

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：0224，節次：3

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請勿在本試題紙上作答，否則不予計分

1. Which of the following terms or structures is properly associated only with animals?
 - (a) *Hox* genes
 - (b) Autotrophy
 - (c) sexual reproduction
 - (d) chitin

2. What do animals as diverse as corals and monkeys have in common?
 - (a) number of embryonic tissue layers
 - (b) type of body symmetry
 - (c) presence of *Hox* genes
 - (d) degree of cephalization

3. Which of the following correctly characterizes the phylum Rotifera?
 - (a) a single-opening digestive tract
 - (b) a pair of mandibles made of chitin
 - (c) parthenogenic reproduction
 - (d) a relatively large size

4. Which extant chordates are postulated to be *most* like the earliest chordates in appearance?
 - (a) lancelets
 - (b) amphibians
 - (c) reptiles
 - (d) chondrichthyans

5. In which of these extant classes did jaws occur earliest?
 - (a) lampreys
 - (b) chondrichthyans
 - (c) ray-finned fishes
 - (d) lungfishes

6. Which of the following statements correctly describes any chemical reaction that has reached equilibrium?

(背面仍有題目,請繼續作答)

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- (a) The concentrations of products and reactants are equal.
 - (b) The rates of the forward and reverse reactions are equal.
 - (c) Both forward and reverse reactions have halted.
 - (d) The reaction is now irreversible.
7. Measurements show that the PH of a particular lake is 4.0. What is the hydrogen ion concentration of the lake?
- (a) 4.0 M
 - (b) 10^{-10} M
 - (c) 10^{-4} M
 - (d) 10^4 M
8. Which of the following statements concerning *unsaturated* fats is true?
- (a) They are more common in animals than in plants.
 - (b) They have double bonds in the carbon chains of their fatty acids.
 - (c) They generally solidify at room temperature.
 - (d) They contain more hydrogen than saturated fats having the same number of carbon atoms.
9. Which of the following is present in a prokaryotic cell?
- (a) Mitochondrion
 - (b) Ribosome
 - (c) Nuclear envelope
 - (d) chloroplast
10. Which structure-function pair is *mismatched*?
- (a) Nucleolus; production of ribosomal subunits
 - (b) Lysosome; intracellular digestion
 - (c) Ribosome; protein synthesis
 - (d) Microtubule; muscle contraction

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11. In the way do the membranes of an eukaryotic cell vary?

- (a) Phospholipids are found only in certain membranes.
- (b) Certain proteins are unique to each membrane.
- (c) Only certain membranes of the cell are selectively permeable.
- (d) Only certain membranes are constructed from amphipathic molecules.

12. Which of the following factors would tend to increase membrane fluidity?

- (a) A greater proportion of unsaturated phospholipids
- (b) A greater proportion of saturated phospholipids
- (c) A lower temperature
- (d) A relatively high protein content in the membrane

13. Protein phosphorylation is commonly involved with all of the following *except*

- (a) regulation of transcription by extracellular signaling molecules.
- (b) enzyme activation.
- (c) activation of G protein-coupled receptors.
- (d) activation of receptor tyrosine kinases.

14. Consider this pathway: epinephrine → G protein-coupled receptor → G protein → adenylyl cyclase → cAMP. Identify the second messenger.

- (a) cAMP.
- (b) G protein
- (c) GTP
- (d) adenylyl cyclase

15. What proportion of UV radiation is absorbed by ozone in the atmosphere?

- (a) Less than 5%
- (b) About 33%
- (c) About 66%
- (d) More than 95%

(背面仍有題目,請繼續作答)

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16. How often does El Niño occur?

- (a) Every three years (periodic)
- (b) Every four to seven years (quasi-periodic)
- (c) Every fifteen to twenty years (quasi-periodic)
- (d) Right before the Taiwan presidential elections (political)

17. The predator-prey cycle shows

- (a) how one population can limit another population
- (b) how wolves and elk maintain a mutualistic relationship
- (c) how bioaccumulation helps maintain balance in nature
- (d) how pollutants are recycled through species in the environment

18. Competition for resources is a limiting factor because

- (a) abiotic factors such as light, water, and temperature are present
- (b) predator-prey populations often increase and decrease in cycles
- (c) campgrounds and orchards provide alternate environments for animals and plants
- (d) there is only a limited amount of food and living space available in any ecosystem

