1. Name an ecosystem that you have studied. Name three plants that are normally present in this ecosystem.

**Name of ecosystem (e.g. grassland). Three plants (e.g. daisy, dandelion, buttercup)**

1. Describe how you carried out a survey to find out how many plants of a particular species were present in your study area.

**Quadrat / random / how random achieved / many times / count or estimate / record; OR Belt (or line) transect / stations / at intervals / place quadrat / count or estimate / record**

1. How did you present the results of the survey of the ecosystem?

**(Bar) chart or table or graph**

1. Suggest one possible error that may affect the results of your survey of the ecosystem.

**Not enough samples taken or example of human error (e.g. lack of randomness/ insufficient quadrats/ species identification / carelessness / unsuitable equipment)**

1. Name an ecosystem that you have studied. Name three animals that are normally present in this ecosystem.

**Name of ecosystem (e.g. grassland); Three animals (e.g. earthworm, spider, ladybird)**

1. Explain how you attempted to find out how many of a particular type of animal were present in the ecosystem you studied.

**Quantitative estimate – any appropriate description; Name of method (e.g. capture-recapture) / Description (Catch, mark, count and release animals on first visit / Catch and count total number and number marked on second visit, and release animals / Use formula: Size of population = 1st count x total 2nd count ÷ number marked on 2nd count)**

1. Give an account of how you carried out a quantitative survey of a named plant species in an ecosystem that you have studied. In your answer describe how you recorded the results of your survey.

**Named plant; Choose sample area or transect (line or belt) / quadrat / random throw or along transect / many times or at stations / count or observe**

1. What is meant by a qualitative survey?

**A survey which indicates if a species is present or not**

1. What is meant by the term ‘fauna’?

**Animals**

1. In ecological studies what is a key?

**A guide to identification** or **explained**

1. Describe how you carried out a quantitative survey of a named animal in the ecosystem that you have studied.

Named animal**; METHOD:** matched ecosystem **/ capture / how / count / mark or tag / how/ release / where/ recapture / count marked ones / formula or calculation shown; OR matched ecosystem / chose area or transect / quadrat / type / size or length of line / at random or stations / how or where / count or note presence / several times / calculation / how result expressed**

1. What is meant in ecology by a quantitative survey?

**A survey which records or estimates the numbers of a species (in a particular ecosystem)**

1. What is a quadrat frame?

**Square frame** or **diagram**

1. In the case of a named plant describe how you would carry out a quantitative survey in the ecosystem that you have studied.

**Named plant; Position quadrat / random / number of times / count plants / estimate cover/ average/ result/ (number) per area or percentage cover**

1. Describe how you recorded the results of your survey of the ecosystem.

**(Bar) chart** or **table** or **graph**

1. Suggest a possible source of error in your study of the ecosystem.

**Lack of randomness/ insufficient quadrats or samples taken / species identification / carelessness / human error / unsuitable equipment**

1. In ecology what is meant by a trophic level?

**The position of an organism in a food chain**

1. What is meant by an abiotic factor?

**A non- living feature**

1. What is meant in ecology by a quantitative survey?

**A survey which records or estimates the numbers of a species (in a particular ecosystem).**

1. What is a quadrat frame?

**A square frame** or **(unit) area**

1. How did you use the quadrat frame to carry out a quantitative survey of plants?

**Random location or explained (e.g. throwing implies randomness) counted or observed presence or absence or measured cover**

1. Why did you use a number of quadrats or use the quadrat frame a number of times in your quantitative survey of plants?

**More accurate** or **reduce error**

1. How did you identify the plants in your study of an ecosystem?

**Key** or **diagrams** or **photos** or **reference to characteristic such as colour or shape**

1. How did you present your results of your study of an ecosystem?

**(Bar) chart** or **table** or **graph**

1. Is the quadrat method suitable for animal populations? Explain your answer.

**Yes if animal is sessile or slow moving; No if animal moves too fast or is too big**

1. Describe how you collected a named animal from a named ecosystem.

**Named ecosystem; Named Animal; How collected (e.g. picked up, pitfall trap, mammal trap, etc.)**

1. State **one** way in which a named organism was adapted to the ecosystem.

**Named organism (e.g. grasshopper); Description of adaptation (structural or behavioural e.g. colour for camouflage)**

1. Give **two** abiotic factors that you investigated.

**Two factors, e. g. temperature, light intensity, air speed, water current, humidity, pH, dissolved oxygen, salinity, nitrate, phosphate and other plant nutrients**

1. List **three** abiotic factors that you investigated.

**Any three, e. g. temperature, light intensity, air speed, water current, humidity, pH, dissolved oxygen, salinity, nitrate, phosphate and other plant nutrients**

1. In the case of a named organism give an adaptation feature that you noted.

**Organism name (e.g. grasshopper) matching ecosystem (grassland) adaptation feature (colour for camouflage) matching organism**

