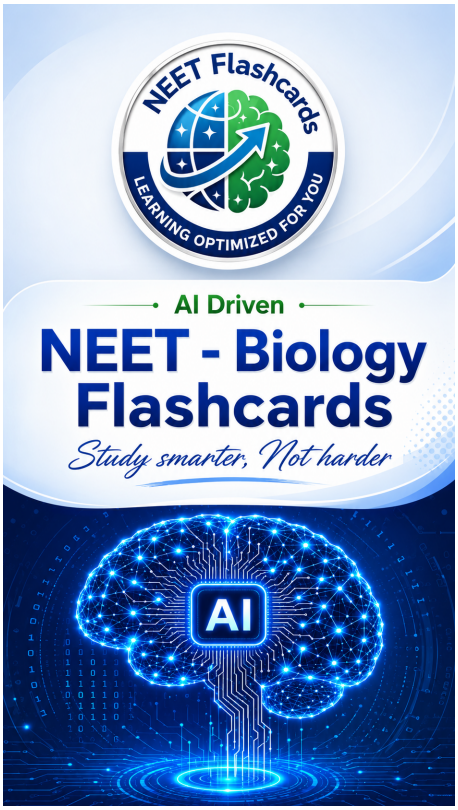


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| Question | Answer |
|---|---|
| According to Darwin, what is a potent force in organic evolution? | Interspecific competition. |
| According to the example in the text, why does a bird sing during the breeding season? | To communicate with its mate. |
| Along with NADPH, where is ATP used immediately? | In biosynthetic reactions in the stroma. |
| At which level does natural selection operate to evolve desired traits? | At the population level. |
| Can a natural habitat be inhabited by only a single species? | No, such a situation is inconceivable. |
| Define commensalism. | An interaction where one species benefits while the other is neither harmed nor benefited. |
| Define mutualism. | An interaction in which both interacting species benefit. |
| Define photophosphorylation. | Synthesis of ATP from ADP and inorganic phosphate in the presence of light. |
| Define population. | A group of individuals of a species sharing or competing for similar resources in a defined geographical area. |
| Does photorespiration synthesise sugars? | No. |
| Ecological processes are evaluated in terms of changes in what factor? | Population size. |
| From where are protons removed during NADP reduction? | From the stroma. |
| Give examples of organisms that breed only once in their lifetime. | Pacific salmon fish and bamboo. |
| How did the warbler species avoid competition? | Through behavioural differences in foraging activities. |
| How is pollen transferred in Ophrys orchids? | The bee gets dusted with pollen during pseudocopulation and transfers it to another flower. |
| How many carbon atoms are present in PGA? | Three carbon atoms. |
| How many wasp species generally pollinate a given fig species? | Only one specific partner wasp species. |
| If 4 fruitflies die in a population of 40 in one week, what is the death rate? | 0.1 individuals per fruitfly per week. |
| In what direction do electrons move in the electron transport chain? | Downhill in terms of redox potential scale. |
| In which parts of the leaf does photosynthesis occur? | In the green parts of the leaf exposed to light. |

| Question | Answer |
|---|---|
| Into which compounds is OAA converted in mesophyll cells? | Malic acid or aspartic acid. |
| Is population size a static parameter? | No, it changes with time. |
| Name any three important characteristics of a population. | Birth rate, death rate and sex ratio. |
| Name population attributes absent in individuals. | Birth rates, death rates, sex ratio and age distribution. |
| Name the two photosystems involved in photosynthesis. | Photosystem I (PS I) and Photosystem II (PS II). |
| What are common morphological defenses in plants against herbivores? | Thorns in Acacia and Cactus. |
| What are the principal carbohydrates formed during photosynthesis? | Glucose and starch. |
| What are the two stages of photosynthesis? | Light reaction and carbon-fixing reactions. |
| What attributes do populations possess that individuals do not? | Birth rates, death rates, sex ratio and age distribution. |
| What can happen if predators are absent from an ecosystem? | Prey populations may grow excessively and cause ecosystem instability. |
| What can happen to species growing exponentially under unlimited resources? | They can reach enormous population densities in a short time. |
| What do plants require animals for in mutualistic relationships? | Pollination of flowers and dispersal of seeds. |
| What interaction symbols are used for amensalism? | – 0 |
| What interaction symbols are used for mutualism? | + + |
| What is amensalism? | One species is harmed while the other remains unaffected. |
| What is another name for logistic growth? | Verhulst-Pearl Logistic Growth. |
| What is carrying capacity (K)? | The maximum possible number of individuals that a habitat can support. |
| What is mutualism? | An interaction in which both species benefit. |
| What is released instead of oxygen in sulphur bacteria during photosynthesis? | Sulphur or sulphate. |
| What is the colour of xanthophylls? | Yellow. |
| What is the essence of biological understanding according to ecology? | Understanding how organisms interact with other organisms and physical habitats as organised wholes. |

