

مراجعة شاملة لأساسيات الخلية والمجهر والغشاء البلازمي



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ⇨ المناهج الإماراتية ⇨ الصف التاسع المتقدم ⇨ أحياء ⇨ الفصل الأول ⇨ ملفات متنوعة ⇨ الملف

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ملفات اكتب للمعلم اكتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل
منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي للمدرس

المزيد من مادة
أحياء:

التواصل الاجتماعي بحسب الصف التاسع المتقدم



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف التاسع المتقدم والمادة أحياء في الفصل الأول

أسئلة على درس الذرات والعناصر والمركبات _ بريدج

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18-10-2026

GRADE 9 ADVANCED BIOLOGY

Lessons 1–2 • Higher-Skill Review

Cell Theory & Microscopy | Plasma Membrane & Membrane Functions

50-Question Challenge Review

20 Multiple Choice • 15 True/False • 15 Fill in the Blank

Focus: evidence, application, comparison, prediction, structure–function relationships, and cross-lesson synthesis.

Directions

Work independently first. For the multiple-choice section, choose the answer that is best supported by the lesson concepts—not simply the answer that sounds familiar. For True/False, correct any false statement in your notes. For Fill in the Blank, use precise biological terminology.

Name: _____ Date: _____



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اضمن تفوقك من بداية العام

Section A — Multiple Choice

The questions are intentionally more scenario-based. Use evidence from structure, function, and the stated microscope or membrane properties.

1. A student observes a specimen with a light microscope. The image becomes larger when the objective lens is changed, but two nearby structures still appear as one blurred structure. Which conclusion is best supported?

- ☒ A. Magnification increased, but resolution did not improve enough to separate the structures.
- B. Resolution increased, but magnification decreased enough to hide the structures.
- C. The specimen became more transparent, so the microscope lost magnification.
- D. The microscope converted the specimen into a three-dimensional surface image.

2. A microscope has an ocular lens of 10x and an objective lens of 40x. A student says the total magnification is 50x because the two values are added. Which response is most accurate?

- A. The student is correct because microscope lenses are always additive.
- ☒ B. The student is incorrect because the lens magnifications are multiplied.
- C. The student is correct only when the specimen is a living cell.
- D. The student is incorrect because total magnification is always 40x.

False

3. A researcher needs to examine the internal ultrastructure of a very thin, dead specimen. Which instrument and reasoning best match the investigation?

- A. SEM, because it scans the surface to produce detailed external structure.
- ☒ B. TEM, because electrons pass through thin specimens to reveal internal detail.
- C. Optical microscope, because visible light always resolves organelles best.
- D. STM, because it directly reveals internal membranes in living cells.

4. A scientist wants a detailed, three-dimensional view of the surface of a specimen rather than a view through it. Which choice is most appropriate?

- A. TEM, because electrons pass through the specimen.
- ☒ B. SEM, because it scans the specimen's surface.
- C. Compound light microscope, because it always produces 3-D images.
- D. STM, because it is designed primarily for tissue sections.

5. A student claims that Hooke discovered living cells because he named the boxlike structures in cork. Which evaluation is strongest?

- A. The claim is supported because cork is made only of living cells.
- ☒ B. The claim is unsupported because Hooke observed nonliving cell walls in cork.
- C. The claim is supported because Hooke used an electron microscope.
- D. The claim is unsupported because Hooke observed only animal tissues.



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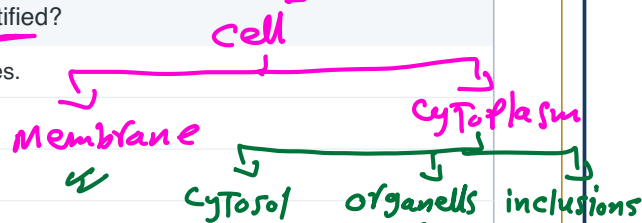
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6. Two unknown cells are examined. Cell X has a nucleus and membrane-bound organelles. Cell Y lacks a nucleus and membrane-bound organelles. Which inference is most justified?

- A. Both are prokaryotic because every cell lacks membrane-bound structures.
- B. Both are eukaryotic because every cell contains a nucleus.
- ☒ C. X is eukaryotic and Y is prokaryotic based on their internal organization.
- D. X is prokaryotic and Y is eukaryotic because smaller cells have nuclei.



7. A new observation shows that every sample of a particular organism contains cells, but one sample contains only a single cell. Which cell-theory principle is most directly supported?

- ☒ A. All organisms are made of one or more cells.
- B. All cells contain a membrane-bound nucleus.
- C. All cells have identical shapes and functions.
- D. All organisms must contain many specialized tissues.

→ First principle. ~~XX~~ ~~XX~~

8. A researcher proposes that cells can routinely form from nonliving material inside an existing organism. Which evidence from cell theory most directly contradicts the proposal?