19. When concerned people try to restore or improve damaged areas of an ecosystem, this is called

- (a) a habitat restructuring program
- (b) a habitat restoration project
- (c) a habitat encroachment program
- (d) a habitat enhancement project

20. When populations share their environment and interact with populations of other species, it is called a

- (a) biome
- (b) ecosystem
- (c) community
- (d) habitat

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21. The best description of "Allosteric Regulation of Enzymes" is

- (a) The binding of an activator stabilizes the active form of the enzyme.
- (b) The binding of an inhibitor stabilizes the inactive form of the enzyme.
- (c) Each enzyme has active and inactive forms.
- (d) A molecule binds to an enzyme at one site and affects the enzyme's function at another site

22. If a molecule binds to another part of an enzyme, it causes the enzyme to change shape and makes the active site less effective. The best term for the description is

- (a) competitive inhibitors
- (b) noncompetitive inhibitors
- (c) cofactors
- (d) substrate

23. Which one is NOT included in the stages of cellular respiration:

- (a) glycolysis
- (b) citric acid cycle
- (c) Calvin cycle
- (d) oxidative phosphorylation

24. Which one is not related to cellular fermentation?

- (a) It consists of glycolysis plus reactions that regenerate NAD^+ , which can be reused by glycolysis.
- (b) Two common types are alcohol fermentation and lactic acid fermentation.
- (c) It uses substrate-level phosphorylation instead of an electron transport chain to generate ATP.
- (d) It consists of chemiosmosis, the use of energy in a H^+ gradient to drive cellular work.

25. Which step is NOT included in the light reactions of photosynthesis?

- (a) Split H_2O and Release O_2
- (b) Reduce NADP^+ to NADPH
- (c) photorespiration
- (d) Generate ATP from ADP by photophosphorylation

背面仍有題目,請繼續作答)

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26. Which step is NOT included in The Calvin cycle of photosynthesis?

- (a) Carbon fixation
- (b) Reduction
- (c) Regeneration of the CO₂ acceptor
- (d) Generate ATP from ADP by photophosphorylation

27. Which protein complexes are associated with centromeres and spindles for mitosis?

- (a) Kinetochores
- (b) Cytochromes
- (c) centrosomes
- (d) histones

28. The best description for Cytokinesis is

- (a) the division of the genetic material in the nucleus
- (b) the division of the cytoplasm
- (c) the division of the chromosomes
- (d) the division of DNA

29. The cells and signaling molecules that initiate inflammatory responses are

- (a) the lymphocytes and the interferons.
- (b) the phagocytes and the chemokines.
- (c) the dendritic cells and the interferons.
- (d) the mast cells and the histamines.

30. A key part of the humoral immune response is

- (a) the attack of cytotoxic T cells on infected host cells.
- (b) the production of antibodies by plasma cells.
- (c) perforation of infected host cells by perforin.
- (d) the attack of phagocytes on living pathogens.

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31. The nitrogenous waste that requires the most energy to produce is

- (a) ammonia.
- (b) ammonium.
- (c) urea.
- (d) uric acid.

32. When stimulated by aldosterone, the reabsorption of Na^+ is increased along

- (a) the loop of Henle.
- (b) Bowman's capsule.
- (c) the proximal tubule.
- (d) the distal tubule.

33. Who suggested that an individual is composed of Germplasm and Somatoplasm?

- (a) Lamarck
- (b) Mendel
- (c) Darwin
- (d) Weismann

34. Who first suggested that species are mutable?

- (a) Lamarck
- (b) Darwin
- (c) Linnaeus
- (d) Mendel

35. Which of the following changes in the gene pool results in adaptation to the environment?

- (a) founder's effect
- (b) mutation
- (c) directional selection
- (d) migration

(背面仍有題目,請繼續作答)

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36. A group of species including the common ancestor and part of offspring species is called

- (a) polyphyletic group
- (b) monophyletic group
- (c) paraphyletic groups
- (d) outgroup.

37. What is the mechanism for 'use and disuse'?

- (a) random mutation
- (b) inheritance of acquired characteristics
- (c) natural selection
- (d) genetic drift

38. 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

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

- (a) disease.
- (b) predation.
- (c) catastrophe.
- (d) competition

40. 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.

