Ozark Stream Ecosystems — Answer Key

40 points. Accept reasonable wording throughout.

Part A

Matching — feeding groups

- Shredder → C (chews up fallen leaf litter)
- Grazer / scraper → A (scrapes algae and periphyton off rocks)
- Collector → D (gathers or filters tiny drifting particles)
- Predator → B (eats other animals)

Matching — stream zones

- Riffle → B · Run → C · Pool → A

Short answer

- 1. Rain sinks through the porous karst and returns as cold springs, so the water is spring-fed — cool and clear — instead of warm runoff over mud.
- 2. Leaf litter from the forest (allochthonous) and algae/periphyton made in the stream by photosynthesis (autochthonous). A cave lacks the algae source because it has no light for photosynthesis.
- 3. Ephemeroptera (mayflies), Plecoptera (stoneflies), Trichoptera (caddisflies). They're sensitive to pollution and low oxygen, so lots of them means the water is clean.

Part B

1–2. Assessment + land-use link

- Site 1 (Pine Hollow) — HEALTHY: full set of sensitive EPT plus a hellbender. The forested, spring-fed watershed keeps the water cold, clean, and shaded, with little sediment or runoff.
- Site 2 (Cattle Ford) — POOR: no EPT at all, only tolerant worms, midges, and snails, plus algae mats. Cattle and crops strip the banks and add sediment and nutrients; erosion smothers the riffles and no shade warms the water, so oxygen drops and sensitive species are gone.
- Site 3 (Millbridge) — FAIR: some EPT but the most sensitive group (stoneflies) is missing, no hellbender, and an invasive clam is present. The crossing warms and blocks the stream and subdivision runoff adds a moderate load — partial impairment.
- 3. Ranking, healthiest to least: Site 1, then Site 3, then Site 2.
- 4. Least healthy = Site 2. Reasonable fixes: fence cattle out of the stream and replant a forested buffer strip along the banks; add rows of vegetation to trap runoff. Predicted response: less sediment and clearer water, cooler shaded water with more oxygen, fewer algae mats, and the gradual return of mayflies, stoneflies, and caddisflies (and eventually better habitat for hellbenders).