

TEST – 7 (Textbook) (SOLUTION)

(INSTA Prelims Test Series 2022)

33. Correct Answer : A

Answer Justification :

Justification: The majority of plants and crop plants are C3 plants, referring to the fact that the first carbon compound produced during photosynthesis contains three carbon atoms. Under high temperature and light, however, oxygen has a high affinity for the photosynthetic enzyme Rubisco.

Oxygen can bind to Rubisco instead of carbon dioxide, and through a process called photorespiration, oxygen reduces C3 plant photosynthetic efficiency and water use efficiency. In environments with high temperature and light, that tend to have soil moisture limitations, some plants evolved C4 photosynthesis. A unique leaf anatomy and biochemistry enables C4 plants to bind carbon dioxide when it enters the leaf and produces a 4-carbon compound that transfers and concentrates carbon dioxide in specific cells around the Rubisco enzyme, significantly improving the plant's photosynthetic and water use efficiency.

As a result in high light and temperature environments, C4 plants tend to be more productive than C3 plants. Examples of C4 plants include corn, sorghum, sugarcane, millet, and switchgrass. However, the C4 anatomical and biochemical adaptations require additional plant energy and resources than C3 photosynthesis, and so in cooler environments, C3 plants are typically more photosynthetically efficient and productive.

To summarize, C3 plants are numerous and they use the C3 pathway. C4 plants mostly dwell in warm water and moist climate. C4 cycle is the alternate pathway of calvin cycle which takes place during the dark phase of photosynthesis.

The evolution of the C4 photosynthetic system is probably one of the strategies for maximising the availability of CO₂ while minimising water loss.

C4 plants are twice as efficient as C3 plants in terms of fixing carbon (making sugar). However, a C4 plant loses only half as much water as a C3 plant for the same amount of CO₂ fixed.

Q Source: AR: Page 189: Biology: XIth NCERT

34. Correct Answer : A

Answer Justification :

Justification: Magnesium forms a part of the chlorophyll molecule - essential in photosynthesis.

Iron is taken up in ferrous and ferric forms by plants. It acts as a catalyst in the production of chlorophyll.

Cu⁺² (copper) can be absorbed through leaves. It becomes very toxic if too much applied. It is also a catalyst in chlorophyll formation.

Q Source: AR: Chapter 12: Biology: XIth NCERT

35. Correct Answer : C

Answer Justification :

Justification: A great variety of baskets, mats and floor coverings are made from grass and reed fibres which are referred to in local languages as moonj, sarkanda, kora, sikki, chipkiang, madur kathi, rice straw, kauna reed. Reeds grow naturally in marshy land and in ponds.

Kauna is the local name for a reed or rush belonging to the family Cyperaceae which is cultivated in the wetlands of the Imphal valley. It has a cylindrical, soft and spongy stem which is woven into mats, square and rectangular cushions and mattresses by the women of the Meitei community of Manipur.

Q Source: Ch 6: Living Arts and Crafts Traditions of India 11th NCERT

36. Correct Answer : D

Answer Justification :

Justification: Pulicat lake is the second largest brackish water lake in the country; next only to Chilika lake.

Greater flamingos and pelicans are some of the famous migratory birds that visit this place.

The region in which Pulicat lake is situated receives rainfall from both South-West as well as North-East monsoon winds. Nelapattu Bird Sanctuary is a famous bird sanctuary located near this lake.

The lake is also home for black-headed ibis, Asian openbill, black-crowned night heron, and little cormorant. Other migratory birds that visit the sanctuary include northern pintail, common teal, little grebe, northern shoveler, Eurasian coot, Indian spot-billed duck, grey heron, Oriental darter, black-winged stilt, garganey and gadwall.

The presence of Barringtonia and Acacia nilotica species near the Pulicat lake region provides an ideal breeding site for spot-billed pelicans.

Flamingo Festival is held every year to promote tourism in Pulicat and Nelapattu.

Q Source: Insights current events