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41. 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.
- (c) Plot 3.
- (d) Plot 5.

42. 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

43. 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

(背面仍有題目,請繼續作答)

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44. Which of the following statements about diatoms is FALSE?

- (a) They are a highly diverse group of protists.
- (b) They are mostly sexual members of the phytoplankton.
- (c) They are unicellular algae with a unique two-part, glass-like wall of hydrated silica.
- (d) Their dead cells tend to sink to the ocean floor, forming large deposits called diatomaceous earth.

45. All of the following are in the same eukaryotic supergroup as land plants EXCEPT

- (a) chlorophytes
- (b) charophytes
- (c) brown algae
- (d) red algae

46. All of the following are common to both charophytes and land plants EXCEPT

- (a) apical meristem
- (b) flagellated sperm
- (c) sporopollenin
- (d) phragmoplast

47. A new species has flagellated sperm, xylem with tracheids, separate gametophyte and sporophyte generations with the sporophyte dominant and no seeds. This plant is closely related to:

- (a) angiosperms
- (b) gymnosperms
- (c) ferns
- (d) mosses

48. In both mycorrhizae and lichens, what does the fungal partner provide to its photosynthetic partner?

- (a) antibiotics
- (b) carbohydrates
- (c) fixed nitrogen
- (d) water and minerals

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49. Which of the following is NOT a sound taxonomic group?

- (a) ascomycetes
- (b) chytrids
- (c) deuteromycetes
- (d) zygomycetes

50. Which of the following statements is INCORRECTLY concerning the cutting and burning of tropical rain forests?

- (a) leads to greenhouse effect
- (b) leads to global warming
- (c) decreased removal of CO₂ from the atmosphere
- (d) decreasing sea level

51. Most of the growth of a plant body is the result of

- (a) cell division.
- (b) cell elongation.
- (c) cell division.
- (d) morphogenesis.

52. If you were able to walk into an opening cut into the center of a giant tree, when you exit from the middle of the trunk (stem) outward, you would cross, in order,

- (a) the heartwood, sapwood, vascular cambium, and bark.
- (b) the late wood, early wood, cork cambium, phloem, and periderm.
- (c) the vascular cambium, annual rings, phloem, cork cambium, and cork.
- (d) the secondary xylem, primary xylem, vascular cambium, phloem, and periderm.

53. An animal that migrates great distance would obtain the greatest benefit from storing its energy as

- (a) proteins.
- (b) carbohydrates.
- (c) amino acids.
- (d) fats.

(背面仍有題目,請繼續作答)

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54. Leptin is a product of adipose cells. Therefore, a very obese mouse would be expected to have which of the following?

- (a) increased gene expression of *ob* and decreased expression of *db*
- (b) increased gene expression of *db* and decreased expression of *ob*
- (c) decreased transcription of both *ob* and *db*
- (d) mutation of *ob* or *db*

55. What is the reason that fluid is forced from the bloodstream to the surrounding tissues at arteriole end of systemic capillaries?

- (a) The osmotic pressure of the interstitial fluid is greater than that of the blood.
- (b) The hydrostatic pressure of the blood is less than that of the interstitial fluid.
- (c) The hydrostatic pressure of the blood is greater than the osmotic pressure of the blood.
- (d) The osmotic pressure of the interstitial fluid is greater than the hydrostatic pressure of the blood.

56. Air rushes into the lungs of humans during inhalation because

- (a) the rib muscles and diaphragm contract, increasing the lung volume.
- (b) pressure in the alveoli increases.
- (c) gas flows from a region of lower pressure to a region of higher pressure.
- (d) pulmonary muscles contract and pull on the outer surface of the lungs.

57. Evolutionary adaptations that help diverse animals exchange matter with the environment include

- (a) gastrovascular activity, two-layered body, and torpedo shape.
- (b) external respiratory surface, small size, and two-layered body.
- (c) large volume, long tubular body, and wings.
- (d) complex internal structures, small size, and large surface area.

58. The epithelium type with the shortest diffusion distance is

- (a) pseudostratified ciliated columnar epithelium.
- (b) stratified squamous epithelium.
- (c) simple squamous epithelium.
- (d) simple cuboidal epithelium.

