Q11A – quantitative & qualitative sampling

Candidate G evidence

SPACE FOR ANSWERS (continued)

11. A.

A quadrat can be used to find the amount of different plant species, and their population density. A quadrat is a grid square of 100 boxes, each divided by 10 x 10, so each box is worth 1% of the ground cover. Therefore it is simple to find the density of plant. With a quadrat in place use a plant species key to help identify the different types of plants found. This should be done multiply times in an area, such as along a transect every 10 meters for 100 meters, or random point sampling within an area.

A trained eye survey can also be undertaken, this is when someone who has knowledge in plants and plants species know what they are looking, and can easily tell the different variety of plants present.

A pooter can used, this will show different animals that live on a tree, use a key if unsure on type of species. Species [illegible] so insects are sucked into mouth.

A longworth small mammal trap, this can be used to trap animals during the day and a night, you can then identify them and release them, over a period of time you can calculate the amount of biodiversity and population density, but some animals may be trap happy where they keep getting into the trap for shelter and warmth all night and some animals may be trap shy so are not enticed to go into trap, so there may be a miscalculation in biodiversity and population density.

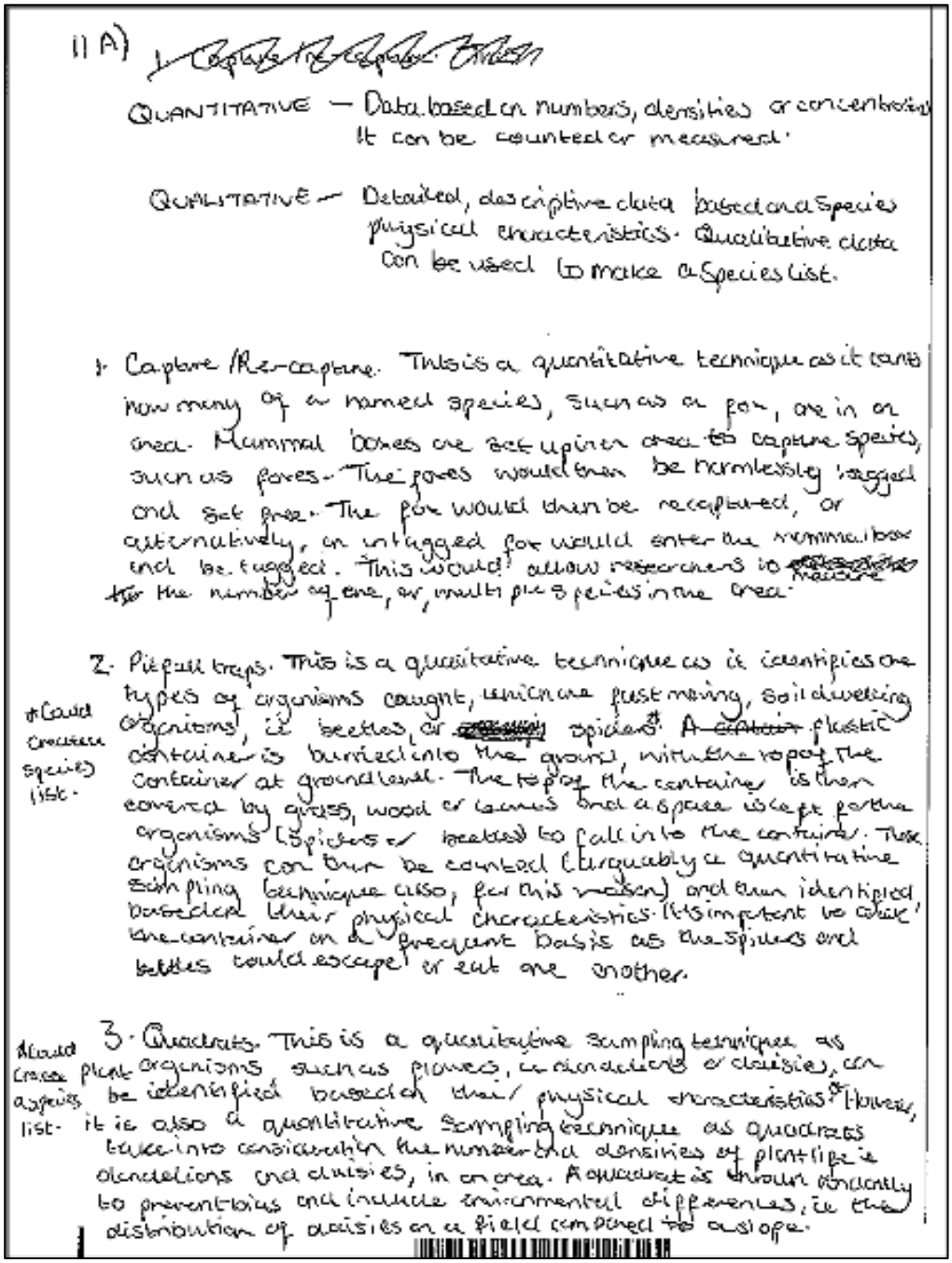
SPACE FOR ANSWERS (continued)

