

# 國立宜蘭大學

## 102 學年度轉學招生考試

(考生填寫)

准考證號碼：

### 生物學試題

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#### 《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. 考試中禁止使用手機或其他通信設備。
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. Who invented the “two-part scientific name” ? (A) Darwin (B) Linne (C) Smith (D) Tinbergen
- ( ) 2. Which of the following book is written by Darwin ? (A) On the Origin of Species (B) Gone with the Wind (C) Gonome (D) Principles of Geology
- ( ) 3. Which technology was most benefit for the progress of taxonomy? (A) Electrophoresis (B) Laser scanning confocal microscopy (C) Immunohistochemistry staining (D) DNA sequencing
- ( ) 4. A group consisting of all organisms descended from a particular common is \_\_\_\_\_. (A) clade (B) branch (C) order (D) family
- ( ) 5. The three domain of the world are Archaea, Bacteria and \_\_\_\_\_. (A) Eukarya (B) Plantae (C) Animalia (D) none of these
- ( ) 6. There are two major types of plants; those with conducting cells are called \_\_\_\_\_. (A) nonvascular plants (B) vascular plants (C) mosses (D) ferns
- ( ) 7. Which of the following substance is rigid polymer that supports the plant body? (A) stomata (B) cuticle (C) lignin (D) all of these
- ( ) 8. The fungal body is a mycelium, and is composed of microscopic threads called \_\_\_\_\_. (A) hyphae (B) septa (C) chitin (D) none of these
- ( ) 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. The antibiotics “Penicillin” was derived from \_\_\_\_\_. (A) bacteria (B) stonewort (C) fungi (D) ferns
- ( ) 11. One of the simplest form of learning is \_\_\_\_\_. (A) habituation (B) innate (C) trial-and-error learning (D) operant conditioning

- ( ) 12. A different type of learning in which an animal's nervous system is rigidly programmed to learn a certain period in its life is called \_\_\_\_\_. (A) habituation (B) imprinting (C) trial-and-error learning (D) operant conditioning
- ( ) 13. All behavior arises out of interactions between genes and \_\_\_\_\_. (A) environment (B) food (C) air (D) water
- ( ) 14. Which of the following groups of bacteria is classified as a member of the Kingdom Archaeobacteria? (A) Mycoplasmas (B) Cyanobacteria (C) Gram-negative bacteria (D) Methanogens
- ( ) 15. The presence of gills in both fish and human embryos is an example of \_\_\_\_\_. (A) homology (B) convergent evolution (C) genetic drift (D) analogy
- ( ) 16. All prokaryotic and eukaryotic organisms that photosynthesize fit into which nutritional category? (A) photoheterotrophs (B) chemoautotrophs (C) photoautotrophs (D) chemoheterotrophs
- ( ) 17. Among vertebrates, the unique feature of agnathans is the \_\_\_\_\_. (A) absence of a backbone (B) presence of a cranium (C) absence of a post-anal tail (D) absence of a jaw
- ( ) 18. Which of the following is a characteristic of all chordates? (A) They all have a notochord. (B) They all have a vertebral column. (C) They all have an exoskeleton. (D) They all exhibit radial symmetry.
- ( ) 19. There are more species of \_\_\_\_\_ than of any other type of animal. (A) nematode (B) arthropod (C) mollusk (D) chordate
- ( ) 20. Hermaphrodites are animals that \_\_\_\_\_. (A) develop from unfertilized eggs (B) usually fertilize themselves (C) possess both male and female reproductive systems (D) have abnormal reproductive systems
- ( ) 21. Which algal group is most closely related to plants? (A) diatoms (B) green algae (C) dinoflagellates (D) seaweeds
- ( ) 22. Bilateral symmetry in the animal kingdom is best correlated with \_\_\_\_\_. (A) an ability to sense equally in all directions (B) the presence of a skeleton (C) motility and active predation and escape (D) development of a true coelom