- A. Cells are the basic unit of structure and organization.
- B. All organisms contain one or more cells.
- ☒ C. Cells arise from previously existing cells.
- D. Cells can contain specialized structures and molecules.

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9. A student compares prokaryotic and eukaryotic cells and writes: "The major difference is that prokaryotes have no DNA." Why is this statement flawed?

- ☒ A. Prokaryotes contain DNA, but it is not enclosed in a membrane-bound nucleus.
- B. Prokaryotes contain no genetic information of any kind.
- C. Eukaryotes are the only cells that contain genetic material.
- D. DNA is found only inside the plasma membrane of eukaryotes.

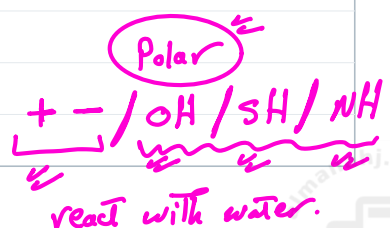
10. A membrane is placed in a watery environment. Phospholipid heads face the water on both sides while the fatty-acid tails face inward. Which explanation best accounts for this arrangement?

- A. The heads are nonpolar and avoid water, while the tails attract water.
- ☒ B. The heads are polar and interact with water, while the tails are nonpolar.
- C. Both heads and tails are polar, so either orientation would be equally stable.
- D. The tails contain carbohydrates that chemically attract water molecules.



11. Suppose the fatty-acid tails of membrane phospholipids suddenly became strongly polar. Which prediction is most reasonable?

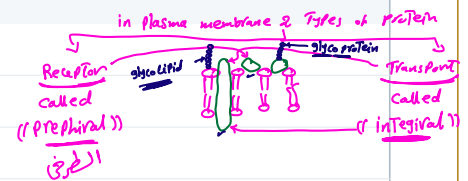
- ☒ A. The bilayer's usual organization would be disrupted because the tails would interact differently with water.
- B. The membrane would become identical to a cell wall because polarity creates rigidity.
- C. The nucleus would disappear because membrane polarity controls DNA replication.
- D. The membrane would stop containing proteins because proteins are always nonpolar.



receptor

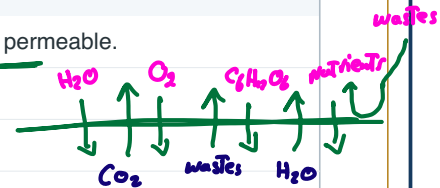
12. A cell's receptor protein binds a specific signal molecule outside the cell. Which conclusion best connects structure to function?

- (A) The receptor can contribute to cell signaling by recognizing an external molecule.
- B. The receptor must be a phospholipid because all membrane components are lipids.
- C. The receptor directly stores the cell's genetic information.
- D. The receptor prevents every substance from crossing the membrane.



13. A membrane contains many transport proteins. A student concludes that the membrane must allow every substance to cross freely. Which correction is best?

- (A) Transport proteins can assist specific substances while the membrane remains selectively permeable.
- B. Transport proteins remove the phospholipid bilayer and replace it with water.
- C. Transport proteins make all substances equally soluble in the membrane.
- D. Transport proteins eliminate the need for membrane receptors.



14. A researcher removes cholesterol from a membrane and observes that the membrane's physical behavior changes. Which lesson-based role of cholesterol is most relevant?

- (A) It helps regulate membrane fluidity by affecting interactions among phospholipid tails.
- B. It serves as the genetic material used to build new cells.
- C. It forms the carbohydrate layer that identifies every cell.
- D. It acts as the main channel through which all ions pass.

15. Which situation best demonstrates selective permeability rather than simple physical separation?

- (A) A membrane permits some substances to cross while restricting others.
- B. A microscope enlarges an image without changing the specimen.
- C. A nucleus contains DNA inside a eukaryotic cell.
- D. A phospholipid contains both polar and nonpolar regions.

16. A student draws the fluid mosaic model as a rigid sheet in which every protein is fixed permanently in one position. What is the key problem with the drawing?

- (A) It ignores the dynamic nature of membrane components and their varied arrangement.
- B. It incorrectly shows that phospholipids contain no fatty-acid tails.
- C. It incorrectly shows that the membrane contains any proteins at all.
- D. It ignores the fact that all membranes are made only of carbohydrates.

1- phospholipids. 3- proteins.
 2- Carbs. 4- cholesterol.

17. A cell has functioning phospholipids but loses a membrane protein required for a particular substance to cross. Which prediction is most defensible?

- (A) The membrane may still exist, but movement of that particular substance may be impaired.
- B. The cell will automatically become prokaryotic because proteins define nuclei.
- C. All substances will cross faster because fewer proteins create more channels.
- D. The phospholipid heads will immediately change from polar to nonpolar.

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18. A scientist compares two cells. Cell A has many surface carbohydrates attached to membrane components. Cell B has very few. Which statement is most consistent with the membrane lesson?

