Practise Exam 1. Name: .

1) The embryo of a grass seed is enclosed by two protective sheaths, a(n) \_\_\_\_\_\_\_\_\_\_, which

covers the young shoot, and a(n) \_\_\_\_\_\_\_\_\_\_, which covers the young root.

A) cotyledon; radicle

B) hypocotyls; epicotyl

C) coleoptile; coleorhiza

D) coleorhiza; coleoptile

E) epicotyl; radical

2) Gas exchange, necessary for photosynthesis, can occur most easily in which leaf tissue?

A) epidermis

B) palisade mesophyll

C) spongy mesophyll

D) vascular tissue

E) bundle sheath

3) In plant roots, the Casparian strip is correctly described by which of the following?

A) It is located in the walls between endodermal cells and cortex cells.

B) It provides energy for the active transport of minerals into the stele from the cortex.

C) It ensures that all minerals are absorbed from the soil in equal amounts.

D) It ensures that all water and dissolved substances must pass through a cell membrane before entering the stele.

E) It provides increased surface area for the absorption of mineral nutrients.

4) A vessel element would likely lose its protoplast in which section of a root?

A) zone of cell division

B) zone of elongation

C) zone of maturation

D) root cap

E) apical meristem

5) A plant that has small, green petals is most likely to be

A) bee-pollinated.

B) bird-pollinated.

C) bat-pollinated.

D) wind-pollinated.

E) moth-pollinated.

6) Which of the following is not a function of rhizobacteria?

A) produce hormones that stimulate plant growth

B) produce antibiotics that protect roots from disease

C) absorb toxic metals

D) carry out nitrogen fixation

E) supply growing roots with glucose

7) A soil well suited for the growth of most plants would have all of the following properties except A) abundant humus.

B) air spaces.

C) good drainage.

D) high cation exchange capacity.

E) a high pH.

8) Which of the following arise from lateral meristem activity?

A) secondary xylem

B) leaves

C) trichomes

D) tubers

E) all of the above

9) Which of the following is the correct sequence of events in a pollen sac?

A) sporangia – meiosis - two haploid cells – meiosis - two pollen grains per cell

B) pollen grain –meiosis - two generative cells - two tube cells per pollen grain

C) two haploid cells – meiosis - generative cell - tube cell-fertilization - pollen grain

D) pollen grain – mitosis - microspores – meiosis - generative cell plus tube cell

E) microsporocyte – meiosis - microspores – mitosis - two haploid cells per pollen grain

10) What is the main cause of guttation in plants?

A) root pressure

B) transpiration

C) pressure flow in phloem

D) plant injury

E) condensation of atmospheric water

11) Transpiration in plants requires all of the following except

A) adhesion of water molecules to cellulose.

B) cohesion between water molecules.

C) evaporation of water molecules.

D) active transport through xylem cells.

E) transport through tracheids

12) Three mitotic divisions within the female gametophyte of the megaspore produce

A) three antipodal cells, two polar nuclei, one egg, and two synergids.

B) the triple fusion nucleus.

C) three pollen grains.

D) two antipodal cells, two polar nuclei, two eggs, and two synergids.

E) a tube nucleus, a generative cell, and a sperm cell.

13) A gardener realized his plants were slowly dying off. After numerous analyses, he realized there was a toxic root growth and a tremendous increase in soil H+. Which of the following is a plausible cause?

a) Increase soil pH due to increase cation exchange

b) Lack of fertilizers

c) Increase aluminum uptake due to low soil pH.

d) Absence of clay from the soil.

14) Potassium deficiency causes plant leaves to develop a yellow coloration around margins and die. A gardener realizes this coloration only in the older leaves of the plant and not in the younger leaves. This observation suggests the fact that potassium is…

a) less mobile nutrient

b) K+ deficiency is only in leaves

c) mobile nutrient

d) none of the above

15) Guard cells do which of the following?

A) protect the endodermis

B) accumulate K+ and close the stomata

C) contain chloroplasts that import K+ directly into the cells

D) guard against mineral loss through the stomata

E) help balance photosynthesis and transpiration

16) When growing plants in culture, auxin is used to stimulate cell enlargement. Which plant growth regulator has now to be added to stimulate cell division?

