

※ 本大題請於試卷內之「選擇題作答區」依序作答。

Part I (50%): Select the correct answer, only 1 answer is correct. 2.5 points for each question

1- Which of the following element is NOT a plant nutrient?

- a- Nitrogen
- b- Phosphorus
- c- Potassium
- d- Arsenic

2- What is the main biological function of nitrogen in the plant?

- a- It is used to synthesize proteins
- b- It is used to synthesize carbohydrate polymers such as cellulose
- c- It is used to synthesize phenolic polymers such as lignin
- d- It is not an essential element and does not perform an important function.

3- How can human produce phosphorus fertilizers?

- a- By mining phosphate rocks
- b- By fixing phosphorus gas from the atmosphere
- c- There is a lot of phosphorus in soils, so it does not need to be produced
- d- By synthesizing phosphorus

4- Which element is a macronutrient for plants??

- a- Iron
- b- Nitrogen
- c- Zinc
- d- Copper

5- In which forms do plants primarily take up nitrogen?

- a- Nitrogen gas (N_2)
- b- Ammonium (NH_4^+) and nitrate (NO_3^-)
- c- Nitrite (NO_2^-)
- d- Urea

6- Which element is classified as a micronutrient?

- a- Phosphorus
- b- Nitrogen
- c- Potassium
- d- Iron

見背面

7- Which nutrient is very important for energy transfer using ATP?

- a- Nitrogen
- b- Phosphorus
- c- Calcium
- d- Potassium

8- What is the symptom of nitrogen deficiency in plants?

- a- Dark green leaves
- b- Purple leaf margins
- c- Yellowing of older leaves
- d- Wilting of young leaves

9- Plants mainly obtain carbon from?

- a- Soil organic matter
- b- Carbon dioxide in the air
- c- Carbonates in the soil
- d- Carbon fertilizers

10- Which nutrient deficiency causes interveinal chlorosis in young leaves?

- a- Phosphorus
- b- Potassium
- c- Iron
- d- Calcium

11- Which vascular tissue transports the nutrients from the roots to the leaves?

- a- The phloem
- b- The xylem
- c- The symplast
- d- The exodermis

12- Which vascular tissue transports the nutrients from the leaves to the seeds?

- a- The phloem
- b- The xylem
- c- The apoplast
- d- The cortex

13- Which nutrient is required in the smallest amount by plants?

- a- Nitrogen
- b- Phosphorus
- c- Molybdenum
- d- Magnesium

14- Which nutrient is more abundant in the cell wall than in the cytosol?

- a- Calcium
- b- Nitrogen
- c- Potassium
- d- Phosphorus

15- Which of these elements is not essential to plants?

- a- Boron
- b- Molybdenum
- c- Cobalt
- d- Cadmium

16- Which of these elements is highly abundant in most soils?

- a- Iron
- b- Copper
- c- Boron
- d- Molybdenum

17- Which of these elements is required in the highest amount by plants?

- a- Nitrogen
- b- Iron
- c- Zinc
- d- Manganese

18- Which of these elements are used in largest quantity in fertilizers?

- a- Nitrogen
- b- Magnesium
- c- Calcium
- d- Iron

19- In which form is phosphorus mainly taken up by roots?

- a- Organic phosphate
- b- Metaphosphate
- c- Phosphoric acid $H_2PO_4^-$
- d- Orthophosphate PO_4^{3-}

20- Which nutrient improves tolerance to drought and salinity?

- a- Iron
- b- Potassium
- c- Copper
- d- Nitrogen

見背面

※ 本大題請於試卷內之「非選擇題作答區」標明題號依序作答。

Part II (50%), Short answer questions.

(21) Explanation of Terms: (2 points for each question)

- (a) Symplast pathway;
- (b) PPFD (photosynthetic photon flux density);
- (c) Thylakoid membrane;
- (d) Heavy metal;
- (e) Homeostasis

(22) Explain the origin of the names C3, C4, and CAM plants. (10 points)

(23) What is acidic soil, and why does acidic soil inhibit crop growth? (10 points)

(24) List three common nitrogen fertilizers. (10 points)

(25) Describe three agricultural applications of ethylene. (10 points)

試題隨卷繳回