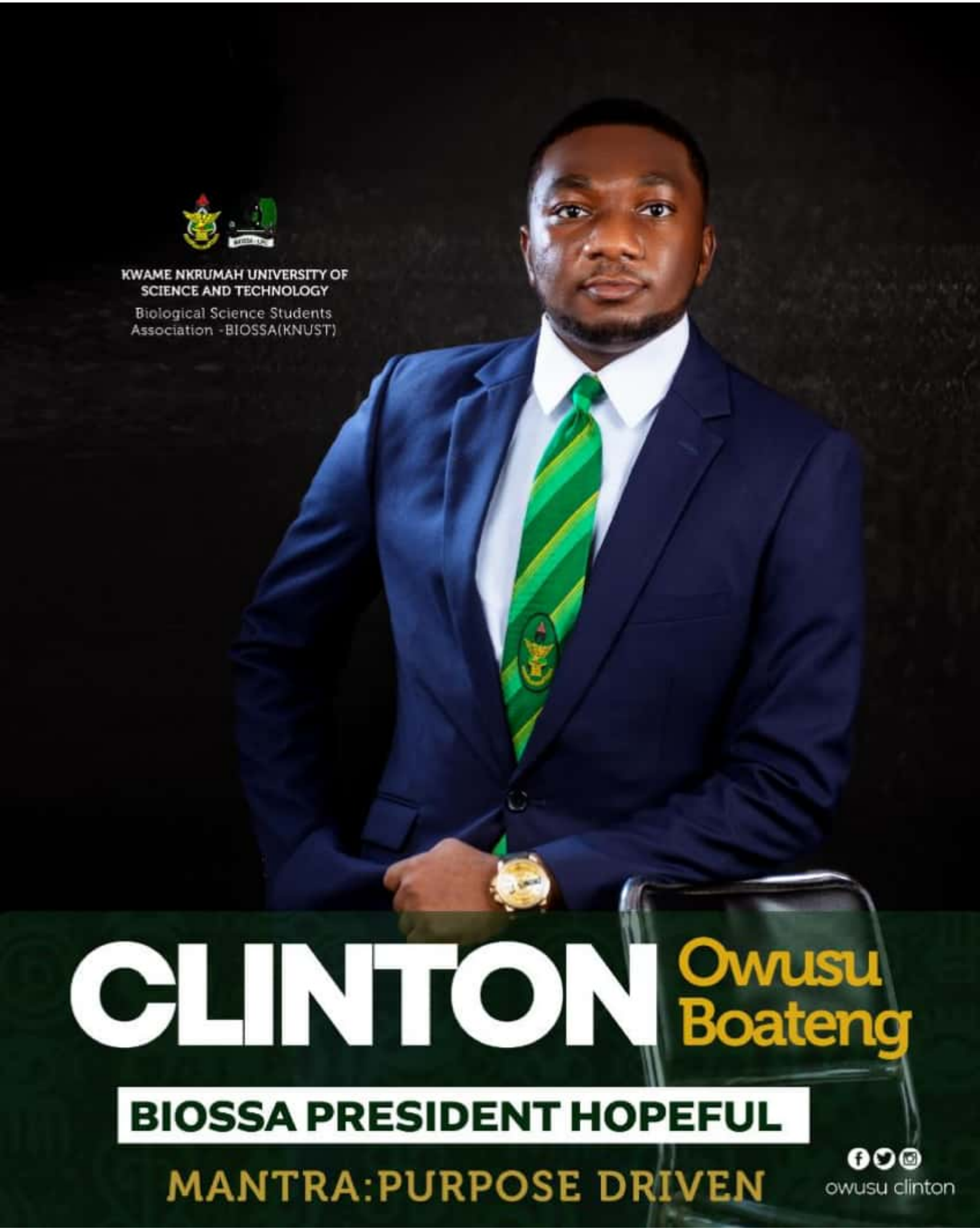

M/C

1. Members of Kingdom Plantae are:
   a. Photosynthetic
   b. Eukaryotic
   c. Multicellular
   d. a and c
   e. All of these