A) ethylene

B) indoleacetic acid

C) gibberellins

D) cytokinin

E) abscisic acid

17) Photosynthesis begins to decline when leaves wilt because

A) chloroplasts within wilted cells are incapable of photosynthesis.

B) CO2 accumulates in the leaves and inhibits the enzymes needed for photosynthesis.

C) there is insufficient water for photolysis during the light reactions.

D) stomata close, preventing CO2 entry into the leaf.

E) Wilted cells cannot absorb the red and blue wavelengths of light.

18) Which of the following root tissues gives rise to lateral roots?

A) endodermis

B) phloem

C) cortex

D) epidermis

E) pericycle

19) Which of the following is a correct statement about sugar movement in phloem?

A) Diffusion can account for the observed rates of transport.

B) Movement can occur both upward and downward in the plant.

C) Sugar is translocated from sinks to sources.

D) Only phloem cells with nuclei can perform sugar movement.

E) Sugar transport does not require energy.

20) Maize leaves in a agricultural field are showing a purple coloration on their margins. This should suggest which of the following;

a) An excess of potassium

b) A deficiency of nitrogen

c) A increase uptake of Aluminum due to high soil pH

d) A deficiency of phosphorus

21) The local area surrounding the Trinity River in Texas has been red flagged with high levels of PCB’s. The U.S dept of Agriculture decides to employ plants that have the capability of extracting this pollutant from the soil area. The name of this process is called…

a) Salination

b) Aggressive Soil repair

c) Cation remediation

d) Phytoremdiation

e) more than one of the above are correct

22) In plants, proton pumps functions to

A) absorb anions

B) Cotransport cations

C) absorb heavy minerals

D) actively transport water

E) Cotransport anions

23) 4) Solute potential is more ……………………… in the cells of tracheids and vessel elements.

a) positive

b) negative

c) Neither a or b

d) neutral

24) An animal cell with a ψS of -0.65 MPa maintains a constant volume when bathed in a solution that has a ψS of -0.42 MPa and is in an open container. The cell has a

A) ψP of +0.65 MPa.

B) ψ of -0.23 MPa.

C) ψP of +0.35 MPa.

D) ψP of +0.23 MPa.

E) ψ of 0 MPa.

25) Water flows into the source end of a sieve tube because

A) sucrose has diffused into the sieve tube, making it hypertonic.

B) sucrose has been actively transported into the sieve tube, making it hypertonic.

C) water pressure outside the sieve tube forces in water.

D) the companion cell of a sieve tube actively pumps in water.

E) sucrose has been dumped from the sieve tube by active transport.

26) Which of the following is not part of an older tree's bark?

A) cork

B) cork cambium

C) lenticels

D) secondary xylem

E) secondary phloem

27) In sporophytic self incompatibility, an S1 pollen grain from a S1S2 plant can only fertilize a

A) S2S3 plant

B) S1S3 plant

C) S1S2 plant

D) S3S4 plant

E) S2S1 plant

28) Cryptochromes, phototropins, zeaxanthin are all examples of

A) genes involved in photoreception

B) isomers

C) red light receptors

D) phytochromes

E) blue light receptors

29) A farmer in Finland is capable of obtaining information from his crops in respect to their nutrient excess or deficiency. For example, a blue tinge indicates that his plants need more phosphate and green signals nitrogen. Which of the following genetic modifications are being employed by this farmer?

a) Secretion of an alcohol dehydrogenase that breaks down ethanol and toxins in the absence of nutrients in the soil.

b) Resistance to Aluminum toxicity under extremely low pH

c) Soil modification to send impulses to plant leaves that modify their pigmentation hence expressing the deficient nutrient.

d) The linking of promoter of gene to a reporter gene which produces the colored pigmentations thus creating a “smart plant”

30) Rhizobacteria form root nodules in what order?

1. bacteriods form

2. nodule connects to vascular tissue

3. infection thread is started.

