) as a bilayer with their polar heads sandwiched between the nonpolar tails. Answer: A 28) Which of the following cytoskeleton elements are the largest in diameter? A) microtubules B) centrioles C) microfilaments D) intermediate filaments Answer: A 29) Which of the following statements about integral proteins in the plasma membrane is *false*? A) Most extend all the way through the membrane. B) They determine which molecules are transported through the membrane. C) They are more abundant by volume than the membrane phospholipids. D) Some attach to the glycocalyx. Answer: C 30) Which type of endocytosis ingests the most specific type of molecule? A) phagocytosis B) fluid-phase endocytosis C) receptor-mediated endocytosis D) pinocytosis Answer: C

31) Hormones are secreted by	P) com cois	() avegratesis	D) nin a natasia
A) pnagocytosis.	D) OSMOSIS.	C) exocytosis.	D) pinocytosis.
Allswei. C			
<ul><li>32) Of the following, the only</li><li>A) centriole.</li><li>C) endoplasmic reticulu</li><li>Answer: B</li></ul>	organelle that has a double m ım.	embrane structure is the B) mitochondrion. D) Golgi apparatus.	
<ul><li>33) Functions of the Golgi app</li><li>A) production of secreto</li><li>C) synthesis of lysosom</li><li>Answer: D</li></ul>	paratus include all of the follow ory granules. es.	wing <i>except</i> B) plasma membrane for D) DNA replication.	mation.
<ul><li>34) Which of the following sta</li><li>A) It stores lipids as incl</li><li>B) It consists of stacked</li><li>C) It makes the digestiv</li><li>D) It makes the integral</li><li>Answer: A</li></ul>	tements about the rough endo lusions. envelopes called cisternae. e enzymes contained in the ly proteins of the cell membrane	oplasmic reticulum is <i>false?</i> vsosomes. e.	
35) Which of the following is a A) microfilament C) centriole Answer: C	<i>10t</i> a cytoskeleton element?	B) microtubule D) intermediate filament	
36) Which type of proteins are A) SNARE proteins Answer: A	e required for exocytosis? B) caveolin	C) coatomer proteins	D) clathrin
27) In chromatin the DNA me	loculo wraps around protoing	s called	
A) nucleotides. Answer: C	B) integral protein.	C) histones.	D) codons.
38) In the cell life cycle, DNA A) interphase S.	is replicated during B) prophase II.	C) prophase I.	D) interphase G <sub>1</sub> .
Answer: A			
<ul><li>39) The longest arrays of micr</li><li>A) kinetochores.</li><li>C) asters.</li><li>Answer: B</li></ul>	otubules that assemble from e	each centrosome during proph B) mitotic spindle fibers. D) the nuclear envelope.	ase form filaments called
<ul> <li>40) During anaphase, motor p</li> <li>A) form the aster.</li> <li>B) pull together the rep</li> <li>C) re-form the nuclear of</li> <li>D) pull the chromosomory</li> <li>Answer: D</li> </ul>	roteins attached to mitotic spi licated chromosomal strands. envelope. es to opposite poles of the cell	indle fibers serve to	

