You are responsible for all material covered in lecture, lab, or as part of your readings. The exam will be looking for synthesis (the ability to put ideas and concepts together) as much as recall. While no list can exhaustively cover all the topics that may be covered in an exam, you will be better prepared when you can:

Define ecology & distinguish it from environmental science
Explain the steps that make up the scientific method, know the meaning of the terms "hypothesis", "prediction", "test", "control", "variable", & "theory", & be able to design a sound scientific study, using both experimental & observational approaches; know the strengths and weakness of both approaches.
Describe the different levels of organization that ecologists study: individuals, populations, communities, ecosystems; how they are related and what we can learn by studying these different levels.
Explain what ecologists mean when they talk about “pattern”; be ready to give some examples of different kinds of pattern.
Explain what ecologists mean by “temporal” and “spatial” scale and describe how scale relates to the study of ecological pattern.
Describe the basic features of photosynthesis; what inputs and are involved and how does this influence the distribution of life forms on the planet.
Understand the basis for earth’s climate and how climate patterns relate to biomes
Explain what “Hadley Cells” are and what they have to do with climate.
Know what is meant by a “rain shadow” and be prepared to discuss its ecological implications
Describe the basic components of earth’s atmosphere and how they have changed over time
Describe some of the basic plant biomes of the ocean and how they contrast with terrestrial biomes.
Understand what is meant by “ecologically significant environmental variables” and how these variable play a role in both where organisms occur and how they “perform”.
Describe the underlying principles of a nutrient cycle, with examples of what nutrients are important to life on our planet; where they come from, and where they go.
Understand what is meant by the terms abiotic and biotic factors.
Explain the ways that different abiotic environmental factors may constrain an individual’s performance and how this links to ecology
Describe the relationship between enzyme activity and temperature and explain how this relates to the ecology of ectotherms and endotherms.
Explain the terms fundamental niche and realized niche, including a description of what might limit a species’ ability to fill a niche.
Explain the key features of the theory of natural selection and how it operates.
Explain the difference between “group selection” and “individual selection”
Explain why your professor keeps going on about “Food, Sex, and Death”
Understand the links between environmental variation, natural selection, and evolution and how these variables ultimately contribute to patterns of biodiversity
Explain how trade offs between survivorship and reproduction influence the timing and intensity of reproduction over an individual’s lifetime
Explain the difference between “opportunists” (r-strategists) and “competitors” (K-strategists), with examples
Explain survivorship curves and how they relate to temporal patterns of reproduction
Explain what is meant by the tree of life and be prepared to describe its basic organizing principles
Explain why biodiversity is important
Describe our current knowledge of biodiversity in terms of the estimated number of described and undescribed species
Summarize Vitousek et al’s article (on reserve) about introduced species