4. nodule formed from cells in cortex and pericycle

A) 3, 1, 4, 2

B) 1, 2, 3, 4

C) 2, 4, 3, 1

D) 3, 4, 2, 1

E) There is a missing step.

31) Absorption of K+ into the guard cells, causes water to flow the guard cells, the stomata.

A) into, closing

B) into, opening

C) out of, opening

D) out of, closing

D) None of the above

32) The ripening of fruit and the dropping of leaves and fruit are principally controlled by

A) Auxin

B) cytokinins

C) ethylene

D) CO2 in air

E) indole acetic acid

33) Will prevent cation exchange.

A) decreasing soil pH

B) Increasing solute potential

C) increasing soil pH

D) adding more water to the soil

E) More than one is correct

34) What is the result of double fertilization in angiosperms

A) the endosperm develops into a diploid tissue

B) a triploid zygote is forms.

C) both a diploid embryo and a triploid endosperm are formed.

D) two embryos develop in every seed.

E) faster growth of new seed.

35) A plant that nourishes itself but grows on another plant (ex. Staghorn fern)

a) Epiphytes

b) Parasitic plant

c) a non-photosynthetic plant

d) Ghost flower

36) Golden Rice is a transgenic variety that

A) is resistant to various herbicides, making it practical to weed rice fields with those herbicides.

B) is resistant to a virus that commonly attacks rice fields.

C) includes bacterial genes that produce a toxin that reduces damage from insect pests.

D) produces much larger, golden grains that increase crop yields.

E) contains daffodil genes that increase vitamin A content.

37) What is the first organ to emerge from a germinating eudicot seed?

A) plumule

B) hypocotyl

C) radicle

D) epicotyl

E) shoot

38) Some of the problems associated with intensive irrigation include all but

A) mineral runoff.

B) overfertilization.

C) land subsidence.

D) aquifer depletion.

E) soil salinization

39) Cells no longer capable of DNA transcription.

A) vessel elements

B) sieve tube elements

C) companion cells

D) A and B only

E) A, B, and C

40) Recent research has shown that pollination requires that carpels recognize pollen grains as "self or non-self." For self-incompatibility, the system requires

A) rejection of non-self cells.

B) the rejection of self cells.

C) carpel incompatibility with the egg cells.

D) that the flowers be incomplete.

E) the union of genetically identical sperm and egg cells.

41) Which of the following essential nutrients plays an essential role in the opening and closing of the stomatal aperture?

A) Fe

B) Bo

C) Mg

D) H

E) K

42) Auxins in plants are known to affect all of the following except

A) Gravitropism of roots

B) maintenance of dormancy

C) phototropism of shoots

D) apical dominance

E) fruit development

43) Nitification is a process that

A) recycles nitrogen from dead and decaying materials

B) converts ( NO3-) into (NH4+)

C) releases (NO3-) from a rock substrate

D) converts (NH3) into (NO3-)

E) A and B are correct.

44) Hormone that induces bolting

A) brassinosteroids

B) gibberellins

C) auxin

D) ethylene

E) abscisic acid

45) The male gametophyte of a flowering plant

A) ovule

B) microsporocyte

C) pollen grain

D) embryo sac

E) stamen

46) Plants that have their flowering inhibited by being shaded during day light are

A) day neutral plants

B) short day plants

C) long day plants

D) short night plants

E) devoid phyochrome

47) A plant will recognize a pathogenic invader

A) If it has many specific plant disease resistance R genes

B) If it is a smart plant

C) only if the pathogen and the plant have the same R genes

D) when the pathogen secrets Avr proteins

E) If it has the specific R gene that corresponds to the pathogens molecule encoded by an Avr gene.

48) The type of mature cell that a particular embryonic plant cell will become appears to be determined mainly by

A) the selective loss of genes.

B) the cell's final position in a developing organ.

C) the cell's pattern of migration.

D) the cell's age.

E) the cell's particular meristematic lineage.

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50) The Proton pump functions in the absorption of ……………. and the co transport of ……………….

a) nitrates, potassium

b) anions, neutral solutes

c) sucrose, bicarbonates

d) cations, anions

e) none of the above