

# Biology: Tissues, Organs, and Systems of Living Things

## Review I: Cells, Organelles & Cell Cycle

SNC2DE\_17-18

1. Explain the difference between prokaryotic and eukaryotic cells.
2. State the three components of the cell theory.
3. Define the term organelle.
4. Why are cells so small?
5. What organelle contains the chromatin? What is its function?
6. What are the purposes of the mitochondria, Golgi bodies, centrioles and endoplasmic reticulum?
7. Explain the difference between diffusion and osmosis.
8. What is the chemical name of DNA?
9. Explain what is meant by DNA, gene, chromatin, chromosome.
10. Name three differences in the organelles of plants and animal cells.
11. Explain the process of photosynthesis. State the name of the organelle unique to plants that is essential to this process. Write a balanced chemical equation for the process of photosynthesis.
12. Explain what happens during cellular respiration.
13. Explain why a cell divides, rather than just continuing to grow larger.
14. During which phases does a cell spend most of its time in?
15. What is the purpose of mitosis?
16. What process takes place during the S phase of the cell cycle?
17. Explain why DNA must coil up before the cell can divide. (*if the DNA did not coil up, it might get tangled or damaged during metaphase and anaphase.*)
18. Explain why the DNA must replicate before the cell begins to divide. (*All daughter cells must contain the same amount of DNA as the parent. If the DNA did not replicate, the number of chromosomes would be halved each time the cell divides.*)
19. When will the nucleus tell the cell to NOT divide?
20. Identify stage of mitosis that is best for examining the number of chromosomes, and explain why.
21. What organelle moves the chromosomes around during mitosis?
22. Where do spindle fibres come from? (*Centrosomes*)
23. What are the stages of mitosis in order, and explain what happens in each stage?
24. Which structure connects centrosomes to the centromeres of chromosomes during mitosis?
25. What cell process immediately follows mitosis?
26. During which stage of cell division do the cell cytoplasm and organelles divide?
27. What is the difference between plant and animal cell cytokinesis?
28. Explain the difference between chromatin, chromosomes, chromatids, sister chromatids, and daughter chromosomes.
29. Explain what is meant by the word tumour, malignant tumour and benign tumour.
30. How do tumours affect surrounding tissue?
31. Explain the connection between mitosis and cancer.
32. Name three carcinogens.
33. Explain why radiation is considered to be a mutagen and carcinogenic.
34. What is the process in which cancer cells break away from the original (primary) tumour and move to a different part of the body?
35. What are the differences between cancer cells and normal healthy cells?
36. List the ABCDE's of moles.
37. Explain why cancer is rare even though mutations happen constantly in cells. (*Many mutations in cells are necessary to cause it to become cancerous. Also most mutations are repaired during the cell cycle checkpoints.*)
38. What are the screening methods for cancer?
39. Explain what biophotonics are and some applications.
40. What is apoptosis? Explain why this process is necessary.