

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

選擇題：(題目共 100 題，每題 1 分，答錯倒扣 0.25 分，未作答則不予計分)

1. The biological species concept cannot be applied to two putative species that are
 - A. sympatric
 - B. nearly indistinguishable in morphology
 - C. reproductively isolated
 - D. exclusively asexual
2. A group of species including the common ancestor and partial offspring species is called
 - A. polyphyletic group
 - B. monophyletic group
 - C. paraphyletic groups
 - D. outgroup.
3. Which of the following evolutionary forces would result in excessive homozygosity within populations?
 - A. dissortative mating
 - B. balancing selection
 - C. mutation
 - D. Small population size.
4. Which of the following is the first step in allopatric speciation?
 - A. geographical isolation
 - B. polyploidy.
 - C. hybridization.
 - D. genetic drift.
5. Of the modes of selection, which one would maintain genetic polymorphisms within populations?
 - A. purifying selection
 - B. stabilizing selection
 - C. directional selection
 - D. sexual selection
6. Differential survival and reproduction is just another way of saying
 - A. mutation.
 - B. variation.
 - C. natural selection.
 - D. recombination.
7. In evolutionary terms, an organism's fitness is measured by its stability in the face of environmental change.
 - A. health.
 - B. migration rate.
 - C. genetic variability.
 - D. contribution to the gene pool of the next generation.
8. In a population of 10000 individuals, 16 were born with PKU disease. There are two alleles at the gene. Of the following, which are correct?
 - A. Frequency of the recessive allele = 0.00016.
 - B. Frequency of the heterozygote = 0.0768.
 - C. Frequency of the dominant allele = 0.84.
 - D. Given Hardy-Weinberg equilibrium, frequency of patients with PKU = 0.04
9. Some nutrients are considered "essential" in the diets of certain animals because
 - A. only those animals use the nutrients.
 - B. they are subunits of important polymers.

(背面仍有題目,請繼續作答)

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

- C. they cannot be manufactured by the organism.
D. only some foods contain them.

10. When more energy sources are needed than are generated by diet, in which order does the animal draw on stored sources?
A. fat, glycogen, protein
B. glycogen, protein, fat
C. liver glycogen, muscle glycogen, fat
D. muscle glycogen, fat, liver glycogen

11. Evidence that parthenogenic whiptail lizards are derived from sexually reproducing ancestors includes
A. the requirement for male-like behaviors in some females before their partners will ovulate.
B. the development and then regression of testes prior to sexual maturation.
C. the observation that all of the offspring are haploid.
D. dependence on favorable weather conditions for ovulation to occur.

12. Invertebrate animals, spermatogenesis and oogenesis differ, in that
A. oogenesis begins at the onset of sexual maturity, whereas spermatogenesis happens in embryonic development.
B. oogenesis produce four haploid cells, whereas spermatogenesis produces only one functional spermatozoon.
C. cytokinesis is unequal in oogenesis, whereas it is equal in spermatogenesis.
D. oogenesis ends at menopause, whereas spermatogenesis is finished before birth.

13. From earliest to latest, the overall sequence of early development proceeds as follows:
A. first cell division -> synthesis of embryo's DNA begins -> acrosomal reaction -> cortical reaction
B. cortical reaction -> synthesis of embryo's DNA begins -> acrosomal reaction -> first cell division
C. cortical reaction -> acrosomal reaction -> first cell division -> synthesis of embryo's DNA begins
D. acrosomal reaction -> cortical reaction -> synthesis of embryo's DNA begins -> first cell division

14. Animal development compares to plant development in that
A. plant cells, but not animal cells, migrate during morphogenesis.
B. animal cells, but no plant cells, migrate during morphogenesis.
C. plant cells and animal cells migrate extensively during morphogenesis.
D. neither plant cells nor animal cells migrate during morphogenesis.