2. With respect to plant reproduction, there has been an evolutionary trend toward...
   a. increased pollen production
   b. smaller flowers
   c. larger fruits
   d. sporophyte dominance
   e. greater seed production

3. A diploid plant is a(n) _____.
   a. egg
   b. sperm
   c. spore
   d. gametophyte
   e. sporophyte

4. The gametophyte produces _____ by _____.
   a. spores; mitosis
   b. gametes; mitosis
   c. spores; meiosis
   d. gametophytes; mitosis
   e. sporophytes; meiosis

5. The first cell after fertilization is the:
   a. Spore
   b. Sporophyte
   c. Embryo
   d. Seed
   e. Zygote

6. Spores develop into _____.
   a. Haploid gametophytes
   b. Diploid gametophytes
   c. Haploid sporophytes
   d. Haploid gametes
   e. Diploid sporophytes

7. Where do spores come from?
   a. gametes
   b. gametophytes
   c. sporophytes
   d. zygotes
   e. other spores

F/B

MATCHING

a. Sporophyte
b. Gametophyte
c. Zygote
d. Spore
e. Gamete

8. A fertilized egg

9. Diploid, multicellular

10. Haploid, multicellular

11. Plants make this by meiosis

12. Haploid, single cell, the product of mitosis

13. Diploid, single cell

14. Dominant generation of Bryophytes

15. Dominant generation of vascular plants

M/C

16. Which evidence supports the concept of green algae as ancestral to the Plant Kingdom?
    a. DNA studies
    b. Similar kinds of chlorophyll in both groups
    c. Similar kinds of cell wall chemicals in both groups
    d. Similar kinds of reserve food in both groups
    e. All of these are correct

F/B

MATCHING

a. Seedless vascular plant
b. Gymnosperm
c. Angiosperm
d. Bryophyte
e. None of these

17. Cycads

18. Horse tails (scouring rush)

19. Tulip

20. Moss

21. Green algae

M/C

22. Green algae are assumed to be ancestors of plants because
    a. the fossil ancestors have been discovered
    b. green algae make chitin and laminarin
    c. green algae make cellulose and starch
    d. green algae are almost exclusively marine
    e. lignin is known to occur in some green algae

23. You examine a 1 inch tall plant you collect in the woods. This plant was part of a several square feet mass of similar small plants. It is very flexible and does not easily stand upright by itself. Upon examining the tiny flat leaf-like structures of this plant you see no veins. There is no evidence of seeds, but at the end of a little stalk on the end of the plant there is some sort of spore bearing structure. To which of these groups does this plant likely belong?
    a. angiosperm
    b. gymnosperm
    c. fern
    d. algae
    e. bryophyte

24. Land plants are believed to have evolved from _____.
    a. green algae
    b. fungi
    c. lichens
    d. bacteria
    e. Euglena

25. Terrestrial plants are believed to have evolved from:
    a. Bryophytes
    b. Green algae
    c. Red algae
    d. Brown algae
    e. Blue-green bacteria

26. Which of the following does not support the theory that terrestrial plants have an algal ancestor?
    a. The same type of chlorophyll is present in both
    b. Both have starch energy storage molecules
    c. Both have the same accessory pigments
    d. Vascular tissues are found in both groups
    e. Both are autotrophic

27. The common name for members of Division Chlorophyta is:
    a. Green algae
    b. Flowering plants
    c. Brown algae
    d. Red algae
    e. Green plants

28. Which of the following is NOT good evidence that land plants arose from green algae?
    a. both photosynthesize
    b. both use the same kind of chlorophyll
    c. green algae live in fresh water environments
    d. both contain similar accessory pigments
    e. green algae live in many temporary habitats

29. Which of the following is true for most members of Division Chlorphyta?
    a. Produce free swimming gametes.
    b. Some have life cycles dominated by haploid forms.
    c. Unicellular, colonial, or multicellular species are all in this division.
    d. a and b.
    e. All of the above.

