Answers to Review for Test (Mitosis, Cell Reproduction & Meiosis)

Multiple Choice p. 257 – 258 # 1 - 10:

1. D	2. C	3. B	4. C	5. C
6. A	7. B	8. B	9. A	10. A

Short Answer #12, 14, 17, 18, 22, 24, 25:

12. When a cell is small, the information stored in its DNA is able to meet all of the cell's needs. But if a cell were to grow without limit, and "information crisis" would occur. *Recall the "library" analogy from class; as the population of a town increases, greater demands are put on the information in the library, so sometimes people have to wait to borrow a book.*

14. A cell's ratio of surface area to volume decreases as it grows larger. This means that the area available for diffusion also decreases. Thus, if a cell grows too large, it is unable to take in all needed materials and expel all its wastes. These problems impose limits on the growth of a cell.

17. During interphase, a cell increases in size and synthesizes new proteins and organelles (G_1); replicates its chromosomes (S); and prepares for cell division by producing needed spindle proteins (G_2).

18. The genetic information that is passed on from one generation of cells to the next is carried by chromosomes, which are made up of DNA. Before cell division, chromosomes are replicated, so that each chromosome consists of two identical sister chromatids. Sister chromatids are attached at an area called the centromere.

22. Yes, new cells will replace the removed cells because of the process of cell division, which will continue until the new cells come in contact with other cells. When that occurs, cell division will stop.

24. The consequences of uncontrolled cell growth are severe, as in cancer, for example.

25. Cancer cells do not respond to the signals that regulate the growth of most cells. As a result, they form masses of cells called tumors that can damage the surrounding tissues.

Multiple Choice p. 283 #7, 8, 9 7. D 8. D 9. D

Short Answer # 19, 20

19. Meiosis is a process of reduction division in which the number of chromosomes per cell is cut in half through the separation of homologous chromosomes.

20. DNA replicates during interphase so that during meiosis I, all of the chromosomes are doubled and consist of duplicate chromosomes (sister chromatids). At anaphase I, the homologous chromosomes separate, with the sister chromatids still together, as two haploid daughter cells form. During meiosis II, the sister chromatids separate to produce four haploid cells.