

國立宜蘭大學

101 學年度轉學招生考試

(考生填寫)

准考證號碼：

生物學試題

《作答注意事項》

1. 請先檢查准考證號碼、座位號碼及答案卷號碼是否相符。
2. 考試時間：80 分鐘。
3. 本試卷共有選擇題 50 題，一題 2 分，共計 100 分。
4. 請將答案寫在答案卷上（於本試題上作答者，不予計分）。
5. 考試中禁止使用大哥大或其他通信設備。
6. 考試後，請將試題卷及答案卷一併繳交。
7. 本試卷採雙面影印，請勿漏答。

Choose a correct (the best) answer for each question:

1. Which of the following molecules are thought to have been absent from the very early atmosphere?

- A. water vapor (H_2O)
- B. carbon dioxide (CO_2)
- C. hydrogen (H_2)
- D. oxygen (O_2)

2. Which of the following evidence best supports the endosymbiosis of organelle evolution?

- A. Mitochondria is as big as bacteria.
- B. Mitochondria divides by binary fission.
- C. Mitochondria contains DNA.
- D. The outer membrane mitochondria resemble that of a eukaryotic cell.

3. The cycle of viral infection in which the viral DNA is integrated into the host's DNA is called the _____ cycle.

- A. lysogenic
- B. lysozyme
- C. lytic
- D. Lysol

4. Dikaryotic cells of fungi

- A. are just another form of haploid cells.
- B. is just another name for diploid cells.
- C. contain paired haploid nuclei that fail to fuse for a period of time.
- D. are nonseptate plasmodial masses with many nuclei and no cell partitioning.

5. In _____, the mouth develops at or near the blastopore.

- A. gastrocoelomates
- B. blastocoelomates
- C. protostomes
- D. deuterostomes

6. The only animal in which digestion occurs within cells is

- A. comb jellies.

- B. flatworms.
 - C. sponges.
 - D. cnidarians.
7. Which of the following features is often seen among the roundworms and the arthropods?
- A. Periodically shed their outer covering.
 - B. Radial symmetry.
 - C. Endoskeleton.
 - D. Undergo metamorphosis.
8. Which of the following statements best describes the jawless fishes?
- A. Ectotherms that have a bony skeleton.
 - B. Ectotherms that have a smooth nonscaly skin.
 - C. Endotherms that have a smooth nonscaly skin.
 - D. Vertebrates that have scales and are ectothermic.
9. Which feature is found in the bony fish but not in the cartilaginous fish?
- A. swim bladder
 - B. lateral line system for detecting prey
 - C. endothermy
 - D. ectothermy
10. Which of the following characteristics is NOT found in the amphibians?
- A. thin moist skin
 - B. two-chambered heart
 - C. small inefficient lungs
 - D. aquatic larvae
11. In general, the respiratory system in birds
- A. is similar to the human breathing system.
 - B. is only accelerated by the flight muscles.
 - C. resembles the positive pressure system of a frog.
 - D. is a one-way circulation of air so constant oxygen absorption can meet the high oxygen demand.
12. What type of fiber is responsible for the strength of various connective tissues?
- A. elastic
 - B. collagen

- C. actin
- D. reticular

13. Which of the following has a four-chambered heart?

- A. birds
- B. fish
- C. amphibians
- D. birds.

14. Cnidaria and flatworms exchange gases and remove wastes by way of their

- A. open circulatory systems.
- B. closed circulatory systems.
- C. gastrovascular cavities.
- D. moist skin surfaces.

15. Which group of vertebrates will lack a pulmonary circuit?

- A. fish
- B. frogs
- C. birds
- D. annelids

16. An animal with an incomplete gut is a

- A. squid.
- B. earthworm.
- C. planarian.
- D. human.

17. The amphibians' common receptacle for the urinary, genital, and digestive canals is the

- A. vulva.
- B. glottis.
- C. cloaca.
- D. tympanum.

18. How is the majority of carbon dioxide transported in the blood?

- A. as gas bubbles of CO_2
- B. as bicarbonate ions (HCO_3^-)
- C. on the free hemoglobins
- D. as carbon monoxide

19. Which substance is normally found in the glomerular filtrate but not in urine?
- A. glucose
 - B. salts
 - C. water
 - D. uric acid
20. The nitrogenous waste material of an embryo that accumulates inside the eggshell of a bird is
- A. urea.
 - B. uric acid.
 - C. amino acid.
 - D. ammonia.
21. What type of support system aids locomotion in the earthworm?
- A. an exoskeleton
 - B. an endoskeleton
 - C. a calcium carbonate shell
 - D. a hydrostatic skeleton
22. ___ will take calcium from the blood, whereas ___ will deposit calcium into the blood.
- A. Osteoclasts; osteoblasts
 - B. Osteocytes; osteoclasts
 - C. Osteocytes; osteoblasts
 - D. Osteoblasts; osteoclasts
23. From large to small, which muscle list of structures is correctly organized?
- A. muscle, muscle cell, myofibril, sarcomeres, filaments
 - B. muscle, muscle fibers, sarcomeres, filaments, myofibrils
 - C. muscle, sarcolemma, myofibrils, actin filaments, myosin filaments
 - D. muscle cells, myofibrils, filaments, sarcoplasm
24. The part of the brain that controls the anterior pituitary gland secretions is the
- A. medulla.
 - B. thalamus.
 - C. cerebral cortex.
 - D. hypothalamus.