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59. An advantage of asexual reproduction is that

- (a) asexual reproduction produces offspring that respond effectively to new pathogens.
- (b) asexual reproduction allows a species to readily rid itself of harmful mutations.
- (c) asexual reproduction allows the species to endure long periods of unstable environmental conditions.
- (d) asexual reproduction enables the species to rapidly colonize habitats that are favorable to that species.

60. An oocyte released from a human ovary enters the oviduct as a result of

- (a) the beating action of the flagellum on the oocyte.
- (b) the force of the follicular ejection directing the oocyte into the oviduct.
- (c) the wavelike beating of cilia lining the oviduct.
- (d) movement of the oocyte through the pulsing uterus into the oviduct.

61. During fertilization, the acrosomal contents

- (a) digest the protective coat on the surface of the egg.
- (b) nourish the mitochondria of the sperm.
- (c) trigger the completion of meiosis by the sperm.
- (d) block polyspermy.

62. In mammals, the nuclei resulting from the union of the sperm and the egg are first truly diploid at the end of the

- (a) acrosomal reaction.
- (b) initial cleavage.
- (c) completion of spermatogenesis.
- (d) completion of gastrulation.

63. What impact would a nonfunctioning statocyst have on an earthworm? The earthworm would not be able to

- (a) move.
- (b) sense light.
- (c) hear.

(背面仍有題目,請繼續作答)

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(d) orient with respect to gravity.

64. Duchenne muscular dystrophy is a sex-linked condition in humans that results from abnormal dystrophin protein. The condition results in progressive weakening and atrophy of muscles, usually beginning with the legs. This is most consistent with which of the following?

- (a) an abnormality of actin protein distribution
- (b) a structural abnormality of the sarcomere
- (c) a disturbance of smooth muscle
- (d) an abnormality of calcium channels

65. Active transport involves all of the following *except* the

- (a) diffusion of solute through the lipid bilayer of a membrane.
- (b) pumping of solutes across the membrane.
- (c) hydrolysis of ATP.
- (d) transport of solute against a concentration gradient.

66. Guard cells are the only cells in the epidermis that contain chloroplasts and can undergo photosynthesis. This is important because

- (a) chloroplasts sense when light is available so that guard cells will open.
- (b) photosynthesis provides the energy necessary for contractile proteins to flex and open the guard cells.
- (c) guard cells will produce the O_2 necessary to power active transport.
- (d) ATP is required to power proton pumps in the guard cell membranes.

67. A researcher analyzes the mineral content of a particular grass and is surprised to find substantial levels of uranium in both leaf and root tissues. The most likely explanation for this finding is that

- (a) uranium is an essential nutrient for this grass.
- (b) the plant has a mutation in its active transport proteins.
- (c) there is a higher than usual concentration of uranium in the soil.
- (d) uranium is substituting for some other essential nutrient.

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68. You are weeding your garden when you accidentally expose some roots of your pea plants. You notice swellings (root nodules) on the roots and there is a reddish tinge to the ones you accidentally damaged. Most likely your peas plants

- (a) suffer from a mineral deficiency.
- (b) are infected with a parasite.
- (c) are benefiting from a mutualistic bacterium.
- (d) are developing offshoots from the root.

69. Which of the following is the correct sequence during the alternation of generations life cycle in a flowering plant?

- (a) sporophyte → meiosis → gametophyte → gametes → fertilization → diploid zygote
- (b) sporophyte → mitosis → gametophyte → meiosis → sporophyte
- (c) haploid gametophyte → gametes → meiosis → fertilization → diploid sporophyte
- (d) sporophyte → spores → meiosis → gametophyte → gametes

70. What effects would occur in a mutant of *Arabidopsis* that cannot synthesize GABA within its flowers?

- (a) Pollen tube growth would not be directed toward the egg, and fertilization would not occur.
- (b) The seeds from the flowers would be unable to break dormancy.
- (c) The pollen grain would not form a pollen tube due to incompatibility with the pollen tube.
- (d) The length of the style would be increased to the point where the growing pollen tube would be unable to reach the synergids.

71. According to the acid growth hypothesis, auxin works by

- (a) dissolving sieve plates, permitting more rapid transport of nutrients.
- (b) dissolving the cell membranes temporarily, permitting cells that were on the verge of dividing to divide more rapidly.
- (c) changing the pH within the cell, which would permit the electron transport chain to operate more efficiently.
- (d) increasing wall plasticity and allowing the affected cell walls to elongate.

