1) Microspores are derived from or develop from ____.
   a) the egg b) microspore mother cells
c) pollen grains d) megaspore mother cells

2) All plants can be propagated by sexual propagation.
   a) true b) false

3) If a plant produces a seed by apomixis, is the plant that grows from the seed a hybrid?
   a) yes b) no

4) What type of fertilization do flowering plants (e.g. higher plants) possess?
   a) single fertilization b) pollination
c) double fertilization d) stigmation
e) deposition

5) The egg and sperm nuclei are also called _____.
   a) sex cells b) diploid nuclei
c) gametes d) partners
e) significant others

6) Which of the following is not a stage in seed germination?
   a) activation of metabolism b) digestion of stored food
c) cell division d) imbibition
e) union of gametes

7) Where would you find the egg in the ovule?
   a) in the embryo b) in the zygote
c) in the nucleus d) in the embryo sac
e) in the megaspore

8) What part of the flower contains the pollen grains?
   a) megasporangia b) embryo sac
c) anther d) ovary
e) pistil

9) What phase of growth does a plant have to be exhibiting in order to flower?
   a) adult phase b) pre-puberty phase
c) juvenile phase d) post-puberty phase

10) Have we proven the concept that every cell in a plant has the genetic potential to reproduce the entire plant?
    a) yes b) no
11) If I discover a very unique looking youpon shrub in my yard and propagate it by cuttings to produce thousands of young plants, then that population or group of plants would be an example of _____.
   a) a clone  
   b) apomixis  
   c) parthenocarpy  
   d) cousins  
   e) a hybrid

12) Holly seeds have immature embryos, and if I want to make them germinate I could ______.
   a) expose them to red light  
   b) use cold scarification  
   c) soak them in water  
   d) scarification them  
   e) excise their embryos and put them in tissue culture

13) What type of dormancy is hard seed coat dormancy of seeds?
   a) quiescence  
   b) rest

14) Tomato seeds will not germinate in the fruit and must be extracted and cleaned in order for them to germinate because of inhibitors in the flesh of the fruit. What is the advantage of this?
   a) to assure germination in the spring only  
   b) acts as a rain gauge  
   c) prevents vivipary  
   d) measures depth of planting  
   e) spreads germination over more than one growing season

15) What is the most common type of seed dormancy?
   a) quiescence due to lack of water  
   b) rest due to lack of cold  
   c) quiescence due to too high temperature  
   d) rest due to photoperiod

16) Which of the following is not a way to minimize water loss by cuttings?
   a) place in humidity chamber  
   b) spray with antitranspirants  
   c) place in a cool, humid place  
   d) use an intermittent mist system  
   e) all are methods that are used

17) If you have a variegated monocot plant where only the very edge of the leaf is white, which layer is most likely mutated?
   a) L-I  
   b) L-II  
   c) L-III  
   d) L-IV

18) Would you predict that a chimera could be propagated true-to-type by layering?
   a) yes  
   b) no

19) _____ stimulates adventitious shoots and _____ stimulates adventitious roots of cuttings.
   a) auxin / cytokinin  
   b) cytokinin / auxin  
   c) gibberellic acid / cytokinin  
   d) gibberellic acid / auxin

20) For nutrient mist, apply ___ of any complete, soluble fertilizer, such as 20-20-20, per ___ of water.
    a) 2-6 oz / 10 gal  
    b) 2-6 oz / 100 gal  
    c) 2-6 lb / 10 gal  
    d) 2-6 lb / 100 gal
21) ____ is a type of propagation where roots are induced to be formed on the plant part after it is detached from the parent plant.
   a) cutting  
   b) layering  
   c) grafting  
   d) division  
   e) no propagation technique does this

22) When we make a cut in layering, we are trying to selectively cut the _____.
   a) xylem  
   b) cambium  
   c) phloem  
   d) periderm

23) What type of layering covers the stem in multiple places along the stem (i.e., the stem is laid along the ground and some portions are buried while other portions are left exposed)?
   a) repetitive layer  
   b) simple layer  
   c) serpentine layer  
   d) tip layer  
   e) none of these types use this stem placement

24) If you pile soil around the base of a shrub to induce roots to form at the base of the limb, this would be called ______ layering.
   a) simple  
   b) tip  
   c) mound  
   d) submerged  
   e) none of these are correct because it would kill the stem

25) Which of the following is not an advantage or use of grafting?
   a) get disease resistance of stock  
   b) produces a hybrid  
   c) by-passes juvenile phase  
   d) change variety

