

國立高雄海洋科技大學 101 學年度碩士班考試入學

水產養殖研究所 - 生物學 試題

選擇題(請選擇一個最佳的答案填入答案卷中，每題 2 分，答錯不倒扣)

1. 下列有關原生生物的敘述，何者錯誤？
 - (A)有部份種類是異營生物
 - (B)有部份種類是自營生物
 - (C)細胞內的胞器均不具有內膜
 - (D)草履蟲是原生生物。
2. 下列組合，何者屬同功器官？
 - (A)蝙蝠的翼與螻蛄的前肢
 - (B)蝙蝠的翼與金龜子的前翅
 - (C)蛾的前翅與金龜子的前翅
 - (D)人類的手與鯨魚的胸鰭。
3. 某生物的染色體數 $2N=8$ ，在減數分裂進行獨立分配時，最多有幾組不同遺傳配子的組合？
 - (A) 4
 - (B) 8
 - (C) 16
 - (D) 32。
4. 下列的生物組合，何組在分類地位的關係上較為接近？
 - (A)招潮蟹與果蠅
 - (B)招潮蟹與彈塗魚
 - (C)文蛤與龍蝦
 - (D)文蛤與水母。
5. 下列有關海洋生物圈的敘述，何者錯誤？
 - (A)是地球上最大的生物圈
 - (B)有劇烈的溫度振盪
 - (C)是氧氣最大的來源
 - (D)是地球上食物供應最多者。
6. 三點蠟是採 r-戰略的種類，下列何者不是其特徵？
 - (A)會有親代的照顧
 - (B)會產下許多的子代
 - (C)幼體有高死亡率
 - (D)族群有時群集分佈，有時隨機分佈。

7. 養殖魚塭中，吳郭魚和群生的絲藻是屬於何種種間關係？
(A)共生
(B)捕食
(C)競爭
(D)寄生。
8. 下列措施中，何者最能提高生態系統的抵抗力穩定性？
(A)造林增加綠色植物的數量
(B)減少肉食性動物的數量
(C)減少寄生生物的數量
(D)增加物種的數量
9. Many poisonous animals are brightly colored as a warning to predators. This special coloration is called
(A) commensal coloration
(B) Mullerian mimicry
(C) aposematic coloration
(D) Batesian mimicry
10. Which kingdoms include autotrophs?
(A) Protista and Plantae
(B) Protista and Animalia
(C) Fungi and Protista
(D) Fungi and Animalia
11. The high level of pesticides in eagle is an example of
(A) the principle of exclusion
(B) biological magnification
(C) ecological succession
(D) cycling of nutrients by decomposers
12. Which of these is mechanical isolation?
(A) Sperm cannot reach or fertilize an egg.
(B) Courtship pattern differs.
(C) reproducing at different times of the year.
(D) Genitalia are unsuitable to each other.
13. When a population is small, there is a greater chance of
(A) gene flow.

- (B) natural selection.
- (C) genetic drift.
- (D) sexual selection.

14. Which is the scientific name of an organism?

- (A) *Chanos chanos*
- (B) *Chanos*
- (C) *chanos*
- (D) *Chanos chanos*

15. An S-shaped growth curve

- (A) occurs when unlimited resources.
- (B) includes an exponential growth phase.
- (C) occurs in natural population but not in laboratory ones
- (D) is subject to a sharp decline.

16. What is coevolution?

- (A) Two species selecting for traits in each other.
- (B) Individuals of two species living together.
- (C) The presence of two species in the same community.
- (D) Two species evolving separately through time.

17. 細胞膜為流體鑲嵌模型 (fluid mosaic model),指的是

- (A) 由嵌著碳水化合物的磷脂雙層所組成
- (B) 由磷脂雙層間夾著蛋白質所組成
- (C) 由嵌著磷脂的蛋白質雙層所組成
- (D) 由可漂流在磷脂雙層中的蛋白質及磷脂質所組成

18. 滲透作用(Osmosis)可被定義為

- (A) 非極性分子的擴散
- (B) 主動運輸(active transport)
- (C) 溶質的擴散
- (D) 水的擴散

19. 細胞週期的那段期間遺傳物質被複製?

