

※ 注意：請於答案卷之「選擇題作答區」依序作答。

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1. What is the likely origin of chloroplasts?
  - (A) Mitochondria that had a mutation for photosynthesis.
  - (B) Photosynthetic prokaryotes that lived inside eukaryotic cells.
  - (C) A combination of mitochondria and Golgi bodies
  - (D) Prokaryotes with photosynthetic mitochondria
2. Plant light reaction of photosynthesis
  - (A) converts chemical energy to light energy.
  - (B) produces ATP via  $e^-$  transport chain.
  - (C) uses  $CO_2$  to produce  $O_2$ .
  - (D) involves three photosystems.
3. Which of the following are produced during the Calvin cycle?
  - (A) glucose, ADP, NADP+
  - (B) glucose, ADP, NADP+,  $CO_2$
  - (C) ADP, NADP+,  $O_2$
  - (D) ATP, NADPH,  $O_2$
4. Plant cell cycle
  - (A) consists of three major phases.
  - (B) is exactly the same as animal cells.
  - (C) is controlled by all kinds of chemicals.
  - (D) can be controlled by pathogenic microbes.
5. Devil's Ivy 黃金葛 and bacteria are common in
  - (A) having plasmodesmata.
  - (B) having vacuoles.
  - (C) having asexual reproduction.
  - (D) being heterotrophic.
6. Polyploidy is resulted from
  - (A) chromosomes replicate too many times.
  - (B) two chromosomes fuse into one.
  - (C) an entire pair of chromosomes is gained by chance during meiosis.
  - (D) members of a chromosome pair fail to separate.
7. Plant disease-resistance responses are controlled by
  - (A) a single gene.
  - (B) multiple genes.
  - (C) environments.
  - (D) All of above could be possible.
8. All the offspring of a cross between a red-flower tobacco plant and a white-flower tobacco plant have red flowers. The expected phenotypic ratio of a cross between two white-flower tobacco plants is
  - (A) 3 red-flower:1 white-flower.
  - (B) 1 red-flower:3 white-flower.
  - (C) 0 red-flower:1 white-flower.
  - (D) 1 red-flower:0 white-flower.
9. Genes located close together on the same chromosomes are referred to as \_\_\_\_\_ genes and generally \_\_\_\_\_.
  - (A) associated, sort independently during meiosis
  - (B) homologous, are inherited together
  - (C) linked, do not sort 分配 independently during meiosis
  - (D) codependent, do not sort independently during meiosis
10. Endangered orchid species often
  - (A) have reduced variation.
  - (B) have increased reproduction rate.
  - (C) have higher mutation rate.
  - (D) adapt better to extreme environments.
11. The high diversity of beans relative to that of pine trees is mainly due to
  - (A) rapid and frequent mutations.
  - (B) reproductive barriers.
  - (C) adapt better in a wide range of environments.
  - (D) artificial breeding.
12. Broccoli, cabbages, and brussels sprouts all descend from the same wild mustard and can still interbreed. These varieties were produced by
  - (A) speciation.
  - (B) artificial selection.
  - (C) natural selection.
  - (D) genetic drift.
13. Plant self-incompatibility 自交不親和
  - (A) can be due to a failure of pollen germination.
  - (B) can be broken down by treating ethylene.
  - (C) occurs in most species.
  - (D) is important for keeping pure gene pools.
14. The pine species A and the pine species B inhabit the same areas. The species A releases pollens in February, while the species B does so in April. This is an example of \_\_\_\_\_ isolation.
  - (A) behavioral
  - (B) postzygotic
  - (C) temporal
  - (D) habitat
15. Plants that possess more than two complete sets of chromosomes are said to be
  - (A) haploid.
  - (B) diploid.
  - (C) polyploid.
  - (D) hybrids.

