Life Sciences 11 Review Checklist

Name:

Check the items you feel most confident with, and focus on items you are least confident with. *Start with your notes and assignments first,* then fill in details with your textbook if you are unclear on the information in the notes.

Scientific Method, Cells and Cell Processes (p. 8 – 15, p. 169 - 185)

- □ Conduct a controlled experiment
- □ Describe Protein Synthesis
- □ Compare and contrast diffusion and osmosis
- □ Compare and contrast the processes of mitosis and meiosis
- □ Describe the 8 characteristics of life
- □ Recognize the structure of the 4 molecules of life
- □ State the function and give examples of the 4 molecules of life
- □ State the 2 types of cells
- □ Within eukaryotic cells, compare plant and animal cells
- □ Relate the structure to function for all the organelles
- □ Compare and contrast cellular respiration and photosynthesis and explain the relationship between them

Evolution (p. 369 – 386, p. 397 – 402, p. 435 – 440)

- □ describe the basic structure of deoxyribonucleic acid (DNA) with reference to the following terms:
    - □ double helix
    - □ sugar-phosphate backbone
    - □ nitrogenous bases (A, T, C, G)
    - □ complementary base pairing (A-T, C-G)
- □ explain the role of DNA in evolution
- □ describe the five agents of evolutionary change: mutation, genetic drift, gene flow, non-random mating, and natural selection
- □ differentiate among and give examples of convergent evolution, divergent evolution, and speciation
- □ compare the gradual change model with the punctuated equilibrium model of evolution

Taxonomy (p. 447 – 461)

- □ explain how the following principles are used in taxonomy to classify organisms:
    - □ evolutionary relationships
    - □ homologous structures
    - □ embryological relationships
- □ compare characteristics of a prokaryotic cell with those of a eukaryotic cell
- □ describe the unifying characteristics of organisms in each of the following kingdoms:
    - □ Archaebacteria
    - □ Eubacteria
    - □ Protista
    - □ Fungi
    - □ Plantae
    - □ Animalia
- □ classify selected organisms using the following taxons: kingdom, phylum (and sub-phylum), class, order, family, genus, species
- □ apply binomial nomenclature to name selected organisms

Microbiology – Viruses (p. 16 – 20, p. 478 – 483)

- □ identify criteria for classifying organisms as living
- □ describe the basic structure of a virus, including the antigens, the membranous envelope, the protein capsid, and the nucleic acid core (DNA or RNA)
- □ identify the role of the host cell in viral reproduction
- □ compare the lytic and lysogenic cycles
- □ define and give examples of viral specificity
- □ describe the body's basic lines of defence against a viral attack, including
    - □ primary line of defence (e.g., skin, mucous membranes, tears)
    - □ secondary line of defence (e.g., phagocytic white blood cells engulf viruses)
    - □ tertiary line of defence (e.g., white blood cells called lymphocytes produce antibodies)
- □ give examples of ways to reduce the spread of viral diseases

Microbiology – Bacteria (p. 471 – 477)

- □ examine bacteria and identify the characteristics that unify them
- □ use examples to illustrate bacteria diversity with respect to the following:
    - □ classification
    - □ shape and grouping of cells
    - □ motility

- □ ecological role
- □ nutrition (fermentation, aerobic respiration, photosynthesis)
- □ reproduction (binary fission, conjugation)
- □ human diseases

□ give examples of the beneficial roles of bacteria
□ conduct an experiment using sterile technique to test the effects of various antibacterial agents (e.g., antibiotics, disinfectants, and antiseptics) on bacterial cultures
□ analyse and interpret data from experiments to draw conclusions about the effectiveness of particular agents on specific bacteria
□ explain how bacteria mutate to become resistant to antibiotics

Animal Biology – General (p. 657 – 663) & (745 – 749)

□ compare phyla in terms of
- □ levels of organization – cell, tissue, organ, organ system
- □ cephalization
- □ development of a coelom
- □ symmetry
- □ reproduction

□ describe the life functions animals need to survive, including
- □ feeding
- □ respiration
- □ circulation (internal transport)
- □ excretion
- □ reproduction
- □ response (nervous system) and motility

□ compare the advantages and disadvantages of different ways animals carry out their life functions (e.g., filter feeding vs. hunting, parasitic vs. free-living, asexual vs. sexual reproduction, sessile vs. motile)
□ compare invertebrates based on germ layers, body symmetry, cephalization, coelom and early development

Animal Biology – Porifera & Cnidaria (p. 664 – 675)

□ examine members of the Phylum Porifera and identify their unifying characteristics
□ describe how poriferans carry out their life functions
□ examine members of the Phylum Cnidaria and identify their unifying characteristics
□ describe how cnidarians carry out their life functions
□ compare polyp and medusa with respect to structure, general function, and motility
□ suggest the advantages of a motile form in the life cycle of a cnidarian
□ describe how cnidarians sting their prey

Animal Biology – Platyhelminthes, Nematoda & Annelida (p. 683 – 699)

□ examine members of the Phylum Platyhelminthes and describe their unifying characteristics
□ describe how platyhelminthes carry out their life functions
□ examine members of the Phylum Nematoda and describe their unifying characteristics
□ describe how nematodes carry out their life functions
□ examine members of the Phylum Annelida and describe their unifying characteristics
□ describe how annelids carry out their life functions
□ describe the physical changes that were necessary for flatworms and roundworms to become parasitic
□ evaluate the characteristics of a successful parasite
□ describe human disorders that are caused by non-segmented worms
□ compare platyhelminthes, nematodes, and annelids with respect to evolutionary changes
□ describe the ecological roles of platyhelminthes, nematodes, and annelids

Animal Biology – Arthropoda & Echinodermata (p. 715 – 738)

□ examine members of the Phylum Echinodermata and describe their unifying characteristics
□ describe how echinoderms carry out their life functions
□ examine members of the Phylum Arthropoda and describe their unifying characteristics
□ describe how arthropods carry out their life functions

Animal Biology – Chordata (Animal Kingdom II Reading and Questions)

□ identify 4 characteristics of chordates
□ explain why all vertebrates are chordates, but not all chordates are vertebrates.
□ compare and contrast the different classes of vertebrates
□ explain the different types of fish
□ explain why mammals are so successful