1) In the above diagram, where would Colorado’s Oil Shale be listed?
   (a) proven reserve (economically recoverable)
   (b) conditional reserve (sub-economic)
   (c) hypothetical or speculative (un-discovered)
   (d) not part of the oil resource at all

2) T/F: If a “Peak Oil” theorist were drawing this diagram for oil, the area of “Used” resources would be much smaller compared to the reserves.

3) According to the Millennial Ecosystem Assessment, which of these human actions reduces the threat of species loss?
   (a) Over-exploitation
   (b) Habitat loss and degradation
   (c) Creation of nature reserves
   (d) Invasive species
   (e) Nutrient loading

4) Ecological footprint is typically measured as:
   (a) the land area needed to produce equivalent resources consumed by a given lifestyle
   (b) the number of species at risk due to human consumption
   (c) the net change in some global measure, like CO2 in the air
   (d) the mass of carbon emitted by a given lifestyle
(5) Renewable or Flow resources are characterized by:
   (a) Difficulty of estimating the recoverable stock of reserves.
   (b) Variable flows that repeat on some time frame, typically annually.
   (c) Fixed flows that cannot be increased or decreased by human intervention.
   (d) A and B

6) According to the Millennial Ecosystem Assessment which of these biomes has experienced the least transformation by human action?
   (a) tropical forests
   (b) tundra
   (c) temperate forests
   (d) temperate grasslands

7) T/F: According to the Millennial Ecosystem Assessment most human-caused species extinctions historically were of island species.

8) T/F: Among the human-induced trends in the world’s biomes is forest cover recovery in the mid-latitudes and forest cover loss in the lower latitudes.

9) T/F: According to the Millennial Ecosystem Assessment only a few, very specialized species are declining in population today, and these are a small proportion of the “higher taxa” (by which they mean the more complex organisms like amphibians, mammals, birds, etc.).

10) T/F: While the expansion of agriculture into natural systems might introduce new (crop and weed) species to an ecosystem, on the whole the spread of agriculture causes a decline in biodiversity according to the Millennial Ecosystem Assessment.

11) T/F In “mature” resource systems, conservation of a resource can be as economically efficient, or even more efficient, than adding new supply.

12) T/F There is no “economically efficient” rate at which humans deplete stock resources.

13) T/F: In historical times the main human cause of species extinction was over-exploitation.

14) T/F Homogenization is the process whereby species assemblages become increasingly dominated by a small number of rare species threatened by extinction due to human action.

15) T/F: Even though stock resources exist in finite supply, we have not been able to determine quantities available for production very reliably (within less than 20% error).

16) T/F: Invasive species often create low-diversity landscapes, and therefore are a cause of homogenization.

17) T/F: In general, the species most in danger of extinction are specialists and limited to small ranges and small populations.
18) In the above diagram, why does the yield or harvest curve decline to the right of Maximum Sustainable Yield?
   (a) because the ability of the resource to renew itself is depressed by over-harvest
   (b) because the harvest effort declines as people recognize the problem of over-exploitation
   (c) because the technology of harvest improves
   (d) because the price tends to fall above maximum sustainable yield

19) A water price rate structure meant to increase conservation:
   (a) restricts specific water uses (e.g., watering lawns) to certain times.
   (b) charges less per unit of water as total use increases
   (c) charges more per unit of water as total use increases
   (d) uses fines to reduce water use

20) According to the Millennial Ecosystem Assessment, we have carefully studied about 2 million species, but estimates suggest there are how many species on earth?
   (a) 3-5 million
   (b) 5-6 million
   (c) 5-30 million

21) Reese describes market failures in resource markets when:
   (a) the market is comprised of many individual, competitive producers
   (b) the market price increases and decreases with amount produced
   (c) the market does not yield a stable price
   (d) the market does not account for “external” environmental and social effects of resource production and use.
22) “Carrying capacity” is:
   (a) the ability of a resource owner to carry the costs of holding the resource back from the market
   (b) long-term species population that can be sustained by productivity of an ecosystem.
   (c) Ability of distribution systems to convey resources like water, oil, and coal.

(23) Maximum Sustainable Yield of a renewable resource is:
   (a) the yield that can be sustained by demand from the market
   (b) the yield that can be expected to occur at the same level, year after year
   (c) the highest yield that could be harvested indefinitely
   (d) The one-time, temporary highest yield that could be achieved if all conditions were optimal.

24) Boulder captures its water supply from:
   (a) the Boulder Creek watershed
   (b) the Colorado River Basin
   (c) the Rio Grande River Basin
   (d) a and c
   (e) a and b

Match these human responses to natural hazards with their goal (#’s 25-28):

   (a) adjustments that prevent the extreme event
   (b) adjustments that reduce the burden of impacts on specific individuals or groups
   (c) adaptations that reduce exposure and/or vulnerability of the human use system

25) build levees and dams to reduce floods A
26) seed hurricanes A
27) offer people earthquake insurance B
28) remove homes and offices from a floodplain C

29) T/F: According to the Millennial Ecosystem Assessment, while the majority of species are in decline, a subset of “generalists” are actually growing in population and expanding their range.

30) T/F: In a fragmented habitat, species diversity tends to increase as patch size declines.

31) Vulnerability to natural hazards is defined as:
   (a) the property exposed to the hazard
   (b) the change in losses with each occurrence
   (c) the proportion of property damaged by hazards

32) T/F: The catastrophe hypothesis described in the Kates et al reading about New Orleans and Katrina argues that as people adapt to frequent, lower magnitude events, they also become less vulnerable to infrequent, high magnitude “catastrophic” events.
33) In their analysis of the history of the development of New Orleans, Kates et al find that as each major flood occurred:
   (a) little change occurred in development pattern
   (b) people re-built in safer locations
   (c) levees were built and development expanded into risky areas

34) Prof. Travis received a $60 fine for watering his lawn too much during the 2002 drought, this is an example of what mechanism meant to reduce demand?
   (a) inverted block pricing
   (b) limiting use by law
   (c) education
   (d) technology

35) The dam on the Green River in Utah below which Prof. Travis goes fishing caused a change in the downstream environment and biota. When scientist John Wesley Powell floated the river in 1872 before the dam was built, he caught fish like the Pike Minnow at the site, but when Travis floats that stretch he catches:
   (a) Brown Trout
   (b) Steelhead Trout
   (c) Pike Minnow “Jaws” sub-species
   (d) Salmon