30. Which of these are reasons why biologists believe some type of ancestral green algae may have evolved into the first terrestrial plants?
    a. They are all adapted to highly variable environments (can withstand extremes of temperature and moisture) and are adapted to use freshwater.
    b. They have the same types of photosynthetic pigments.
    c. Plants from both groups have complex structure like roots and leaves.
    d. a and b.
    e. All of the above.

31. When walking in a forest you find a plant with what appear to be unfertilized seeds on little scales exposed to the air. Yellow dust-like particles are on the surface of the unfertilized seeds. To what group does this plant belong?
    a. angiosperms
    b. gymnosperms
    c. bryophytes
    d. seedless vascular plants
    e. algae

32. When walking in a tropical forest you come upon a 6 meter tall plant that shows no evidence of seed production. In which of these groups does the plant most likely belong?
    a. gymnosperms
    b. angiosperms
    c. bryophytes
    d. ferns
    e. algae

33. A fossil plant is found that appears to have several seeds all completely enclosed in a single outer covering. This plant probably belongs to what group?

a. gymnosperms
b. angiosperms
c. bryophytes
d. ferns
e. algae

34. What is/are advantages to producing broad leaves compared to narrow needle-like leaves?
a. increased water loss
b. increases gas exchange
c. increases surface area for light capture
d. both a and b
e. a, b, and c

35. Which of the following weather conditions would you expect to have the greatest NEGATIVE IMPACT on sexual reproduction of ferns and mosses?
a. excessively wet and raining conditions
b. above average temperatures for several days
c. excessively dry period for several days
d. moderate temperatures and rainfall
e. the shade of a forest

36. Which of the following weather conditions would you expect to have the greatest POSITIVE IMPACT on sexual reproduction of ferns and mosses?
a. excessively wet and raining conditions
b. above average temperature for several days
c. excessively dry period for several days
d. below average temperatures for a few days
e. the shade of a forest

Essay
37. In some areas of the world where there are large numbers of pines, in the spring everything is covered with a yellow dust that turns out upon examination to be pine pollen. Why must conifers produce so much pollen and why do we not see as much pollen produced by a field of flowers?

38. In addition to aiding in seed dispersal, what are other possible functions of fruits that give advantages to plants that make fruits as compared to seed plants that do not make fruits?

M/C
39. Which evolutionary plant innovation eliminated the need for sperm to swim through water in order to fertilize an egg, resulting in plants being truly adapted for reproduction on land?
a. rhizoids
b. fruit
c. roots
d. independent gametophyte
e. pollen

40. If you were hiking and wanted to show off your understanding of the differences between gymnosperms and angiosperms, what characteristics could you see with your naked eye that would help you impress your friends?
a. flowers or cones
b. presence or lack of vascular tissues
c. presence or lack of seeds
d. presence or lack of tree sized stems
e. size of the male gametophyte

41. Leaves are covered on the outside with this to reduce water loss.
a. cuticle
b. stomata
c. petiole
d. endosperm
e. root hairs

42. Vessel tubes are rigid because they include this chemical in their cell walls:
    a. DNA
    b. lignin
    c. ribose
    d. nitrogen
    e. starch

43. Bryophytes
    a. lack eggs and sperm
    b. lack vascular tissue
    c. lack seeds
    d. lack gametes
    e. two of these are correct

44. Gymnosperms
    a. lack flowers
    b. lack seeds
    c. lack eggs and sperm
    d. lack leaves
    e. two of these are correct

45. Ferns
    a. lack vascular tissue
    b. have an alternation of sporophyte and gametophyte generations
    c. lack eggs and sperm
    d. make seeds
    e. two of these are correct

Essay

46. Describe the adaptations plants underwent in the transition from water to land.

M/C

47. When making the move from water to land, plants made modifications in all of the following except...
    a. cell wall composition
    b. conducting tissues
    c. cell surface coverings
    d. mode of reproduction
    e. method of gas exchange