41) The reticulum.	face of the G	olgi apparatus is	to receive spherical vesicles fro	om the rough endoplasmic
A) cis; co Answer: A	nvex	B) trans; concave	C) trans; convex	D) cis; flattened
42) Which mem A) peroxi C) smoot Answer: C	nbranous organ isome h endoplasmic	elle stores calcium and is a reticulum	a primary site of lipid metabolis B) mitochondrion D) Golgi apparatus	m?
43) Which orga A) lysoso	nelle is importa me	ant in neutralizing free rad B) mitochondrion	licals? C) peroxisome	D) Golgi apparatus
Allswel. C				
44) Which of th A) protei B) regula C) transc D) separa Answer: D	e following stat n synthesis ition of passage ription of DNA ation of nucleop	tements accurately describ of substances into and ou plasm and cytoplasm	es the function of the nuclear er t of the cell membrane	velope?
45) Peroxisome A) synthe C) store o Answer: A	s function to esize and degra cellular free rad	de hydrogen peroxide. icals.	B) regulate membrane D) produce pigments.	permeability.
46) Dyneins and A) enable B) resist C) move D) are mo Answer: C	d kinesins are n e a cell to send o pulling forces th organelles alon plecular compo	notor proteins that out and retract extensions hat are placed on cells. Ig microtubules through th nents of telomeres.	called pseudopods. ne cytoplasm.	
47) Cell division A) a build B) a build C) a build D) two bu Answer: C	n is analogous t ding forming ar ding forming ar ding duplicatin uildings duplica	to nother building by randon nother building through a g its blueprint and then fo ating their parts and fusin	n accumulation of materials. loss of some of its parts. rming a new building by splitting. g.	ng in two.
48) The plasma A) it acts B) it sepa C) it dete D) it is ar Answer: D	membrane is in as a site for cell arates the ECF f armines what su a important site	mportant for all the follow l-to-cell interaction and re rom the ICF. ibstances enter and exit th for DNA transcription.	ring reasons <i>except</i> ecognition. e cell.	
49) The plasma A) glycop Answer: C	membrane is c proteins.	omposed of all of the follo B) cholesterol.	owing <i>except</i> C) tubulin protein.	D) phospholipids.

50) Materials that are to be exocyte	osed by cells are enclosed in v	vesicles synthesized by the	
A) nucleosome.	B) ribosome.	C) mitochondrion.	D) Golgi apparatus.
Answer: D			
51) Which of the following does <i>n</i>	ot pass through nuclear pores	?	
A) chromatin	B) proteins	C) messenger RNA	D) ribosomal RNA
Answer: A			
52) Which of the following is asso	ciated with protein synthesis?		
A) smooth endoplasmic reti	culum	B) chloroplasts	
C) mitochondria		D) ribosomes	
Answer: D			
53) Ribosomes may be either free	within the cytoplasm or boun	d to a membrane system kno	wn as the
A) Golgi apparatus.	1	B) cytoskeleton.	
C) rough endoplasmic retic	ulum.	D) microtubule organizing (	center.
Answer: C			
54) Which is <i>not</i> part of interphase	?		
A) S	B) M	C) G <sub>1</sub>	D) G2
Answer: B			
<ul> <li>55) Embedded in the plasma mem</li> <li>A) stabilize the membrane.</li> <li>B) participate in pinocytosis</li> <li>C) make the membrane mon</li> <li>D) destabilize the membrane</li> <li>Answer: A</li> </ul>	ibrane of cells, cholesterol mo s. re resistant to freezing. .e, leading to heart attacks.	lecules act to	
56) The endocytotic process in wh	ich small vesicles of fluid are	brought into the cell is called	
A) exocytosis.	B) phagocytosis.	C) xenocytosis.	D) pinocytosis.
Answer: D			
57) The double membrane structu	re is unique to the		
A) nucleolus.	B) peroxisome.	C) mitochondrion.	D) lysosome.
Answer: C			
<ul><li>58) Peroxisomes</li><li>A) are the toxic waste removes</li><li>B) synthesize proteins for u</li><li>C) are involved in the production</li><li>D) contain some of the code Answer: A</li></ul>	val system of the cell. se outside the cell. uction of ATP. necessary for their own dupl	ication.	
59) The stiffest elements of the cvt	oskeleton, analogous to the b	ones of the human body, are	
A) the cytosol.		B) microtubules.	
C) microfilaments.		D) intermediate filaments.	
Answer: B			

