1. State whether the following statements are TRUE or FALSE

a. All organisms obtain energy by oxidising compounds synthesized by photosynthesis. ....

b. When a pigment reflects red light, all others are absorbed except red. ....

c. Thylakoids in grana have enzymes for cyclic photophosphorylation. ....

d. PSII has a primary electron acceptor called pheophytin. ....

e. The chloroplasts traps light energy and use it to form $NADPH_2$. ....

f. The formula for Chlorophyll *b* is $C_{55}H_{70}O_6N_4Mg$ and not $C_{55}H_{72}O_5N_4Mg$. ....

g. In the summary equation of photosynthesis ATP and $NADPH_2$ are not recorded because they are in the form of rich energy bonds. ....

h. The role of NADPH in oxygen-producing photosynthesis is to convert RuBP into PGA. ....

i. In the light independent reactions solar energy from light convert CO_2 and H_2O into energy rich molecules. ....

j. The greenhouse effect is likely to increase the rate of photosynthesis globally. ....

k. For every CO_2 molecule fixed by photosynthesis, one molecule of O_2 is produced. ....

l. C_3 plants are more cold resistant than C_4 plants. ....

m. In C4 metabolism sugar synthesis takes place in the mesophyll cells. ....

n. CAM plants open their stomata during the day and close them at night to avoid photorespiration. ....

o. In CAM photosynthesis CO_2 is fixed twice in the mesophyll cells. ....

p. Dark reactions of photosynthesis require darkness for the enzymes to be effective. ....

q. The bundle sheath chloroplasts of C_3 plants contain virtually no RuBP carboxylase. ....

r. Both the photochemical and the dark reactions of photosynthesis are independent of temperature. ....

s. NADPH is produced in the bundle sheath chloroplast in C_4 plants. ....

t. C_4 photosynthesis is so named because it produces four molecules of a three carbon compound as the first stable product of photosynthesis. ....

2. Fill in the blank spaces with a word/phrase that is suitable to complete the sentence or use a word/phrase that best describes the statement.

a. ..... proposed that impure air is purified in the presence of light and green plants.

b. Non-cyclic photophosphorylation produces ..... as a by-product of photolysis.

c. Energy emitted as long wavelength with lower energy is known as .....

d. In non-cyclic photophosphorylation the electron is not cyclic, it ends up in .....

e. An organized cluster of photosynthetic pigments and electron carriers embedded in the thylakoid membranes of chloroplasts. .....

f. To make chlorophyll a plant needs a supply of ..... ions.

g. There are ..... carbon atoms in one molecule of malic acid.

h. ..... is the first compound formed in the Calvin cycle.

i. The linking of phosphate groups to organic molecules is .....

j. In the C4 pathway CO_2 is ..... twice.

k. ..... differentiate C_4 plants from CAM plants.

l. The most widespread known mechanism through which CO_2 is converted to carbohydrates during the carbon fixing reactions is the .....

m. In the 4-carbon pathway of photosynthesis ..... is produced when a 3-carbon compound and CO_2 are combined in mesophyll cells.

n. Chlorophylls *a* and *b* belong to a group of compound known as cyclic .....

o. In C4 plants ..... chloroplast are present in the mesophyll cells.

p. Carotenoids are of two types: ..... and .....

q. Coenzymes are ..... whilst phytochromes are .....

r. The affinity of ..... for CO_2 is by far higher than that of Rubisco.

s. Thylakoids are surrounded by fluid filled space called .....

t. The concentration of ..... determines the pH of a substance.

u. During ..... RuBP reacts with O_2 to produce a 2-carbon compound known as .....

3. Define the following terms:-

Science .....
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Metabolism .....
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Autotrophic .....
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Photophosphorylation .....
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Coenzyme .....
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