- ( ) 23. 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
- ( ) 24. 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) a bottleneck (C) mutation (D) genetic drift
- ( ) 25. 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
- ( ) 26. AB 型血型的人之所以被稱為萬能受血者的原因為何？(A)紅血球上有 A 及 B 抗原 (B) 紅血球上沒有 A 及 B 抗原 (C) 血清中有抗 A 及抗 B 抗體 (D)血清中沒有抗 A 及抗 B 抗體
- ( ) 27. 下列何者屬於人類自體免疫疾病？(A) 類風濕性關節炎 (B) 支氣管擴張 (C) 血友病 (D) 肝硬化
- ( ) 28. 人類血液中含有最多的抗體？(A) Ig E (B) Ig G (C) Ig A (D) Ig M
- ( ) 29. H7N9、H5N2 屬於：(A) 細菌 (B) 病毒 (C) 真菌 (D) 細胞
- ( ) 30. 下列何種 RNA 和蛋白質的合成有關？(A) m-RNA (B) t-RNA (C) r-RNA (D) 以上皆是
- ( ) 31. 關於人類精、卵母細胞進行減數分裂時，下列何者錯誤：(A) 可產生 4 個成熟精子 (B) 可產生 4 個成熟卵子 (C) 新生成精子染色體數目減半 (D) 都有染色體聯會現象發生
- ( ) 32. 核苷酸的組成不包含下列何種物質？(A) 五碳糖 (B) 磷酸 (C) 氮鹼基 (D) 胺基酸
- ( ) 33. 人體神經敘述下列何者正確？(A) 樹突傳出訊息 (B) 軸突接收訊息 (C) 右腦神經控制身體右邊動作 (D) 小腦與身體平衡有關

- ( ) 34. 人類腎的功能下列何者錯誤？(A) 清除體內氨 (B) 調節水的平衡 (C) 調節電解質的平衡 (D) 分泌荷爾蒙
- ( ) 35. 化石證據顯示地球所有生命可能起源於下列何者？(A) 簡單節肢動物 (B) 原核細胞 (C) 草食動物 (D) 無氧呼吸的動物
- ( ) 36. 下列何者屬複雜碳水化合物，且為黴菌與昆蟲外骨骼的主要成分？(A) terpenes 烯 (B) starch 澱粉 (C) chitin 幾丁質 (D) steroids 類固醇
- ( ) 37. 下列何者屬脂肪且為動物細胞質膜的主要成分？(A) terpenes 烯 (B) starch 澱粉 (C) chitin 幾丁質 (D) steroids 類固醇
- ( ) 38. 下列每一個都是地球早期大氣中的分子，那一個除外？(A) 氫 (B) 硫化氫 (C) 甲烷 (D) 氧。
- ( ) 39. 下列那一種可同時於原核及真核細胞中發現？(A) mitochondria 粒線體 (B) nucleus 細胞核 (C) chloroplast 葉綠體 (D) ribosome 核糖體
- ( ) 40. 若細胞可增大為正常大小的2倍，可能會發生何種問題？(A) 保水 (B) 鹽類平衡 (C) 生殖 (D) 細胞內的資訊溝通
- ( ) 41. 滲透作用發生的必要條件？(A) 有半透膜 (B) 有濃度梯度 (C) 糖或鹽分子溶於水中 (D) 具能量來源
- ( ) 42. 分子滲透利用通道穿過生物膜的方式稱為？(A) active transport 主動運輸 (B) sodium-potassium pump 鈉鉀幫浦 (C) facilitated diffusion 親和性擴散 (D) osmosis 滲透
- ( ) 43. 選擇不存在於細胞膜中的分子？(A) 磷脂質 (B) 自由移動的蛋白質 (C) 穿透細胞膜的蛋白質 (D) DNA
- ( ) 44. 真核細胞的DNA分成一些片段稱為 \_\_\_\_\_，而不像細菌僅具有一個環狀DNA分子。(A) 核糖體 ribosome (B) 過氧化體 peroxisome (C) 染色體 chromosome (D) 葉綠體 chloroplast
- ( ) 45. 引發化學反應所需的能量稱為？(A) activation energy (B) initiation energy 啟發能 (C) 催化 catalysis (D) primary energy

- ( ) 46. 族群中的遺傳變異由何而來？(A) crossing over during meiosis (B) random fertilization (C) independent assortment (D) all of the above
- ( ) 47. 為何豌豆成為孟德爾實驗的良好對象？(A) 品系多 (B) 小而易培養 (C) 易控制授粉 (D) 以上皆是
- ( ) 48. 進行遺傳學實驗須從何開始？(A) 單套染色體者 (B) 異型合子 (C) 純種系 (D) 以前未研究過者
- ( ) 49. 在進行植物遺傳學實驗時，以藍色花系與黃色花系雜交，F1 子代全都為黃色花，則黃色花可能為？(A) 隱性 (B) 顯性 (C) 非完全顯性 (D) 不孕
- ( ) 50. 植物為免於被草食者所食，會如何因應？(A) 產生毒性物質 (B) 產生難吃的物質 (C) 有荊棘防衛 (D) 以上皆是