25. In order to maximize diffusion across the surfaces of a gill, oxygen-rich water flows in the opposite direction of oxygen-poor blood. This concept is called
- A. reverse expiration.
 - B. pneumonectomy.
 - C. countercurrent flow.
 - D. partial pressure saturation.
26. The genes of a population comprise
- A. the species diversity.
 - B. the individual alleles.
 - C. the variation that can be found within the species.
 - D. the gene pool.
27. _____ is (are) the source of new alleles in the population.
- A. Environmental change
 - B. Mutation
 - C. Selective breeding
 - D. Random chance
28. Change occurring within a population is called
- A. natural selection.
 - B. macroevolution.
 - C. microevolution.
 - D. mutation.
29. Where would be the best place to search for fossils?
- A. an area that was formerly a desert
 - B. an area that was formerly a mountain
 - C. an area that is currently a desert but once was an ocean
 - D. an area that is currently an ocean but was formerly a desert
30. The midrange phenotype is favored during which type of selection(s)?
- A. stabilizing
 - B. directional
 - C. disruptive
 - D. frequent
31. A small group of fish getting trapped in a pond after the river flooded its banks is an example of

- A. a founder effect.
 - B. mutation.
 - C. a bottle neck.
 - D. genetic drift.
32. The appearance of herbicide resistant genes in weeds is an example of
- A. genetic drift.
 - B. mutation.
 - C. a founder effect.
 - D. gene flow.
33. A black bear population being fragmented and isolated by a newly constructed road is an example of
- A. reproductive isolation.
 - B. gene flow.
 - C. genetic drift.
 - D. competition.
34. Galapagos finch diversity is an example of
- A. stasis.
 - B. morphological convergence.
 - C. macroevolution.
 - D. adaptive radiation.
35. What is the science of naming and classifying species called?
- A. taxonomy
 - B. evolution
 - C. biogeography
 - D. herpetology
36. Who was one of the earliest naturalists?
- A. Darwin
 - B. Wallace
 - C. Mendel
 - D. Aristotle
37. Which fossil would you expect to be closest to the surface?
- A. dinosaur
 - B. human
 - C. primate

- D. bacteria
38. Which of the following nutrients is likely to have a strong impact on vision?
- A. cholesterol
 - B. vitamin A
 - C. vitamin B12
 - D. vitamin D
39. Genetically modified organisms are engineered
- A. on wilderness.
 - B. on farms.
 - C. in laboratories.
 - D. on farms and in laboratories
40. Restriction enzymes can cut
- A. tRNA.
 - B. mRNA.
 - C. rRNA.
 - D. DNA.
41. Where are reverse transcriptases obtained from?
- A. fungi
 - B. bacteria
 - C. viruses
 - D. plants
42. DNA sequencing is a method
- A. of determining the order of fatty acids in a DNA.
 - B. of determining the order of saccharides in a DNA.
 - C. of determining the order of nucleotides in a DNA
 - D. of determining the order of amino acids in a DNA..
43. In which of the following organisms is human insulin massively produced?
- A. a pig
 - B. a bacterium
 - C. a chimpanzee
 - D. a sheep
44. Hydrophobic interactions of the tails of phospholipids can produce
- A. a lipid bilayer.
 - B. hydrolysis of the fatty acids.
 - C. a protein membrane.

- D. a nonpolar membrane.
45. Which of the following is responsible for observable traits?
- A. phenotype
 - B. genotype
 - C. prototype
 - D. morphotype
46. Which of the following genotypes is homozygous?
- A. *AaBB*
 - B. *aABB*
 - C. *aaBB*
 - D. *aaBb*
47. If a woman of blood type A has a child of blood type O, the father may belong to
- A. blood type A, AB, and O, but not B.
 - B. blood type O only.
 - C. blood type A, B, and O, but not AB.
 - D. any blood type other than type A.
48. Rosalind Franklin's research contribution was essential in
- A. establishing the single-stranded nature of DNA.
 - B. establishing the principle of base pairing.
 - C. establishing most of the principal structural features of DNA.
 - D. sequencing DNA molecules.
49. The cytoplasm of all living cells contains
- A. sugars, DNA, and lipids.
 - B. sugars, ions, and proteins.
 - C. DNA, ions, and lipids.
 - D. DNA, proteins, and sugars
50. Elephants are large animals because they
- A. have bigger cells.
 - B. possess expandable cells.
 - C. are made of a greater number of cells.
 - D. have bigger cells and are made of a greater number of cells.