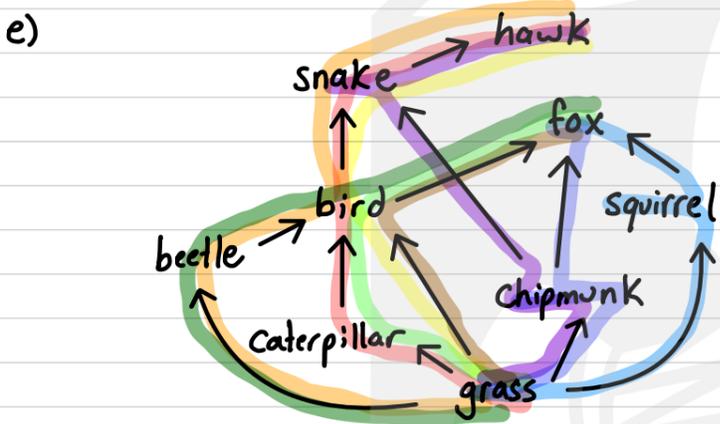
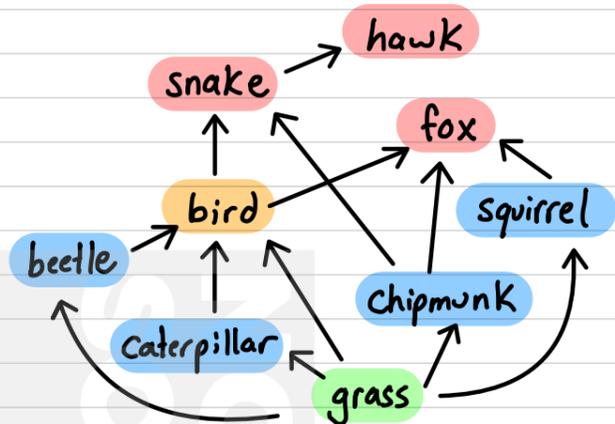
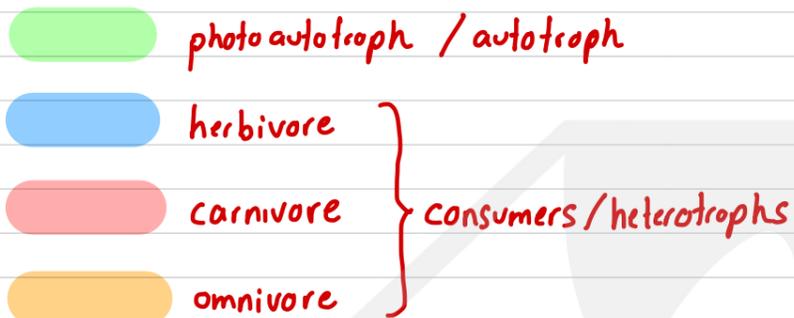


# Markscheme

- ① a) Food chains only demonstrate a single feeding pattern where organisms fulfil a single role and occupy a single trophic level - which is often not the case. Many organisms feed on a variety of organisms. Food webs allow us to better understand a community and how members interact with each other
- b) Decomposers (Detritivores and Saprotrophs). Every organism would be connected to them as decomposers feed on dead organisms
- c) Producers can be easily identified as there are no arrows pointing to them, only away. Base of all chains

d) grass → caterpillar → bird → snake → hawk



9 food chains

longest food chain is 5 members long:

grass → caterpillar → bird → snake → hawk

- f)
- |   |   |   |
|---|---|---|
| grass → caterpillar → bird → snake → hawk | } | bird is 3rd Trophic level (secondary consumer)  |
| grass → bird → fox                        | } | bird is 2nd Trophic level (primary consumer)    |
| grass → squirrel → fox                    | } | fox is 3rd Trophic level (secondary consumer)   |
| grass → caterpillar → bird → fox          | } | fox is 4th Trophic level (tertiary consumer)    |
| grass → caterpillar → bird → snake → hawk | } | hawk is 5th Trophic level (quaternary consumer) |
| grass → chipmunk → snake → hawk           | } | hawk is 4th Trophic level (tertiary consumer)   |

g) many possible answers. Likely notice food chains tend to be longer in aquatic food webs.

- ② Energy is lost at every trophic level (~90%) due to respiration, waste (and indigestible parts in organisms) ∴ the longer the food chain is, the less energy is available. Higher trophic levels are often less efficient as more energy is spent hunting mobile prey. Eventually, the energy required to hunt > energy gained from feeding - making trophic level unviable
- ③ Herbivores consume producers directly thus they receive more energy as less has been lost - allows for many herbivores to thrive. However carnivores eat other consumers which have less energy available, limiting how many successful predators an ecosystem can support