(0) The mitatic arights formed from the	
60) The mitotic spinale forms from the	$\mathbf{D}$ , $\mathbf{D}$
A) centrosome matrix.	B) nucleolus.
C) Golgi apparatus.	D) nucleus.
Answer: A	
<ul><li>61) The nuclear envelope is continuous with the rough A) consists of tubes, like the smooth ER.</li><li>B) has unique pores.</li><li>C) consists of two membranes separated by a sp</li><li>D) is not associated with ribosomes.</li></ul>	ER, but it differs from the rough ER in that it acce.
Answer: B	
62) Membrane-bound organelles have the same type	of membrane as the plasma membrane event
A) for the absence of a glycocally	B) the nonpolar tails face outward
C) for the absence of cholosterol	D) they are all covered with ribesomes
C) for the absence of cholesterol.	D) they are an covered with hoosomes.
Answer: A	
63) In the process of phagocytosis, the organelles who	se enzymes break down ingested foreign cells are the
A) peroxisomes.	B) lysosomes.
C) nucleoli.	D) smooth endoplasmic reticulum.
Answer: B	
<ul><li>64) During mitosis, the kinetochore microtubules of the A) push the two poles of the cell apart.</li><li>B) anchor the centriole to the cell membrane.</li><li>C) attach to chromatids and align them at the maximum D) push on the chromatids.</li><li>Answer: C</li></ul>	e mitotic spindle etaphase plate.
65) The theory proposing that aging results from the e	ffects of free radicals is primarily a theory of
A) wear and tear.	B) cross–linking of glucose.
C) genetically programmed aging.	D) progressive disorder of immunity.
Answer: A	
66) The cytoskeletal elements that are analogous to the contractile forces in conjunction with myosin are	e muscles of the body which generate pseudopodia and
A) intermediate filaments.	B) microtubules.
C) integral proteins.	D) microfilaments.
Answer: D	
67) Transcription of DNA requires the presence of	
A) centrosomes.	B) histones.
C) extended chromatin.	D) nucleosomes.
Answer: C	,
68) The process of cellular aging may involve all of the	e following except
A) excessive metabolic rate.	b) progressive shortening of telomeres.
C) accumulated damage by free radicals.	<i>D</i> ) decreased production of tysosomes.
Answer 1)	

	D) late prophase
	, , , , , , , , , , , , , , , , , , , ,
a ring to "squeeze" the two daughter cel B) microfilame D) intermediat	lls apart during cytokinesis are ents. te filaments.
s the DNA duplicated? haphase C) metaphase	D) interphase
closing the plasma.	
euron. C) macrophag	e. D) sperm cell.
	_
plasm include all of the following <i>excep</i> B) lipid drople D) pigments.	ot ets.
n, <i>not</i> an organelle?	D) microtubule
	a ring to "squeeze" the two daughter ce B) microfilame D) intermediat is the DNA duplicated? naphase C) metaphase shelves or cristae. at surrounds the nucleus of the cell. iclosing the plasma. e cell. d controls body functions is a euron. C) macrophag oplasm include all of the following <i>excep</i> B) lipid drople D) pigments.

Answer: True 📀 False

77) Hypercholesterolemia is an inherited disease in which the body's cells lack the protein receptors that bind to cholesterol-delivering LDLs.

Answer: 📀 True 🛛 False

78) Ribosomes consist of two subunits, each surrounded by a membrane.

Answer: True 📀 False

- 79) Peroxisomes are important in detoxification of a number of toxic substances, for instance, hydrogen peroxide.Answer: True False
- 80) The nucleolus serves as the cell's ribosome-producing machine. Answer: • True False

- 81) Microtubules are composed of actin.
  - Answer: True 📀 False
- 82) Chromatin is composed of DNA wound around proteins known as actin.Answer: True **Q** False
- 83) An example of a type of cell with high rates of mitosis is a cell of the skin.Answer: TrueFalse
- 84) During the S phase, cells are characterized by rapid growth.Answer: True **O** False
- 85) During the G<sub>1</sub> phase, DNA is replicated in the cytoplasm. Answer: True • False
- 86) Telomeres are structures that limit the maximum number of times cells can divide.Answer: O True False
- 87) Extended chromatin is tightly wound around histones.Answer: True False
- 88) A mitotic spindle develops during early telophase of mitosis.Answer: True False
- 89) During anaphase, the chromosomes are moved to the center of the cell.Answer: True **Q** False
- 90) Cytokinesis is the physical division of the cytoplasm between the two newly formed cells that result from mitosis.