48. Pollen and seeds evolves in response to...
    a. an increase in pollinators
    b. flower evolution
    c. moist environments
    d. seed predators
    e. dry land environments

49. In flowering plants, what is the relationship of the sporophyte generation to the gametophyte generation?
    a. Sporophyte is dominant, but begins development attached to gametophyte
    b. Gametophyte is dominant, and sporophyte is retained on gametophyte
    c. Sporophyte is dominant, and gametophyte is microscopic
    d. Members of this division do not produce sporophytes
    e. Members of this division do not produce gametophytes

50. An oak tree is a _____.
    a. gametophyte
    b. zygote
    c. sporophyte
    d. spore
    e. all of these

51. The evolutionary trend from the ancestral algae to the more recently evolved seed

plants shows:
a. Decreased size of the gametophyte
b. Increased prominence of the sporophyte generation
c. Decreased duration of the gametophyte generation
d. a and b
e. All of the above

52. Which of these is an advantage to a plant that moved onto land?
a. increased CO_2 availability
b. dry environment
c. less support
d. increased heat
e. decreased water availability

53. Which was not an advantage of the terrestrial environment to the first plants?
a. Carbon dioxide concentration was higher in air than water.
b. Minerals and other nutrients were more abundant in the soil than in water.
c. More energy for photosynthesis was available.
d. There were more pollinators on land.
e. All of these were benefits.

54. Which group of land plants is most restricted to moist environments?
a. Vascular plants
b. Tracheophytes
c. Bryophytes
d. Anthophyta
e. Angiosperms

Essay
55. Explain how bryophytes are an intermediate between aquatic and terrestrial plants.

M/C
56. Bryophytes:
a. Are mosses and liverworts
b. Lack true roots and leaves
c. Have poorly developed conducting tissues
d. a and b
e. All of the above

57. Bryophytes have simple structures, called _____, that anchor the plant and absorb water.
a. Roots
b. Mycorrhizae
c. Rhizomes
d. Tracheophytes
e. Rhizoids

58. Archegonia and antheridia are:
a. Water conducting tissues found in Bryophytes
b. Reproductive structures found in Bryophytes
c. Reproductive structures found in flowering plants
d. Spores produced by flowering plants
e. Vascular tissues in ferns

59. Archegonia are _____.
a. floatation bladders
b. reproductive structures
c. conducting tissues
d. flowers
e. root symbionts

60. Which of the following are important reproductive adaptations that allow plants to inhabit terrestrial environments?
a. Leaves and stems
b. Seeds and pollen

c. Roots and leaves
d. Gametophytes and sporophytes
e. Flowers and leaves

61. How do seeds improve the chances of survival of a young plant?
a. Seeds attract pollinators.
b. Seed coats prevent desiccation.
c. Seeds retain food reserve for embryo.
d. a and b.
e. a, b, and c.

62. What is the benefit of having a tall stem?
a. ease of water movement
b. more nutrients available
c. greater support
d. easier reproduction
e. less competition for light

63. Which of the following types of plants produce seeds?
a. Horsetails
b. Ferns
c. Ginkgo
d. Pines
e. c and d

64. Which of the following groups of plants was the first to produce seeds?
a. Angiosperms
b. Bryophytes
c. Gymnosperms
d. Lycophytes
e. Chlorophytes

65. Which of the following are Gymnosperms?
a. Cycads, ginkgoes, and ferns
b. Cycads, conifers, and ferns
c. Ginkgoes, conifers, and horsetails
d. Conifers, ginkgoes, and ferns
e. Cycads, ginkgoes, and conifers

66. Which division has been reduced to one remaining species?
a. conifers
b. cycads
c. ginkgos
d. bryophytes
e. liverworts

67. What group dominated the Carboniferous period and is now burned as coal?
a. angiosperms
b. conifers
c. cycads
d. seedless vascular plants
e. algae