15. Some bacteria are metabolically active in hot springs because
A. They are able to maintain a cooler internal temperature
B. High temperature make catalysis unnecessary
C. Their enzymes have high optimal temperatures
D. Their enzymes are completely insensitive to temperature

16. Which of the following processes includes all others?
A. osmosis
B. diffusion of a solute across a membrane
C. Facilitated diffusion
D. Passive transport

17. Which term includes all others in the list?
A. Monosaccharide
B. Disaccharide
C. Carbohydrate
D. Polysaccharide

18. The molecular formula for glucose is $C_6H_{12}O_6$. What is the molecular formula for a polymer made by linking ten glucoses together by dehydration reaction?
A. $C_{60}H_{120}O_{60}$

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

- B. $C_6H_{12}O_6$
- C. $C_{60}H_{102}O_{51}$
- D. $C_{60}H_{100}O_{50}$

19. When a cell in S phase is fused with a cell in G_1 , _____.
- A. DNA synthesis begins immediately in the original G_1 nucleus
 - B. the replication of DNA occurring in the original S nucleus is terminated
 - C. the two nuclei fuse and further division is arrested
 - D. the chromosomes of the original G_1 nucleus condense in preparation for mitosis
20. Observations of cancer cells in culture support the hypothesis that cancer cells _____.
- A. do not exhibit density-dependent inhibition
 - B. produce molecules that inhibit the growth factors required for cell division
 - C. exhibit anchorage dependence
 - D. spend the majority of their time in the G_0 phase
21. Which of the following are likely to limit the maximum size of a cell?
- A. the time it takes a molecule to diffuse across a cell
 - B. the cell's surface-to-volume ratio
 - C. the presence of a nucleus in the cell
 - D. The first two answers are correct.
22. Which one of the following organelles is *unlikely* to show enhanced abundance in the pancreatic cells that secrete large amounts of digestive enzymes?
- A. rough endoplasmic reticulum
 - B. free cytoplasmic ribosomes
 - C. Golgi apparatus
 - D. All of the above will increase in pancreatic cells secreting digestive enzymes.
23. Which of the following would be *least* likely to affect osmosis in plants?
- A. proton pumps in the membrane
 - B. a difference in solute concentrations
 - C. receptor proteins in the membrane
 - D. aquaporins
24. Root hairs are most important to a plant because they
- A. anchor a plant in the soil.
 - B. store starches.
 - C. increase the surface area for absorption.
 - D. provide a habitat for nitrogen-fixing bacteria.
25. A young farmer purchases some land in a relatively arid area and is interested in earning a reasonable profit for many years. Which of the following strategies would best allow such a goal to be achieved?
- A. establishing an extensive irrigation system
 - B. using plenty of the best fertilizers
 - C. finding a way to sell all parts of crop plants
 - D. selecting crops adapted to arid areas
26. Which element is important in the formation and stability of cell walls?
- A. zinc
 - B. chlorine
 - C. calcium
 - D. molybdenum

(背面仍有題目,請繼續作答)