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16. Which of the following plants can be infected by Rhizobacteria 根瘤菌?  
 (A) Rice  
 (B) Pine  
 (C) Tomato plant  
 (D) None of the above is true.
17. Plants have adaptations for life on land due to  
 (1) having cuticle.  
 (2) producing protected gametes.  
 (3) having vascular systems.  
 (4) forming mycorrhizae.  
 (A) 1, 2, 3  
 (B) 1, 3, 4  
 (C) 2, 3, 4  
 (D) 1, 2, 3, 4
18. \_\_\_ has a dominant sporophyte generation and a seed, but no fruit?  
 (A) Fern  
 (B) Rose  
 (C) Pine tree  
 (D) Moss
19. \_\_\_ in most land plants occurs through \_\_\_\_.  
 (A) Transpiration, root  
 (B) O<sub>2</sub> release, stomata  
 (C) Nutrient uptake, phloem  
 (D) CO<sub>2</sub> intake, gas pores.
20. In plants, \_\_\_ is made of \_\_\_ cells  
 (A) xylem, living  
 (B) phloem, dead  
 (C) stomata, guard  
 (D) All of above are true.
21. The \_\_\_ is the protective chamber that houses the ovule and later matures to become the fruit.  
 (A) petal  
 (B) ovary  
 (C) carpel  
 (D) sepals
22. Plant cells have what kinds of unique structures which are absent in animal cells?  
 (1) Cell wall           (2) Golgi  
 (3) Chloroplasts      (4) Large vacuoles  
 (A) 1, 2, 3  
 (B) 2, 3, 4  
 (C) 1, 3, 4  
 (D) 1, 2, 3, 4
23. Plant fruits can  
 (1) produce food for animals  
 (2) help seed dispersal  
 (3) protect seeds  
 (4) attract pollinators  
 (A) 1, 2, 3  
 (B) 1, 3, 4  
 (C) 2, 3, 4  
 (D) 1, 2, 3, 4
24. Plant pollen grains produce \_\_\_ sperms each and further fertilization gives rise to \_\_\_\_.  
 (A) Two, embryo and endosperm  
 (B) Two, embryo and seed coat  
 (C) Four, embryo and seed coat  
 (D) Four, embryo and endosperm
25. Secondary growth of plants  
 (A) increases branching.  
 (B) arises from cell division in apical meristems.  
 (C) enhances nutrient uptake.  
 (D) adds new layers of secondary xylems.
26. How many layers of vascular cambium will there be in the trunk of a ten-year-old tree?  
 (A) One.  
 (B) Two.  
 (C) Ten.  
 (D) Thousands.
27. Plants usually do not depend on root to  
 (A) acquire water and minerals.  
 (B) establish symbiosis with other organisms.  
 (C) synthesize hormones.  
 (D) reproduce.
28. How many chromosomes are there in a rice egg cell nucleus as compared to a rice pollen cell nucleus?  
 (A) half as many.  
 (B) twice as many.  
 (C) the same number.  
 (D) half as many or the same number, depending on whether the pollen cell has divided to produce sperm or not
29. Transpiration is most active when plant  
 (A) carries out active photosynthesis.  
 (B) is under dry-air condition.  
 (C) reproduces.  
 (D) develops branching.
30. Pathogenic bacteria of plants cannot enter plant cell. Therefore, they are present in  
 (A) apoplast.  
 (B) symplast.  
 (C) plasmodesmata.  
 (D) cuticle layer.
31. Parasitic plants  
 (A) lack of chlorophylls.  
 (B) are unable to carry out photosynthesis.  
 (C) may have asexual reproduction.  
 (D) may be exemplified by orchids.

32. \_\_\_ are not a sugar "sink" of plant

- (A) Roots
- (B) Mature leaves
- (C) Young leaves
- (D) Flowers

33. Which of the following essential nutrients is most likely to leach 流失 from the soil?

- (A)  $\text{Ca}^{2+}$
- (B)  $\text{Mg}^{2+}$
- (C)  $\text{K}^+$
- (D)  $\text{NO}_3^-$

34. What is the role of the fungus in a mycorrhizal association?

- (A) photosynthesis
- (B) production of sugars
- (C) absorption of phosphate
- (D) secretion of growth factors

35. Which of the followings regarding plant hormones is false?

- (A) They can trigger responses in all cells.
- (B) Even small amount can trigger response.
- (C) They are involved in many aspects of plant growth and development.
- (D) Some of them can also have biological effect on animals.

36. To rescue a retarded young plant 拯救矮化植物, we can treat it with

- (A) gibberellins
- (B) auxins
- (C) ethylene
- (D) cytokinins

37. Phytochromes control flowering by

- (A) determining whether day length exceeds a critical minimum.
- (B) determining whether day length is shorter than a critical maximum.
- (C) sensing sunrise and sunset.
- (D) inducing cell division in apical meristems.

38. Which of the following links is false?

- (A) thigmotropism – touch
- (B) circadian rhythms – daily clock
- (C) photoperiod – seasonal response
- (D) phytochromes – photosynthesis.

39. \_\_\_ is involved in plant defense against diseases caused by microbes and pests

- (A) Production of inhibitory proteins
- (B) Salicylic acid
- (C) Jasmonic acid
- (D) All of the above are true.

40. The level of abscisic acid in plants

- (A) controls stomata closure.
- (B) decreases after a long drought 乾旱.
- (C) increases in germinating seeds.
- (D) controls pollination.