1. Which of the following is **unique to plant cells** and not found in animal cells?
   A) Ribosomes
   B) Mitochondria
   C) Cell wall
   D) Endoplasmic reticulum

2. Which organelle is **most directly involved** in synthesizing proteins for export from the cell?
   A) Smooth ER
   B) Rough ER
   C) Golgi apparatus
   D) Free ribosomes

3. A protein destined for secretion is synthesized by:
   A) Free cytoplasmic ribosomes
   B) Mitochondrial ribosomes
   C) Ribosomes on rough ER
   D) Lysosomal enzymes

4. Which cytoskeletal component is primarily responsible for **chromosome separation** during mitosis?
   A) Actin filaments
   B) Intermediate filaments
   C) Microtubules
   D) Myosin

5. The **fluid mosaic model** of the plasma membrane includes:
   A) Static arrangement of phospholipids
   B) Rigid proteins embedded in a rigid bilayer
   C) Dynamic phospholipids and proteins moving laterally
   D) A triple phospholipid layer with cholesterol pores

6. Which organelle is involved in **modifying and packaging** proteins?
   A) Golgi apparatus
   B) Lysosome
   C) Peroxisome
   D) Nucleolus

7. Which of the following structures is **not bound by a membrane**?
   A) Nucleus
   B) Ribosome

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C) Lysosome
D) Mitochondrion

8. In eukaryotic cells, **DNA is primarily located** in the:
   A) Golgi body
   B) Nucleolus
   C) Nucleus
   D) Rough ER

9. Which of the following statements about the **nuclear envelope** is TRUE?
   A) It is continuous with the plasma membrane
   B) It contains nuclear pores for RNA export
   C) It surrounds the nucleolus directly
   D) It contains DNA in its membranes

10. Which cell structure is most involved in **detoxification of drugs and alcohol** in liver cells?
    A) Lysosome
    B) Smooth ER
    C) Rough ER
    D) Golgi

11. Which structure is found in **prokaryotic cells** but not eukaryotic?
    A) Nucleoid
    B) Endoplasmic reticulum
    C) Golgi apparatus
    D) Lysosome

12. Which component of the cytoskeleton provides **tensile strength** and maintains the integrity of the nuclear envelope?
    A) Microfilaments
    B) Microtubules
    C) Intermediate filaments
    D) Actin fibers

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13. Describe the pathway a secretory protein follows from synthesis to secretion.

14. Explain the role of ribosomes and differentiate between free and bound ribosomes.

15. What is the function of the nucleolus?

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16. Why do mitochondria and chloroplasts have their own DNA? Name one implication of this.
17. What are the structural and functional differences between rough ER and smooth ER?
18. Compare the plasma membrane structure in eukaryotes and prokaryotes.
19. Describe two functions of the cytoskeleton in eukaryotic cells.
20. What is the role of the Golgi apparatus in protein sorting and modification?
21. Explain why the inner mitochondrial membrane is highly folded.
22. How does the presence of cholesterol affect membrane fluidity?
23. What is the difference between peripheral and integral membrane proteins?
24. Describe the process of endocytosis and how it differs from exocytosis.
25. How do lysosomes maintain an acidic environment, and why is this important?

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26. Identify the site of transcription and translation.
27. Provide a labeled diagram of the fluid mosaic model and describe each component.
28. Compare animal and plant cells using a Venn diagram: include at least 3 differences and 3 similarities.

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31. A mutation disrupts the function of kinesin motor proteins. Predict how this would affect intracellular transport.
32. A drug inhibits Golgi function. What effects would this have on protein secretion and lysosome formation?
33. In a microscopy study, you observe cells lacking visible nuclei and membrane-bound organelles. Are these prokaryotic or eukaryotic? Justify your answer.
34. A cell is placed in a hypotonic solution and begins to swell. Explain what is occurring at the membrane level.
35. A scientist uses GFP (green fluorescent protein) to tag a newly discovered protein and observes its movement from the ER to the Golgi to the membrane. What does this indicate about the protein's function?