1. Name two habitats from the ecosystem you have studied.

**Name of ecosystem; Name two habitats**

1. Name an animal from a habitat you have studied and describe one way in which it is adapted to that habitat.

**Named habitat / Named animal / adaptation (e.g. Grassland / grasshopper / colour for camouflage)**

1. Describe briefly how you carried out a quantitative survey of a named plant found in an ecosystem.

**Named plant / transect / quadrat/ random/ count or cover/ repeat / identify / record / average**

1. In relation to ecological surveys, explain the meaning of the term: Qualitative.

**A survey which indicates if a species is present or not**

1. In relation to ecological surveys, explain the meaning of the term: Quantitative.

**A survey which records or estimates the numbers of a species (in a particular ecosystem)**

1. In the course of your ecological studies you investigated an ecosystem. Name this ecosystem and describe how you conducted a quantitative survey of plants present in it.

**Name of ecosystem; Quadrat / random / how random achieved / many times / count or estimate / record; OR Belt (or line) transect / stations / at intervals / place quadrat / count or estimate / record**

1. Suggest a possible source of error in your quantitative ecological survey.

**Not enough samples taken or example of human error**

1. How did you present the results of your ecological survey?

**(Bar) chart or table or graph**

1. Distinguish between quantitative and qualitative surveys in an ecosystem.

Quantitative**: How many are present;** Qualitative**: What is present**

1. Why is a quadrat frame unsuitable for studying most animal populations?

**Animals move**

1. Suggest a plant that would not be suitable to survey using a quadrat frame.

**e.g. very large plant**

1. Outline how a quadrat frame is used for studying plant populations.

**Throw** or **place / several times / random (belt) / how random achieved or equivalent for belt / count or estimate / identify**

1. How did you present your results of your ecological survey?

**(Bar) chart** or **table** or **graph**

1. State one possible source of error in a survey of an ecosystem.

**(Due to) human error / changing conditions / Accidental discovery / Sample size**

1. Explain the terms: 1. Flora, 2. Fauna

**1. Plants; 2. Animals**

1. How were you able to identify the different plants in the ecosystem that you investigated?

**Key(s)** or **illustrations**

1. Name **two** pieces of apparatus used to collect animals from an ecosystem.

**Pooter / Beating tray / Pitfall trap / Net / etc.**

1. In relation to a study of an ecosystem distinguish clearly between qualitative and quantitative surveys by writing a sentence about each.

Qualitative**: What is present;** Quantitative**: How many present**

1. Describe how you carried out a quantitative survey of the major plant species.

**Quadrat / random / how random / count (or estimate) / many times / calculate (or record) OR Transect / stations / intervals / count (or estimate) / how (counted) / result described**

1. Give two possible sources of error that may have arisen in the course of your survey of plant species.

**Misidentification / non-random (quadrat distribution) / not enough times / unsuitable quadrat size / miscount (or miscalculation)**

1. What is meant by a quantitative survey of organisms in a habitat?

**A survey in which the number of a particular species / organism is counted**

1. Ecosystems are subject to changes, both natural and artificial. Mention one of each type of change as it applies to your named ecosystem.

**Natural: relevant matching example; Artificial: relevant matching example**

1. Distinguish between a quantitative and a qualitative survey by writing a sentence about each.

**Quantitative: The number of individuals present; Qualitative: Variety of organisms present**

1. Name one plant from the ecosystem you have studied. Describe how you carried out a quantitative survey to determine its frequency.

**e.g. 1. Daisy; 2. Throw quadrat / note if daisies present / random or repeat or calculate or scale up**

1. All organisms are adapted to their own habitat. 1. Name one animal from the ecosystem you have studied. 2. Describe one way in which it is adapted to its habitat.

**e.g. 1. Grasshopper; 2. Green colour**

1. How were you able to identify the animals that you found in the ecosystem?

**Key** or **(guide) book** or **illustrations**

1. Draw labelled diagrams of two pieces of apparatus that you used to collect animals and in each case name the apparatus and an animal collected.

**Apparatus / Named animal / Diagram**

1. When conducting a quantitative survey of plants, how did you ensure that your sample was random?

**Method described must demonstrate randomness**

1. What is a quadrat used for in your ecology studies?

**Quantitative surveys e.g. distribution, frequency, cover**

1. As part of your study of your selected ecosystem you constructed a pyramid of numbers. Name the species that occupied the top of your pyramid. What is the main prey of the species referred to?

**Named (species) of carnivore or of omnivore or of parasite**

1. Describe a procedure for estimating rabbit numbers in an ecosystem.

**Capture-recapture: how captured / how marked / animal welfare comment / release same place / recapture / count / formula or calculation described**

1. A quantitative survey was carried out to show the effect of poor waste management on the plants in an ecosystem. What is meant by the term quantitative?

**Counting / Numbers / How many**

1. Describe how you carried out a quantitative survey on a species of plant in its habitat.

**Quadrat / random or how achieved /count / number of times**