(背面仍有題目,請繼續作答)

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72. Plants often use changes in day length (photoperiod) to trigger events such as dormancy and flowering. It is logical that plants have evolved this mechanism because photoperiod changes

- (a) are more predictable than air temperature changes.
- (b) alter the amount of energy available to the plant.
- (c) are modified by soil temperature changes.
- (d) can reset the biological clock.

73. A sexually reproduction animal has two unlinked genes, one for head shape (A) and one for tail length (B). Its genotype is AaBb. Which of the following genotypes is possible in a gamete from this organism?

- (a) bb
- (b) AB
- (c) AaBb
- (d) Bb

74. Human males are much more likely to be have hemophilia (a failure of blood to clot properly) than human females. This is the case because

- (a) hemophilia is a contagious disease to which males are more susceptible.
- (b) the gene for hemophilia is carried on the Y chromosome.
- (c) hemophilia is carried on the autosomes.
- (d) the gene for hemophilia is sex-linked.

75. How would one explain a testcross involving F₁ dihybrid flies in which more parental-type offspring than recombinant-type offspring are produced?

- (a) The two genes are linked.
- (b) Both of the characters are controlled by more than one gene.
- (c) The testcross was improperly performed.
- (d) Recombination did not occur in the cell during meiosis.

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76. Meiosis II is similar to mitosis in that

- (a) sister chromatids separate during anaphase.
- (b) DNA replicates before the division.
- (c) the daughter cells are diploid.
- (d) homologous chromosomes synapse.

77. Which of the following is true of a species that has a chromosome number of $2n = 16$?

- (a) The species is diploid with 32 chromosomes per cell.
- (b) The species has 16 sets of chromosomes per cell.
- (c) Each cell has eight homologous pairs.
- (d) A gamete from this species has four chromosomes.

78. The frequency of crossing over between any two linked genes will be which of the following?

- (a) Higher if they are recessive
- (b) Dependent on how many alleles there are
- (c) Determined by their relative dominance
- (d) Proportional to the distance between them

79. Which of the following is characteristic of the lytic cycle?

- (a) Many bacterial cells containing viral DNA are produced.
- (b) Viral DNA is incorporated into the host genome.
- (c) The viral genome replicates without destroying the host.
- (d) A large number of phages are released at a time.

80. 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 viral replication
- (c) prevention of the host from becoming infected
- (d) removal of viral proteins

(背面仍有題目,請繼續作答)

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81. Which of the following must exist in a population before natural selection can act upon that population?

- (a) genetic variation among individuals
- (b) variation among individuals caused by environmental factors
- (c) sexual reproduction
- (d) gene flow

82. The role that humans play in artificial selection is to

- (a) determine who lives and who dies.
- (b) create the genetic variants, which nature then selects.
- (c) choose which organisms breed, and which do not.
- (d) train organisms to breed more successfully.

83. Why is it unwise to try to relate an organism's complexity with its size or number of cells?

- (a) A very large organism may be composed of very few cells or very few cell types.
- (b) A single-celled organism, such as a bacterium or a protist, still has to conduct all the complex life functions of a large multicellular organism.
- (c) A single-celled organism that is also eukaryotic, such as a yeast, still reproduces mitotically.
- (d) A simple organism can have a much larger genome.

84. If humans have 2,900 Mb, a specific member of the lily family has 120,000 Mb, and a yeast has ~13 Mb, why can't this data allow us to order their evolutionary significance?

- (a) Size matters less than gene density.
- (b) Size does not compare to gene density.
- (c) Size does not vary with gene complexity.
- (d) Size is mostly due to "junk" DNA.

85. Prokaryotic ribosomes differ from those present in eukaryotic cytosol. Because of this, which of the following is correct?

- (a) Some antibiotics can block protein synthesis in bacteria without effects in the eukaryotic host.
- (b) Eukaryotes did not evolve from prokaryotes.
- (c) Translation can occur at the same time as transcription in eukaryotes but not in prokaryotes.

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(d) Some antibiotics can block the synthesis of peptidoglycan in the walls of bacteria.