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期： 0220 · 節次： 3

※ 考生請注意：本試題 可 不可 使用計算機

27. Biofuels are mainly produced by
- the breakdown of cell wall biopolymers into sugars that can be fermented.
 - plants that convert hemicellulose into gasoline.
 - the genetic engineering of ethanol generating genes into plants.
 - transgenic crops that have cell walls containing ethylene.
28. All of the following may function in signal transduction in plants *except*
- calcium ions.
 - nonrandom mutations.
 - receptor proteins.
 - phytochrome.
29. We know from the experiments of the past that plants bend toward light because
- they need sunlight energy for photosynthesis.
 - the sun stimulates stem growth.
 - cell expansion is greater on the dark side of the stem.
 - auxin is inactive on the dark side of the stem.
30. Plant hormones produce their effects by
- altering the expression of genes.
 - modifying the permeability of the plasma membrane.
 - modifying the structure of the nuclear envelope membrane.
 - both A and B
31. For a neuron with an initial membrane potential at -70 mV, an increase in the movement of potassium ions out of that neuron's cytoplasm would result in
- the neuron switching on its sodium-potassium pump to restore the initial conditions.
 - the replacement of potassium ions with sodium ions.
 - depolarization of the neuron.
 - hyperpolarization of the neuron.
32. Neurotransmitters categorized as inhibitory would be expected to
- open sodium channels.
 - close potassium channels.
 - close chloride channels.
 - hyperpolarize the membrane.
33. The botulinum toxin reduces the synaptic release of
- GABA.
 - epinephrine.
 - glutamate.
 - acetylcholine.
34. Cerebral palsy, which disrupts motor messages from brain to muscle, is usually due to damage of
- basal nuclei of white matter.
 - the neocortex.
 - basal nuclei of gray matter.
 - the corpus callosum.
35. _____ is the layer of cells in a developing embryo between the ectoderm and the endoderm.
- zygote
 - cleavage
 - gastrula
 - mesoderm

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

36. Which of these characteristics does not correctly explain why elephants are classified as animals?

- A. Elephants are eukaryotes
- B. Elephants are sessile
- C. Elephants depend on autotrophs for food
- D. Elephants are multicellular organisms

37. Which of these is *NOT* a chordate?

- A. Lancet
- B. Tuna
- C. sea squirt
- D. amphixius

38. Which structure shown is the only indicator that tunicates are chordates?

- A. anus
- B. mouth
- C. reproductive organs
- D. gill slits

39. Sharks and rays belong to the class Chondrichthyes, which includes _____

- A. hagfishes
- B. cartilaginous fishes
- C. bony fishes
- D. jawless fishes

40. _____ help fishes control their depths in the water

- A. Scales
- B. urinary bladder
- C. Exoskeletons
- D. gas bladder

41. As you study two closely related predatory insect species, the two-spot and the three-spot avenger beetles, you notice that each species seeks prey at dawn in areas without the other species. However, where their ranges overlap the two-spot avenger beetle hunts at night and the three-spot hunts in the morning. When you bring them into the laboratory, their offspring behave in the same manner. You have discovered an example of

- A. mutualism.
- B. character displacement.
- C. Batesian mimicry.
- D. resource partitioning

42. In a particular case of secondary succession, three species of wild grass all invaded a field. By the second season, a single species dominated the field. A possible factor in this secondary succession was

- A. facilitation.
- B. immigration.
- C. inhibition.
- D. mutualism.

43. If the Sun were to suddenly stop providing energy to Earth, most ecosystems would vanish. Which of the following ecosystems would likely survive the longest after this hypothetical disaster?

- A. tundra
- B. desert
- C. grassland
- D. benthic ocean

(背面仍有題目,請繼續作答)

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

44. How does phosphorus normally enter ecosystems?

- A. rock weathering
- B. photosynthesis
- C. geological uplifting (subduction and vulcanism)
- D. atmospheric phosphorous dust

45. The most serious consequence of a loss in ecosystem biodiversity would be the

- A. increase in global warming and thinning of the ozone layer.
- B. loss of ecosystem services on which people depend.
- C. increase in the abundance and diversity of edge-adapted species.
- D. loss of source of genetic diversity to preserve endangered species.

46. Which of the following statements is correct about landscape ecology?

- A. It is the application of ecological principles to the design and construction of sustainable lawns and gardens.
- B. It focuses primarily on human-altered ecological systems.
- C. It deals primarily with ecosystems in urban settings.
- D. It is the application of ecological principles to land-use planning.

47. The movements of individuals can affect the patterns of geographic distributions of species. Which action taken by animals is most likely to expand their natural range?