Answer: 📀 True 🛛 False

#### SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

91) This phase is the physical division of the cytoplasm between the two newly formed cells that result from mitosis.

Answer: cytokinesis

- 92) What is the transport mechanism by which substances move from the cytoplasm to the outside of the cell? Answer: exocytosis
- 93) Cell aging may be related to production of what charged molecules produced by the mitochondria? Answer: radicals (free radicals)
- 94) Identify the two different types of membrane–associated molecules that comprise the glycocalyx. Answer: glycolipids and glycoproteins
- 95) What would extended chromatin wrapped around a group of eight histones be called? Answer: a nucleosome

- 96) This is the phase in which a cell grows and carries on all its usual metabolic activities. Answer: G1 phase of interphase
- 97) These are the smallest living units in the body. Answer: cells
- 98) This is the outermost continuous boundary of a human cell. Answer: plasma membrane (plasmalemma)
- 99) This is the name for the currently held theory describing the plasma membrane structure. Answer: fluid mosaic model
- 100) The phospholipid molecules of the plasma membrane are primarily composed of \_\_\_\_\_\_. Answer: a non-polar tail comprised of 2 fatty acid chains attached to a polar head
- 101) This network of rods running throughout the cytosol acts as a cell's "bones," "muscles," and "ligaments." Answer: cytoskeleton
- 102) This is the mechanism by which large particles and macromolecules enter a cell. Answer: endocytosis
- 103) This is the diffusion of water molecules across a membrane. Answer: osmosis
- 104) This is the type of protein involved in transport mechanisms across the plasma membrane. Answer: integral proteins (transmembrane proteins)
- 105) This is an inherited disease that leads to an accumulation of undigested glycolipids especially in the lysosomes of neurons.

Answer: Tay–Sachs disease

## ESSAY. Write your answer in the space provided or on a separate sheet of paper.

- 106) Differentiate phagocytosis from receptor-mediated endocytosis.
  - Answer: In phagocytosis, the cell extends pseudopods and engulfs the foreign protein/foreign cell, which is often degraded after the phagocytic vesicle fuses with a lysosome. In receptor-mediated endocytosis, specific membrane receptors bind specific extra-cellular molecules. Once bound, the membrane deforms inward, creating a vesicle with the receptors and molecules inside. The vesicle contents are released into the cytoplasm or fuse with a lysosome, with the receptors recycled back to the membrane.
- 107) Describe how cellular differentiation results in structural variation among cells in the human body.
  - Answer: Cellular differentiation is the result of highly regulated gene activation/inactivation in the developing embryo. The products of gene activation are proteins. As the embryo develops, certain cells will begin to produce proteins that neighboring cells do not produce. As development progresses, these unique protein "signatures" lead to differences in cellular function. For example, in muscle cells actin and myosin proteins predominate which results in their unique contractile properties.

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- 108) Describe the two checkpoints that occur during interphase.
  - Answer: The G<sub>1 checkpoint</sub> ensures that the cell has reached a maximum size and has replicated the necessary organelles and enzymes to synthesize DNA. The G<sub>2 checkpoint</sub>, checks to see whether replication errors or DNA damage has occurred during DNA synthesis.
- 109) Describe the mitochondria.
  - Answer: These are long, thin organelles, that have their own DNA molecule which allows for self-replication. They produce ATP molecules, which are the equivalent of cellular energy. They are bound by two membranes. The inner one is highly folded into cristae, where many of the critical molecules involved in ATP production are imbedded.
- 110) Describe the three major types of cytoskeletal elements.
  - Answer: Microtubules are the largest in diameter and are formed by the protein tubulin. They are stiff, but bendable. Microtubules are important in the trafficking of organelles within the cytoplasm. Microfilaments are the smallest in diameter. They are strands of the protein actin, are contractile proteins, which are typically very labile. Intermediate filaments are of intermediate diameter. They are very stabile and permanent, functioning to resist shearing forces within and between adjacent cells.