86. Regarding prokaryotic genetics, which statement is correct?

- (a) Crossing over during prophase I introduces some genetic variation.
- (b) Prokaryotes feature the union of haploid gametes, as do eukaryotes.
- (c) Prokaryotes exchange some of their genes by conjugation, the union of haploid gametes, and transduction.
- (d) Mutation is a primary source of variation in prokaryote populations.

87. Why would a liver cell and a lung cell respond differently to the same steroid hormone?

- (a) They have different receptor proteins within the cell.
- (b) They have different acceptor proteins on the chromatin.
- (c) Steroid hormones usually transmit signals that are antagonistic.
- (d) The acceptor proteins are associated with different genes in the two kinds of cells.

88. The endocrine system and the nervous system are structurally related. Which of the following cells best illustrates this relationship?

- (a) a neuron in the spinal cord
- (b) a steroid-producing cell in the adrenal cortex
- (c) a neurosecretory cell in the hypothalamus
- (d) a brain cell in the cerebral cortex

89. An impulse relayed along a myelinated axon "jumps" from _____ to _____.

- (a) oligodendrocyte; Schwann cell
- (b) node of Ranvier; Schwann cell
- (c) node of Ranvier; node of Ranvier
- (d) Schwann cell; node of Ranvier

90. After an action potential, the resting potential is restored by

- (a) the opening of sodium activation gates.
- (b) the opening of voltage-sensitive potassium channels and the closing of sodium activation gates.
- (c) an increase in the membrane's permeability to potassium and chloride ions.

(背面仍有題目,請繼續作答)

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(d) the delay in the action of the sodium-potassium pump.

91. The axons of rods and cones synapse with

- (a) ganglion cells.
- (b) horizontal cells.
- (c) amacrine cells.
- (d) bipolar cells.

92. Which of the following is an *incorrect* statement about the vertebrate eye?

- (a) The vitreous humor regulates the amount of light entering the pupil.
- (b) The transparent cornea is an extension of the sclera.
- (c) The fovea is the center of the visual field and contains only cones.
- (d) The ciliary muscle functions in accommodation.

93. Cytosine makes up 30% of the nucleotides in a sample of DNA from an organism. Approximately what percentage of the nucleotides in this sample will be thymine?

- (a) 8%
- (b) 31%
- (c) 20%
- (d) 42%

94. You culture an actively dividing *E. coli* bacteria with radioactive thymine. What would happen if a cell replicates once in the presence of this radioactive thymine?

- (a) One of the daughter cells, but not the other, would have radioactive DNA.
- (b) Neither of the two daughter cells would be radioactive.
- (c) All four bases of the DNA would be radioactive.
- (d) DNA in both daughter cells would be radioactive.

95. A triplet of bases in the template strand of DNA is 5' AGT 3'. The corresponding codon for the mRNA transcribed is

- (a) 5' ACU 3'.
- (b) 5' TCA 3'.

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(c) 3' UGA 5'.

(d) 3' ACU 5'.

96. Which of the following does not occur in prokaryotic gene expression, but does in eukaryotic gene expression?

(a) transcription occurs in polycistronic.

(b) A poly-A tail is added to the 3' end of an mRNA and a cap is added to the 5' end.

(c) Transcription can begin as soon as translation has begun even a little.

(d) RNA polymerase requires a primer to elongate the molecule.

97. A lack of which molecule would result in the cell's inability to "turn off" genes?

(a) corepressor

(b) operon

(c) promoter

(d) inducer

98. The lactose operon is likely to be transcribed when

(a) the cyclic AMP levels are low.

(b) there is glucose but no lactose in the cell.

(c) the cyclic AMP and lactose levels are both high within the cell.

(d) the cAMP level is high and the lactose level is low.

99. Which of the following best describes siRNA?

(a) it can form a ribozyme.

(b) an enzyme, that can degrade proteins

(c) a portion of rRNA that allows it to bind to several ribosomal proteins in forming large or small subunits

(d) a short double-stranded RNA, one of whose strands can complement and inactivate a sequence of mRNA

(背面仍有題目,請繼續作答)

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100. The DNA fragments making up a genomic library are generally contained in

- (a) DNA-RNA hybrids.
- (b) individual wells.
- (c) recombinant viral RNA.
- (d) BACs.