- ☒ A. The carbohydrate-containing structures can contribute to cell recognition and identification.
- B. Cell A must be prokaryotic because carbohydrates occur only in prokaryotes.
- C. Cell B cannot have a plasma membrane because carbohydrates are required for all membranes.
- D. The carbohydrates must be located in the hydrophobic center of the bilayer.

many → one

19. Which observation would provide the strongest combined evidence that a cell is eukaryotic and has a plasma membrane with specialized functions?

- ☒ A. A nucleus is present and membrane proteins are involved in transport or signaling.
- B. A plasma membrane is present and the cell has no genetic material.
- C. The cell is microscopic and therefore must contain membrane-bound organelles.
- D. The cell is small and therefore must be prokaryotic with no membrane proteins.

True nucleus

20. A student is asked to connect both lessons in one explanation. Which statement is the strongest synthesis?

- ☒ A. Microscopy helped scientists build evidence about cells, while membrane structure explains how cells interact with and regulate their environment.
- B. Microscopy explains how phospholipids are synthesized, while cell theory explains how microscopes magnify images.
- C. Cell theory applies only to eukaryotes, while plasma membranes occur only in prokaryotes.
- D. Microscopes replace the need for cell theory because cell structures can always be observed directly.

cell theory + membrane



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Section B – True or False

Decide whether each statement is accurate. Pay attention to words such as *always*, *every*, *only*, and *necessarily*.

- ✓ 1. A microscope can increase magnification without necessarily increasing the ability to distinguish two very close structures. TRUE ☒ FALSE ☐
- ✓ 2. The total magnification of a two-lens microscope is found by adding the magnifications of its lenses. TRUE ☐ FALSE ☒
- ✓ 3. Hooke's cork observations helped introduce the term cell, but the cork structures he observed were not living cells. TRUE ☐ FALSE ☒
- ✓ 4. A TEM is better suited than an SEM for examining internal details of a thin specimen. TRUE ☐ FALSE ☒
- ✓ 5. An SEM is primarily used to reveal the internal contents of a cell by electrons passing through it. TRUE ☐ FALSE ☒
- ✓ 6. A cell can be classified as eukaryotic based on evidence that it contains a membrane-bound nucleus. TRUE ☐ FALSE ☒
- ✓ 7. The absence of a nucleus is consistent with a prokaryotic cell. TRUE ☐ FALSE ☒
- ✓ 8. The cell theory says that every organism must contain many cells. TRUE ☐ FALSE ☒
- ✓ 9. Phospholipid heads interact favorably with water, while their nonpolar tails avoid water. TRUE ☐ FALSE ☒
- ✓ 10. If phospholipid tails were strongly attracted to water, the usual bilayer arrangement would be expected to change. TRUE ☐ FALSE ☒
- ✓ 11. The fluid mosaic model describes the plasma membrane as completely rigid and permanently fixed. *strong solid* TRUE ☐ FALSE ☒ *flexible*
- ✓ 12. Transport proteins can give certain substances pathways across a selectively permeable membrane. *peripheral protein.* TRUE ☐ FALSE ☒
- ✓ 13. A receptor protein can help a cell respond to a signal outside the cell. TRUE ☐ FALSE ☒
- ✓ 14. Cholesterol has no effect on the physical behavior or fluidity of the plasma membrane. TRUE ☐ FALSE ☒
- ✓ 15. Selective permeability means that the membrane can regulate movement rather than allowing every substance to cross equally. TRUE ☐ FALSE ☒


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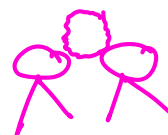
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Section C — Fill in the Blank

Complete each statement with the most precise term from the lessons.

- ✓ 1. A microscope's ability to distinguish two very close structures is called resolution.
- ✓ 2. Total magnification in a two-lens microscope is found by multiply the lens magnifications.
- ✓ 3. Hooke observed the boxlike structures in thin slices of Cork.
- ✓ 4. Cells without a membrane-bound nucleus are classified as prokaryotes.
- ✓ 5. Cells with a nucleus and membrane-bound organelles are classified as eukaryotes.
- ✓ 6. A microscope that uses electrons passing through a thin specimen is a Transmission electron microscope.
- ✓ 7. A microscope that scans the surface of a specimen to create detailed surface images is a Scanning electron microscope.
- ✓ 8. The plasma membrane is organized as a phospholipid bilayer.
- ✓ 9. The phospholipid heads are polar and interact with water.
- ✓ 10. The fatty-acid tails are nonpolar and tend to avoid water.
- ✓ 11. The model describing the membrane as dynamic with a varied arrangement of components is the fluid mosaic model.
- ✓ 12. Membrane proteins that assist movement of particular substances are called Transport proteins.
- ✓ 13. Proteins that recognize external chemical signals can function as membrane receptors.
- ✓ 14. Cholesterol helps regulate membrane fluidity.
- ✓ 15. The membrane property that allows some substances through while restricting others is called selective permeability.

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