- (A) G1 phase.
- (B) S phase.
- (C) G2 phase.
- (D) M phase

20. 下列為有絲分裂(mitosis)與減數分裂(meiosis)間的差異性比較,何者為非?
- (A) 減數分裂(meiosis)產生四個子細胞,有絲分裂(mitosis)只產生兩個子細胞
 - (B) 有絲分裂(mitosis)產生的細胞為雙套體(diploid), 減數分裂(meiosis)產生的細胞為單套體(haploid)
 - (C) 有絲分裂(mitosis)發生一次細胞質(cytokinesis)分裂,減數分裂發生兩次細胞質分裂
 - (D) 互換(Crossing over)是有絲分裂期間創造遺傳變異的現象
21. 孟德爾的獨立分配率(independent assortment)為
- (A) 有絲分裂與減數分裂期間,染色體各自獨立分配給下一代
 - (B) 在動物而非植物,基因性狀是各自獨立分配
 - (C) 在一些環境下,基因的獨立分配產生多倍體植物
 - (D) 配子生成期間,非對偶基因會各自獨立分配給下一代
22. 多肽鏈中的每個胺基酸是有 RNA 分子中的____個核苷酸所組成的密碼子來決定?
- (A) 5
 - (B) 4
 - (C) 3
 - (D) 2
23. 下列關於真核 RNA 的描述何者為真?
- (A) 插入子(Introns)被加入 RNA 中
 - (B) 表現子(Exons)被剪接在一起
 - (C) 額外的小帽蓋核苷酸被加到 RNA 的兩端
 - (D) 長尾端的多餘核苷酸被從 RNA 的 5' 移除
24. 胺基酸可由何特性分辨差異?
- (A) 胺基酸分子上的 R 基團的數目
 - (B) 胺基酸分子上的 R 基團的化學特質
 - (C) 胺基酸分子上的 carboxyl 基團的化學特質
 - (D) 胺基酸分子上的 R 基團與碳的鍵結.
25. Most cells from multicellular organisms must be attached to their surroundings via integrins. Failure to maintain this contact will usually result in
- (A) the differentiation of the cell.
 - (B) the death of the cell
 - (C) increased metabolic activity of the cell.
 - (D) decreased communication with other cells.

26. A major function of glycoproteins and glycolipids in the cell membrane is to
- (A) glue cell together to form tissues.
 - (B) attach the cell membrane to the matrix.
 - (C) help the cell resist shrink.
 - (D) allow the cells of an embryo to sort themselves into tissues and organs.
27. The term anaerobic means
- (A) without bacteria.
 - (B) without O₂.
 - (C) with ATP.
 - (D) with CO₂.
28. Photoautotrophs
- (A) make carbohydrate by using organic raw materials.
 - (B) include only the deep red purple plants.
 - (C) produce organic molecules from inorganic molecules.
 - (D) eat other organisms that use light energy to make food molecules.
29. Which of the following statements regarding genotypes and phenotypes is *true*?
- (A) Alleles are alternate forms of a gene.
 - (B) The genetic makeup of an organism constitutes its phenotype.
 - (C) The expressed physical traits of an organism are called its genotype.
 - (D) An organism with two different alleles for a single trait is said to be homozygous.
30. Which of the following people conducted the experiments that demonstrated that DNA is the material responsible for transformation?
- (A) Griffith.
 - (B) Watson and Crick
 - (C) Oswald Avery
 - (D) Franklin.
31. The term "gene expression" refers to the
- (A) process by which genetic information flows from genes to proteins
 - (B) fact that each individual of a species has a different set of gene
 - (C) fact that individuals of the same species have different genotypes
 - (D) fact that certain genes are invisible as dark stripes on a chromosome.
32. Many names for enzyme end in the suffix
- (A) -ase

- (B)-acid
- (C)-hyde
- (D)-base.

33. Which of the following statements about enzymes is *true*?

- (A) Their function as chemical catalysts.
- (B) They decrease the rate of chemical reaction.
- (C) They don't regulate chemical reaction in a cell.
- (D) They are polymers used to build proteins.