| Question | Answer |
|---|---|
| What is the reaction centre pigment of PS II? | P680 chlorophyll a. |
| What is the role of accessory pigments in photosynthesis? | They absorb light and transfer energy to chlorophyll a. |
| What is the role of pigments in the antenna complex? | They absorb different wavelengths of light to increase photosynthetic efficiency. |
| What is the ultimate source of energy for all living forms on Earth? | Sunlight. |
| What limits population growth ultimately? | Carrying capacity of the environment. |
| What observation did Priestley make when a mint plant was placed in the bell jar? | The mouse stayed alive and the candle continued to burn. |
| What occurs during the reduction phase of the Calvin cycle? | Formation of glucose through a series of reactions. |
| What pathway was worked out by Calvin and his co-workers? | The Calvin cycle. |
| What type of curve is produced by exponential growth? | J-shaped curve. |
| Which enzyme is absent in stroma lamellae membranes? | NADP reductase enzyme. |
| Which hypothesis explains ATP synthesis in chloroplasts? | Chemiosmotic hypothesis. |
| Which interaction benefits both species? | Mutualism. |
| Which intermediate hosts are involved in the life cycle of the human liver fluke? | A snail and a fish. |
| Which measures may be more meaningful than numbers for some populations? | Per cent cover or biomass. |
| Which molecule is carboxylated during the Calvin cycle? | RuBP. |
| Which pigments roughly match the action spectrum of photosynthesis? | Chlorophyll a and chlorophyll b. |
| Which tortoise became extinct after goats were introduced in the Galapagos Islands? | Abingdon tortoise. |
| Which two major types of population growth are described in the text? | Exponential growth and logistic growth. |
| Which two processes decrease population density? | Mortality and emigration. |

| Question | Answer |
|---|---|
| Who provided evidence for the production of glucose in plants in 1854? | Julius von Sachs. |
| Why are accessory pigments like chlorophyll b important? | They help absorb additional wavelengths of light and transfer energy to chlorophyll a. |
| Why are dark reactions also called carbon reactions? | Because they depend on ATP and NADPH produced during light reactions and involve carbon fixation. |
| Why are dark reactions temperature controlled? | Because they are enzymatic reactions. |
| Why are endoparasite life cycles more complex? | Due to their extreme specialisation. |
| Why are green plants called autotrophs? | Because they synthesise their own food through photosynthesis. |
| Why are orchids considered evolutionarily fascinating? | Because they show diverse floral patterns adapted to attract specific pollinators. |
| Why do chloroplasts align themselves along the walls of mesophyll cells? | To receive optimum incident light. |
| Why do protons accumulate in the thylakoid lumen? | Because splitting of water occurs on the inner side of the membrane. |
| Why does cyclic photophosphorylation probably take place? | To meet the difference in ATP and NADPH requirement in the dark reaction. |
| Why does photosynthesis stop increasing at high light intensity? | Because other factors become limiting. |
| Why is chlorophyll a considered the chief pigment of photosynthesis? | Because the regions where it absorbs maximum light also show the highest rate of photosynthesis. |
| Why is Cuscuta considered a parasitic plant? | It derives nutrition from the host plant it parasitises. |
| Why is the Monarch butterfly avoided by predators? | It is highly distasteful due to a special chemical present in its body. |
| Why is the proton gradient important in photosynthesis? | Its breakdown leads to ATP synthesis. |
| Why is the PS II reaction centre called P680? | Because it has an absorption maximum at 680 nm. |
| Why is understanding factors affecting photosynthesis important? | Because the rate of photosynthesis determines the yield of plants, including crop plants. |
| With which photosystem is water splitting associated? | Photosystem II. |
| With which photosystem is water splitting associated? | PS II. |
| Write the equation for exponential population growth. | dN/dt = rN |

| Question | Answer |
| --- | --- |
| Write the equation for population density at time t + 1. | Nt+1 = Nt + [(B + I) – (D + E)] |