A Tullgren funnel,

the heat pushes the biota to the bottom of the leaf litter where only a certain size can pass through the gauze, they fall through the funnel and land in the immobiliser, here the stop moving, so the different species can be recorded and calculated as well as the amount of one species - population density.

Kick sampling, a net is placed in water whilst a rock is picked up, due to the direction of the river and the net placed behind the rock downstream then whatever was underneath the rock gets put into the net. carefully remove the net and this will provide small animals that live in the river where the biodiversity and population density can be calculated if done more either over along the river, from bank to bank or over a space of 50 meters in the river.

Candidate H evidence



11 A)

QUANTITATIVE — Data based on numbers, densities or concentrations. It can be counted or measured.

QUALITATIVE — Detailed, descriptive data based on species physical characteristics. Qualitative data can be used to make a species list.

1. Capture /Re-capture. This is a quantitative technique as it counts how many of a named species, such as a fox, are in an area. Mammal boxes are set up in area to capture species, such as foxes. The foxes would then be harmlessly tagged and set free. The fox would then be recaptured, or alternatively, an untagged fox would enter the mammal box and be tagged. This would allow researchers to measure the number of one, or multiple species in the area.

2. Pitfall traps. This is a quantitative technique as it identifies the types of organisms caught, which are fast moving, soil dwelling organisms, ie beetles, or spiders. A plastic container is buried into the ground, with the top of the container at ground level. The top of the container is then covered by grass, wood or leaves and a space is left for the organisms (spiders or beetles) to fall into the container. These organisms can then be counted (arguably a quantitative sampling technique also, for this reason) and then identified based on their physical characteristics. It is important to check the container on a frequent basis as the spiders and beetles could escape or eat one another.

#could create species list.

3. Quadrats. This is a quantitative sampling technique as it could create plant organisms such as flowers, ie dandelions or daisies, can aspire be identified based on their physical characteristics. However, it is also a quantitative sampling technique as quadrats take into consideration the number and densities of plantlife ie dandelions and daisies, in an area. A quadrat is thrown randomly to prevent bias and include environmental differences, ie the distribution of daisies on a field compared to a slope.

An average is then calculated and it identifies patterns/ trends.

4. Moth traps. A moth trap is used to capture moths. A light bulb (which moths are attracted to) is used to attract the moths, who then slide down glass perspex slides into egg boxes. This is a qualitative technique as the moth's physical characteristics may differentiate between moth groups, but could also be a quantitative sampling technique as the number of moths in an area could be counted.

5. Tullgren funnel. This is a qualitative technique as organisms (soil dwelling organisms) are identified based on their physical characteristics, and this can create a species list, however, may also be quantitative as the numbers of species in the leaf litter could be counted and measured. In Tullgren funnels, a leaf litter sample is taken — this may contain detritivores, which eat leaf litter, breaking up leaves and need to form a humus layer — and the sample is placed into a filter funnel. Above the filter funnel is a light bulb. The soil dwelling organisms, ie detritivores, move away from the light and heat, burrowing into the leaf litter. The detritivores would then fall into a container to be counted or measured, or their physical characteristics identified, to make a species list. The container may have alcohol, which would kill the detritivores, preserving them.

6. Camera traps. A camera trap can be used to identify wild organisms — ranging from deer to lions. It's a qualitative sampling technique, as it identifies the number or density of species in an area which can then be counted or measured. A camera trap uses an infrared or motion sensor to detect animals, ie deer and a light beam to identify the deer. This is beneficial as it allows researchers to investigate organisms without being present, and is preferred by animal rights groups as it causes animals such as deer, no distress or pain when caught, as they're left alone.