- A. invasion
- B. dispersal
- C. migration
- D. re-introducing

48. Which of the following population-limiting factors is independent of population density?

- A. disease.
- B. predation.
- C. catastrophe.
- D. competition

49. Dr. Dolittle wanted to estimate the population size of lizards on campus. He set up a transect line, and 50 lizards were captured, marked, and released. After a week, he surveyed again along the transect line and caught 60 lizards, and 10 of the 60 lizards were previously marked. If all the assumptions for this mark-recapture method are met, approximately how many lizards there are on campus?

- A. 100.
- B. 200.
- C. 300.
- D. 400.

50. A mother bird is gathering food for her chicks, constrained by the fact that she can not leave her chicks for more than 15 minutes. There are five plots with different conditions listed in the table below for her to choose. If everything else being equal, according to Optimal foraging theory, which plot will you predict this mother bird will go for foraging?

Plot	Time for traveling (min)	# of prey/m ²	chance of being eaten
1	5	10	0.1
2	5	15	0.1
3	10	20	0.2
4	10	25	0.2
5	20	50	0

- A. Plot 1.
- B. Plot 2.

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220 · 節次 · 3

※ 考生請注意：本試題 可 不可 使用計算機

- C. Plot 3.
- D. Plot 5.

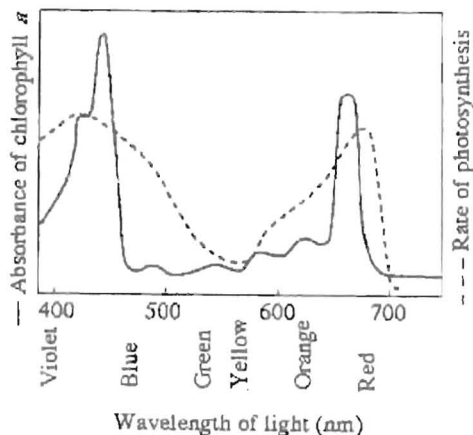
51. The diversity and complexity of bird songs may be associated with:

- I. where a bird is distributed, II. how old a bird is, III its reproductive success, IV physiological and genetic conditions,
- A. all of them
- B. none of them
- C. only II, III
- D. only I, III

52. Which of the following terms is/are correctly described?

- I. Benthic zone: in a lake, the well-lit, open surface water farther from shore.
- II. Estuaries: the area where a freshwater stream or river merges with the ocean.
- III. Intertidal zone: open water at the edge of the continental shelf.
- IV. Littoral zone: in a lake, the shallow, well-lit water close to shore.
- A. II, IV
- B. I, II,
- C. I, IV
- D. II, III

53.



The figure above shows the absorption spectrum for chlorophyll a and the action spectrum for photosynthesis. What reason makes their difference?

- A. Green and yellow wavelengths destroy photosynthetic pigments.
 - B. Green and yellow wavelengths enhance the absorption of red and blue wavelengths.
 - C. Not only chlorophyll a, but also other pigments absorb light for photosynthesis.
 - D. The photosynthesis is interfered by the Oxygen.
54. What wavelength of light in the upper figure is most effective in driving photosynthesis?
- A. 625 nm
 - B. 575 nm
 - C. 475 nm
 - D. 425 nm

55. If there are 48 chromatids in a cell, how many centromeres are there?

- A. 12
- B. 24
- C. 48
- D. 96

(背面仍有題目,請繼續作答)

系所組別：生命科學系甲、乙、丙組

考試科目：普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

56. What is a karyotype?

- A. The set of unique physical characteristics of a chromosome
- B. The collection of all the mutations present within a chromosome
- C. The combination of chromosomes found in a gamete
- D. A set of every pair of homologous chromosomes within a cell according to their sizes and shapes

57. What stage in meiosis would centromeres of sister chromatids disjoin and chromatids separate?

- A. Anaphase I
- B. Telophase I
- C. Anaphase II
- D. Telophase II

58. In a cross $AaBbCc \times AaBbCc$ with simple dominance and independent assortment, what is the probability of their offspring has the genotype $AaBbCc$?