26) The top part of a graft is called the _____.
   a) scion  
   b) interstock  
   c) stock  
   d) cutting

27) The first step in graft union formation is ____.
   a) cambium formation  
   b) callus formation  
   c) union of gametes  
   d) xylem and phloem formation

28) What type of grafting is used to repair a damaged bark at the base of a tree?
   a) brace  
   b) side  
   c) bridge  
   d) inarching  
   e) cleft

29) For which of the following are the stock and scion of equal size?
   a) splice  
   b) cleft  
   c) bark inlay  
   d) notch  
   e) patch

30) What is the type grafting when all the limbs on an entire tree are grafted?
   a) approach  
   b) cleft  
   c) top working  
   d) splice  
   e) side
31) What is the name of the grafting method where the top of the stock is cut-off, the bark is peeling back on the side, and a scion is inserted under the bark?
   a) approach b) side c) bark inlay d) splice e) bridge

32) All budding methods require the bark to be slipping.
   a) true b) false

33) What type of budding removes a partial ring from around the stock?
   a) patch b) flute c) ring d) chip e) I

34) Which of the following IS NOT an objective or advantage of pruning?
   a) dwarfing b) invigoration c) safety d) increase productivity e) all are objectives or advantages of pruning

35) To properly prune a large limb on a tree, where is the first cut made?
   a) on the top of the limb about 6 inches out b) flush with the trunk c) on the bottom of the limb about 6 inches out

36) Narrow crotch angles are better than wide crotch angles.
   a) true b) false

37) Very drastic pruning is called _____?
   a) heading-back b) root pruning c) dehorning d) disbudding e) thinning-out

38) To make the canopy of a tree more dense, what pruning technique should be used?
   a) thinning-out b) dehorning c) heading-back d) disbudding e) scalping

39) To make the canopy of a shrub more less dense, what pruning technique should be used?
   a) thinning-out b) hedging c) lopping d) destemming e) scalping

40) When is the best time to prune trees that do not flower?
   a) in late summer b) in late spring c) after the cold of winter, but before new growth in the spring

41) If I prune a shrub in my front yard to look like a sculpture of me, it would be called a(an) _____.
   a) topiary b) espalier c) manicuring d) sculpturing
42) Which of the following is a chemical pinching agent that overcomes apical dominance?
   a) Atrinal  b) Bonsai  c) auxin  d) ethephon
43) Which of the following methods to control pest damage should be used as a last resort?
   a) pesticides  b) genetic resistance  c) biological control  d) sanitation  e) quarantine
44) Which of the following is NOT a mode of action of pesticides?
   a) all are modes of action  b) stomach poison  c) systemic  d) contact
45) Which of the following is a mollusk?
   a) mite  b) nematode  c) scale  d) slug  e) microplasma
46) Are there plants that can defend themselves by keeping other plants from growing too close?
   a) yes  b) no
47) Bacillus thuringiensis can be used to ______?
   a) control caterpillars  b) control aquatic weeds  c) control aphids  d) control nematodes  e) control your apatite for salad
48) If you find sooty mold on the leaves of your plant, which pest is likely present?
   a) thrips  b) mites  c) nematodes  d) white fly  e) grubs
49) Which pest bores into roots and may cause the roots to have a knotted appearance?
   a) scale  b) leaf miner  c) mealy bug  d) mite  e) nematodes
50) Which pest is controlled by fungicides?
   a) fungi  b) virus  c) bacteria  d) androids  e) gamma factors
KEY

1) b  10) a  19) b  28) c  37) c  46) a
2) b  11) a  20) b  29) a  38) c  47) a
3) b  12) e  21) a  30) c  39) a  48) d
4) c  13) a  22) c  31) c  40) c  49) e
5) c  14) c  23) c  32) b  41) a  50) a
6) e  15) a  24) c  33) b  42) a  5) c
7) d  16) e  25) b  34) e  43) a  4) c
8) c  17) a  26) a  35) c  44) a  3) b
9) a  18) a  27) b  36) b  45) d  2) b
11) a  19) b  28) c  37) c  46) a  25) b
20) b  21) a  22) c  23) c  24) c  26) a
27) b  28) c  29) a  30) c  31) c  32) b
33) b  34) e  35) c  36) b  37) c  38) c
39) a  40) c  41) a  42) a  43) a  44) a
45) d  46) a  47) a  48) d  49) e  50) a