34. 下列的特徵中那一個不能區分真菌與植物？

- (A) 真菌的精子沒有沒有鞭毛
- (B) 真菌的細胞壁由幾丁質組成
- (C) 真菌不進行光合作用
- (D) 真菌是多細胞生物

35. 下列有關真菌獲得營養的敘述，何者錯誤？

- (A) 真菌分泌一種黏液，可誘捕蒼蠅
- (B) 真菌可以死樹為食
- (C) 真菌均以胞內消化作用來獲得營養
- (D) 真菌會捕食線蟲

36. 下列有關肝臟的敘述，何者錯誤？

- (A) 儲存膽汁
- (B) 可將葡萄糖釋放至血中
- (C) 可代謝多餘的氨基酸
- (D) 是人體內最大的器官

37. 下列何者所分泌的酶可將大部分食物完全分解為單糖、氨基酸及脂肪酸？

- (A) 大腸
- (B) 胰臟
- (C) 肝臟
- (D) 胃小凹

38. 海洋魚類不斷地流失水分到周圍含鹽環境中，為達滲透壓平衡，下列敘述何者正確？

- (A) 海水魚類需大量排尿及鹽類
- (B) 海水魚類需大量喝海水及排泄多餘之鹽類
- (C) 海水魚類需大量進食及排尿
- (D) 海水魚類不必排泄多餘之鹽類

39. 下列有關皮膚的敘述，何者錯誤？
- (A) 是抵禦微生物入侵的第一防線
 - (B) 皮膚的油脂及汗腺使皮膚表面呈酸性
 - (C) 皮膚能分泌胃酸，抑制很多微生物的生長
 - (D) 皮膚含有汗腺，分泌一種攻擊很多細菌細胞壁的酶
40. 下列何種防禦措施在病原體膜上形成孔洞的複合體，造成病原細胞破裂死亡？
- (A) 補體系統
 - (B) 免疫反應
 - (C) 發炎反應
 - (D) 干擾反應
41. 下列何者可在腎元的集尿管中再吸收？
- (A) 葡萄糖
 - (B) 氯化鈉
 - (C) 水
 - (D) 蛋白質
42. 下列有關脊椎動物硬骨組織的敘述，何者錯誤？
- (A) 成骨細胞可分泌膠原蛋白
 - (B) 哈氏管內含有血管
 - (C) 硬骨是一種結締組織
 - (D) 成人體內不會再形成新的硬骨細胞
43. 下列有關動脈的敘述，何者錯誤？
- (A) 動脈將血液輸送至小動脈
 - (B) 動脈含有很多瓣膜
 - (C) 動脈可以擴張
 - (D) 動脈將血液帶離心臟
44. Which one of the following statements is not true ?
- (A) The basal metabolic rate is the amount of energy a person needs just to stay alive. It does not include the energy needed for activities.
 - (B) Cells usually use carbohydrates and fats as fuel sources.
 - (C) Humans store some extra energy in the form of glycogen reserves in the pancreas and spleen.
 - (D) One dietary calorie is actually a kilocalorie.

45. The chief advantage of exchanging gases in water is that
- (A) no energy need be expended to keep the exchange surface wet
 - (B) carbon dioxide is easier to eliminate in water than in air
 - (C) water can contain more oxygen than air.
 - (D) less energy is required to ventilate gills than lungs.
46. Whether there is a net flow of fluid into or out of a capillary at a given spot along its length depends on
- (A) whether the fluid contains nutrients or wastes.
 - (B) whether or not the fluid contains oxygen
 - (C) whether or not the fluid contains carbon dioxide
 - (D) the balance between blood pressure and osmotic pressure.
47. Which one of the following is a major function of natural killer cells ?
- (A) to attack and kill pathogenic microorganisms in a nonspecific way
 - (B) to attack virus-infected cells in a nonspecific way
 - (C) to attack virus-infected cells in an antigen-specific way
 - (D) to tag pathogenic microorganisms with antibodies
48. Which one of the following is not a function of the liver ?
- (A) the synthesis of plasma proteins important in blood clotting
 - (B) the synthesis of ammonia from uric acid
 - (C) helping to rid the body of toxin
 - (D) the conversion of glucose into glycogen
49. Which of the following statements about the sodium-potassium pump is not true ?
- (A) It is a membrane protein
 - (B) It keeps the concentration of sodium low inside the cell
 - (C) It moves equal amounts of sodium and potassium across the membrane.
 - (D) It actively transports potassium into the cell
50. Which of the following classes of sensory receptor is the most diverse ?
- (A) mechanoreceptors
 - (B) thermoreceptors
 - (C) electromagnetic receptors
 - (D) chemoreceptors

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