- A. 1/4
- B. 1/8
- C. 1/16
- D. 1/64

59. A Barr body is often found in the nucleus of which kind of human cell?

- A. Sperm cells only
- B. Unfertilized egg cells only
- C. Male somatic cells only
- D. Female somatic cells only

60. Why linked genes are inherited together?

- A. The linked genes are located close together on the same chromosome.
- B. The linked genes are paired close together on the different chromosome.
- C. The linked genes align together during metaphase I of meiosis.
- D. All alleles are rearranged and sorted together during meiosis.

61. Which sequence of blood flow can be observed in either a reptile or a mammal?

- A. left ventricle \rightarrow aorta \rightarrow lungs \rightarrow systemic circulation
- B. pulmonary vein \rightarrow left atrium \rightarrow ventricle \rightarrow pulmonary circuit
- C. right ventricle \rightarrow pulmonary vein \rightarrow pulmocutaneous circulation
- D. vena cava \rightarrow right atrium \rightarrow ventricle \rightarrow pulmonary circuit

62. Damage to the sinoatrial node in humans

- A. would have a negative effect on peripheral resistance.
- B. would block conductance between the bundle branches and the Purkinje fibers.
- C. would have a direct effect on blood pressure monitors in the aorta.
- D. would disrupt the rate and timing of cardiac muscle contractions.

63. How do people contract salmonella poisoning?

- A. The bacterium releases chemical messengers that make it resistant to phagocytosis.
- B. The microbe can survive the acidic environment of the stomach and resist lysosomal degradation in macrophages.
- C. There is a delay in selection of the population of eosinophils that recognize and are responsible for fighting these bacterial infections.
- D. The chemotactic messengers released by the salmonella bacterium do not attract sufficient neutrophils to entirely destroy the infection.

64. Which of the following differentiates T cells and B cells?

- A. T cells but not B cells have surface markers.

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220 · 節次：3

※ 考生請注意：本試題 可 不可 使用計算機

- B. T cells but not B cells can directly attack and destroy invading pathogens.
C. Only B cells are produced from stem cells of the bone marrow.
D. Only B cells take part in cell-mediated immunity.

65. Why is it that some body cells respond differently to the same peptide hormones?

- A. A target cell's response is determined by the product of a signal transduction pathway
B. The hormone is chemically altered in different ways as it travels through the circulatory system.
C. The circulatory system regulates responses to hormones by routing the hormones to specific targets.
D. Different target cells have different genes.

66. Based on their effects, which pair below could be considered antagonistic?

- A. neurosecretory cells and neurotransmitters
B. prostaglandin F and nitric oxide
C. hormones and target cells
D. endocrine and exocrine glands

67. What is the term for metabolic pathways that release stored energy by breaking down complex molecules?

- A. anabolic pathways
B. catabolic pathways
C. bioenergetic pathways
D. fermentation pathways

68. When muscle cells undergo anaerobic respiration, they become fatigued and painful. This is now known to be caused by

- A. buildup of pyruvate
B. increase in ethanol
C. increase in sodium ions
D. increase in potassium ions

69. Paracrine signaling

- A. involves secreting cells acting on nearby target cells by discharging a local regulator into the extracellular fluid.
B. involves mating factors attaching to target cells and causing production of new paracrine cells.
C. occurs only in paracrine yeast cells.
D. requires nerve cells to release a neurotransmitter into the synapse.

70. Why has *C. elegans* proven to be a useful model for understanding apoptosis?

- A. This plant has a long-studied aging mechanism that has made understanding its death just a last stage.
B. The nematode undergoes a fixed and easy-to-visualize number of apoptotic events during its normal development.
C. All of its genes are constantly being expressed so all of its proteins are available from each cell.
D. The animal has very few genes, so that finding those responsible is easier than in a more complex organism.

71. Mycoplasmas are bacteria that lack cell walls. On the basis of this structural feature, which statement concerning mycoplasmas should be true?