68. Which of the following is NOT an adaptation of conifers to cold, dry habitats?
a. production of "anti-freeze" resin
b. year-round photosynthesis
c. reduced leaf size
d. thick cuticle
e. copious pollen production

69. Pines are primarily _____ pollinated.
a. bee
b. wind
c. moth
d. water

e. beetle

70. What is one major difference between ferns and the other seedless vascular plants?
a. reproductive cycle
b. dominant stage of life
c. leaf shape
d. flower structure
e. vascular system

71. Which group does not depend on water for reproduction?
a. ferns
b. byophytes
c. algae
d. club mosses
e. flowering plants

72. Which group of plants has the greatest diversity (i.e., the most species) living today?
a. Chlorophytes
b. Bryophytes
c. Gymnosperms
d. Angiosperms
e. Ferns

73. What is the main function of flower petals?
a. produce gametes
b. photosynthesize
c. provide support
d. attract pollinators
e. discourage herbivores

74. All of the following contributed substantially to the success of angiosperms except:
a. pollinators
b. broad leaves
c. vascular system
d. flowers
e. fruits

75. What single feature is probably most responsible for the success of angiosperms?
a. Seeds
b. Fruit
c. Broad leaves
d. Flowers
e. Tap roots

76. In angiosperms, the male gametophyte is _____.
a. pollen
b. the anther
c. a flower
d. sperm
e. a seed

Essay
77. Explain the evolutionary relevance of the seed.

M/C
78. A fruit is:
a. a seed
b. a mature ovary
c. a mature ovule
d. the female gametophyte
e. a plant embryo

79. Fruit production requires precious resources; what important benefit do they

confer?
a. feed the embryo
b. keep the seed moist
c. means of dispersal of seeds
d. attract seed eater
e. prevent herbivory

80. What is/are the disadvantages to production of broad leaves?
a. increased water loss
b. increases gas exchange
c. increased surface area for light capture
d. a and b
e. a and c

F/B
MATCHING
a. Angiosperm
b. Gymnosperm
c. Fern
d. Bryophyte
e. Two of the above

81. Need free standing water for fertilization to occur.

82. No vascular tissue

83. Male gametophyte is pollen

84. Male and female cones

85. Non-flowering seed plants

86. An apple tree

87. Monocots and Dicots

88. Cycads and Conifers

M/C
89. Most gymnosperms are pollinated by:
a. insects
b. birds
c. small mammals
d. wind
e. their own eggs

90. The anti cancer drug Taxol is extracted from which type of plant?
a. bryophyte
b. fern
c. seed
d. horse tail
e. more than one of these is correct

M/C
1. e
2. d
3. e

4. b
5. e
6. a
7. c

F/B

8. c
9. a
10. b
11. d
12. e
13. c
14. b
15. a

M/C

16. e

F/B

17. b
18. a
19. c
20. d
21. e

M/C

22. c
23. e
24. a
25. b
26. d
27. a
28. a
29. e
30. d
31. b
32. d
33. b
34. d
35. c
36. a

Essay

37. Pines are wind pollinated and must produce large excesses of pollen. Field flowers are insect pollinated and therefore don't have to produce so much pollen.
38. Fruits provide an extra layer of protection to the seeds. Also it is logical to hypothesize that fleshy fruits provide nourishment to their seeds, although most experiments do not support this hypothesis.

M/C

39. e
40. a
41. a
42. b
43. e
44. a
45. b

Essay

46. No answer in TestBank

M/C

47. a
48. e
49. c
50. c
51. e
52. a
53. d
54. c

Essay

55. No answer in TestBank

M/C

56. e
57. e
58. b

59. b
60. b
61. e
62. e
63. e
64. c
65. e
66. c
67. d
68. e
69. b
70. c
71. e
72. d
73. d
74. c
75. d
76. a

Essay

77. No answer in TestBank

M/C

78. b
79. c
80. a

F/B

81. e
82. d
83. e
84. b
85. b
86. a
87. a
88. b

M/C

89. d
90. c