- A. They are gram-negative.
B. They are subject to lysis in hypotonic conditions.
C. They lack a cell membrane as well.
D. They possess typical prokaryotic flagella.

72. Penicillin is an antibiotic that inhibits enzymes from catalyzing the synthesis of peptidoglycan, so which prokaryotes should be *most* vulnerable to inhibition by penicillin?

- A. gram-negative bacteria
B. endospore-bearing bacteria
C. gram-positive bacteria
D. archaea

(背面仍有題目,請繼續作答)

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機73. Which statement about the genomes of prokaryotes is *correct*?

- A. Prokaryotic genomes are diploid throughout most of the cell cycle.
- B. Prokaryotic chromosomes are sometimes called plasmids.
- C. Prokaryotic genomes are composed of linear DNA (that is, DNA existing in the form of a line with two ends).
- D. The prokaryotic chromosome is not contained within a nucleus but, rather, is found at the nucleoid region.

74. Regarding prokaryotic reproduction, which statement is *correct*?

- A. Prokaryotes feature the union of haploid gametes, as do eukaryotes.
- B. Mutation is a primary source of variation in prokaryote populations.
- C. Prokaryotes skip sexual life cycles because their life cycle is too short.
- D. Prokaryotes form gametes by meiosis.

75. Occurring in sheets of tightly packed cells, _____ covers the outside of the body and lines organs and cavities within the body.

- A. Connective tissue
- B. Adipose tissue
- C. Epithelial tissue
- D. Muscle tissue

76. Birds and mammals are mainly _____, maintaining their body temperature within a narrow range by heat generated by metabolism.

- A. Ectothermic
- B. Endothermic
- C. Poikilothermic
- D. hematocryal

77. A major thermoregulatory adaptation in mammals and birds is _____.

- A. Insulation
- B. Vasodilation
- C. Hibernation
- D. Estivation

78. During nitrogenous breakdown, enzymes remove nitrogen in the form of _____, a small and very toxic molecule.

- A. Carbon
- B. Amino acid
- C. Ammonia
- D. Lactic acid

79. Usually one follicle matures and releases its egg during each menstrual cycle in the process of _____.

- A. Oogenesis
- B. Folliculogenesis
- C. Ovulation
- D. Fertilization

80. _____ cells scattered between the seminiferous tubules produce testosterone and other androgens.

- A. Sertoli
- B. Theca
- C. Cumulus
- D. Leydig

81. What is the function of reverse transcriptase in retroviruses?

- A. It hydrolyzes the host cell's DNA.
- B. It uses viral RNA as a template for DNA synthesis.

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

- C. It converts host cell RNA into viral DNA.
D. It translates viral RNA into proteins.

82. Antiviral drugs that have become useful are usually associated with which of the following properties?

- A. ability to remove all viruses from the infected host
B. interference with the viral reproduction
C. prevention of the host from becoming infected
D. removal of viral proteins

83. How does a bacterial cell protect its own DNA from restriction enzymes?

- A. adding methyl groups to adenines and cytosines
B. using DNA ligase to seal the bacterial DNA into a closed circle
C. adding histones to protect the double-stranded DNA
D. forming "sticky ends" of bacterial DNA to prevent the enzyme from attaching

84. A gene that contains introns can be made shorter (but remain functional) for genetic engineering purposes by using

- A. RNA polymerase to transcribe the gene.
B. a restriction enzyme to cut the gene into shorter pieces.
C. reverse transcriptase to reconstruct the gene from its mRNA.
D. DNA polymerase to reconstruct the gene from its polypeptide product.

85. The biggest problem with the shotgun technique is its tendency to underestimate the size of the genome. Which of the following might best account for this?

- A. skipping some of the clones to be sequenced
B. missing some of the overlapping regions of the clones
C. counting some of the overlapping regions of the clones twice
D. missing some duplicated sequences

86. Which of the following is a major distinction between a transposon and a retrotransposon?

- A. A transposon always leaves a copy of itself at its original position and a retrotransposon does not.
B. A retrotransposon always uses the copy-paste mechanism, while a transposon uses cut and paste mechanism.
C. A transposon is related to a virus and a retrotransposon is not.
D. A transposon moves via a DNA intermediate and a retrotransposon via an RNA intermediate.

87. What is the role of DNA ligase in the elongation of the lagging strand during DNA replication?

- A. catalyze the lengthening of telomeres
B. unwind the parental double helix
C. synthesize RNA nucleotides to make a primer
D. join Okazaki fragments together

88. Suppose you are provided with an actively dividing culture of *E. coli* bacteria to which radioactive thymine has been added. What would happen if a cell replicates once in the presence of this radioactive base?

- A. One of the daughter cells, but not the other, would have radioactive DNA.
B. DNA in both daughter cells would be radioactive.
C. All four bases of the DNA would be radioactive.
D. Radioactive thymine would pair with nonradioactive guanine.

89. RNA polymerase moves in which direction along the DNA?

- A. 3' → 5' along the coding (sense) strand
B. 5' → 3' along the template strand
C. 3' → 5' along the coding strand
D. 3' → 5' along the template strand

(背面仍有題目,請繼續作答)

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期：0220，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

90. What is a ribozyme?

- A. an enzyme that synthesizes RNA primers during DNA replication
- B. an enzyme that catalyzes the association between the large and small ribosomal subunits
- C. an RNA with enzymatic activity
- D. an enzyme that synthesizes RNA as part of the transcription process

91. In eukaryotes, transcription is generally associated with

- A. very tightly packed DNA only.
- B. both euchromatin and histone acetylation.
- C. heterochromatin only.
- D. euchromatin only.

92. The lactose operon is likely to be transcribed when

- A. the cyclic AMP levels are low.
- B. there is more glucose in the cell than lactose.
- C. there is glucose but no lactose in the cell.
- D. the cyclic AMP and lactose levels are both high within the cell.

93. According to the endosymbiotic theory of the origin of eukaryotic cells, how did mitochondria originate?

- A. by secondary endosymbiosis
- B. from engulfed, originally free-living prokaryotes
- C. from infoldings of the plasma membrane, coupled with mutations of genes for proteins in energy-transfer reactions
- D. from the nuclear envelope folding outward and forming mitochondrial membranes

94. Members of this phylum produce two kinds of haploid spores, one kind being asexually produced conidia:

- A. Ascomycota
- B. Basidiomycota
- C. Glomeromycota
- D. Zygomycota

95. The chloroplasts of all of the following are derived from ancestral red algae, except those of

- A. brown algae.
- B. diatoms.
- C. dinoflagellates.
- D. green algae.

96. The result of heterospory is

- A. the existence of male and female sporophytes.
- B. the existence of male and female gametophytes.
- C. the absence of sexuality from both plant generations.
- D. both (A) and (B) above.

97. The seed coat's most important function is to provide

- A. a nutrient supply for the embryo.
- B. desiccation resistance.
- C. dormancy.
- D. the means for dispersal.

98. Which of the following is a true statement?

- A. Flowers may have secondary growth.
- B. Primary growth and secondary growth alternate in the life cycle of a plant.
- C. Secondary growth is a common feature of eudicot leaves.
- D. Secondary growth is produced by both the vascular cambium and the cork cambium.

系所組別： 生命科學系甲、乙、丙組

考試科目： 普通生物學

考試日期： 0220 · 節次： 3

※ 考生請注意：本試題 可 不可 使用計算機

99. Which of the following is a true statement about plant reproduction?

- A. Both male and female bryophytes produce gametangia.
- B. Eggs and sperm of bryophytes swim toward one another.
- C. "Embryophytes" are small because they are in an early developmental stage.
- D. Gametangia protect gametes from excess water.

100. Which of the following root tissues gives rise to lateral roots?

- A. cortex
- B. endodermis
- C. pericycle
- D. phloem