

國立高雄海洋科技大學99學年度碩士班入學考試
水產養殖研究所--水產養殖學試題

(單選倒扣題，1-25題答對每題得3分，26-30題答對每題得5分，答錯扣1分，未答題0分計算)

- 1.()解剖吳郭魚發現脾臟腫大，有白色結節，推測最可能是哪種病原感染？(1)鏈球菌(2) *Rickettsia* (3)白點蟲(4)*Aeromonas hydrophila*。
- 2.()有關魚類Lymphocystis virus disease之敘述何者正確？(1)是RNA病毒引起(2)會引起神經細胞壞死(3) 會感染結締組織 (4)屬於Herpesvirus。
- 3.()有關蝦類病原White spot syndrome virus 之敘述何者錯誤？ (1)會感染螃蟹(2)病蝦身體可能泛紅(紅色素擴散)(3)被病毒感染之細胞核腫大 (4)白鷺鷥會被感染而成為帶原者。
- 4.()孔雀魚常見的駝型線蟲感染症，病原是 (1)屬於假體腔動物(2)常寄生魚類肝臟(3)屬於卵生(4)由皮膚鱗片鑽入寄生。
- 5.()在食用魚養殖過程，以下何種藥物是法令允許使用？ (1)富來頓(2)有機磷類(3)氯黴素(4)孔雀綠。
- 6.()有關魚類白點蟲(*Ichthyophthirius multifiliis*)感染症之敘述何者有誤？ (1)引起皮下組織增生，形成肉芽腫 (2)感染後皮膚黏液增加 (3)蟲體繁殖方式具有性和無性生殖 (4)病原屬於原生動物門纖毛蟲綱。
- 7.()有關養殖池中 NO_2^- 的敘述何者錯誤？ (1)硝酸鹽還原所產生(2)在缺氧下易還原成氨(3)濃度過高會引起魚類粉紅色鰓(4)淡水中對魚類的毒性比海水中高。
- 8.()以下何者不常被用來判斷水質優養化程度？ (1)葉綠素(2)溶氧量(3)總磷(4)透明度
- 9.()硫化氫(H_2S)是養殖生物之毒害物質，以下何種方法不是用來去除硫化氫？(1)螯合劑去除法(2)曝氣法(3)化學氧化法，如添加漂白水(4)生物處理法，如利用光合細菌。
- 10.()以下有關水域氨氮的說明何者正確？ (1)有機物受微生物分解只在嫌氣性環境下產生氨氮(2)銨離子毒性比氨分子毒性強(3)氨和銨在水中會達到平衡，pH愈低，氨比例愈高，毒性愈高(4)氨為水生生物主要的含氮排泄物。
- 11.()有關一般用於水質消毒的 $\text{Ca}(\text{ClO})_2$ 之敘述何者錯誤？ (1)可用來殺菌和去除病毒(2)為液態，使用容易(3) ClO^- 存在的比率與水中 pH有關 (4)可當作漂白劑。
- 12.()以下何者不是用來去除水中有機物質的方法？ (1)添加抗氧化劑 (2)添加凝聚劑(如鋁鹽)(3)種植水草(4)泡沫分離。
- 13.()石斑魚養殖敘述何者是錯誤？(1)對鹽分之適應範圍在11-41‰之間(2)水溫在20-28度C是最適合成長環境(3)水溫在18度C以下時其食慾會降低(4)水溫降至10度C以下時會造成魚類死亡(5)以上皆是。
- 14.()綠藻商業化大規模培養係採用？(1)連續式過濾方式(2)化學肥方式(3)分離式方式(4)發酵槽方式生產速度最快。
- 15.()頭足類(烏賊)養殖之餌料係採用何種？(1)蝦肉與魚肉(2)鰻魚粉(3)大型藻(4)貝類方式生產速度最快。
- 16.()下列何項非箱網養殖缺點？(1)寄生蟲及其他疾病較易控制(2)便於活魚運輸(3)餌料效率可以達最大程度(4)養殖成長過程較為均勻(5)以上皆是。

17. () 下列何項不能混養？(1)蝦類與虱目魚(2)石斑魚與黑鯛(3)虱目魚與龍鬚菜(4)蝦類與黃鱸魚參(5)以上皆可
18. () 下列何項藻體長度最小(1)螺旋藻(*Arthrospira platensis*)(2)小球藻(*Chlorella spp.*)(3)擬球藻(*Nannochloropsis spp.*)(4)*Coscinodiscus*。
19. () apparent digestibility和true digestibility二者之值比較為何者正確？(1) apparent digestibility較高 (2) true digestibility較高(3)二者相同 (4)無法比較。
20. () 下列何者正確？(1)飽和脂肪酸碳鏈愈短者消化率愈高 (2)脂肪酸雙鍵愈多愈不易氧化(3)脂肪融點低者消化率愈低 (4)氧化油之消化率高。
21. () 鯉魚營養性疾病瘦脊症肇因於食物 (1)缺乏醣類 (2)蛋白質品質差 (3)油脂氧化(4)缺乏維生素。
22. () 實驗魚在12週實驗期間，攝食飼料200 g，體重平均初重為30g，末重為120g，飼料之水分含量20%、醣類25%、蛋白質30%、脂質15%，則測定實驗魚之PER (protein efficiency ratio)值為 (1) 0.5 (2) 0.6 (3)1.5 (4)1.8。
23. () (1) 18:3 ω 3 (2) 18:2 ω 6 (3) cholesterol (4) ω 3 HUFA 不是甲殼類(斑節蝦)和魚類都必需之脂肪酸。
24. () 飼料原料Carboxymethyl cellulose在水產完全配合飼料之功用和(1) sodium lignosulfonate (2) cellulose (3) ascorbic acid (4) canthaxanthin 較類似。
- 25-30題 依據本文內容回答文後問題

Endocrine manipulations of spawning in cultured fish: from hormones to genes

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Abstract

Almost all fish reared in captivity exhibit some form of reproductive dysfunction. In females, there is often failure to undergo final oocyte maturation, ovulation and spawning; while in males milt production may be reduced and of low quality. These dysfunctions are due to the fact that fish in captivity do not experience the conditions of the spawning grounds, and as a result there is a failure of the pituitary to release the maturational gonadotropin, luteinizing hormone (LH). Reproductive hormones have been utilized since the 1930s to stimulate reproductive processes and induce ovulation/spermiation and spawning. The first methods employed freshly ground pituitaries collected from reproductively mature fish, which contained gonadotropins (mainly LH).and induced steroidogenesis and gonadal maturation. Eventually, purified gonadotropins became available, both of piscine and mammalian origin, e.g., carp or salmon gonadotropin, and human chorionic gonadotropin. In the 1970s, spawning induction methods begun employing the newly discovered gonadotropin-releasing hormone (GnRH), which induces the secretion of the fish's own gonadotropin from the pituitary, thereby overcoming the endocrine failure observed in captive broodstocks. Development of highly potent, synthetic agonists of GnRH (GnRH_a) constituted the next generation of hormonal manipulation therapies, and created a surge in the use of hormones to control reproductive processes in aquaculture. The most recent development is the incorporation of GnRH_a into polymeric sustained-release delivery systems, which release the hormone over a period of days to weeks. These delivery systems alleviate the need for multiple treatments and induce (a) long-term elevation in sperm production and (b) multiple

spawning in fish with asynchronous or multiple-batch group-synchronous ovarian physiology. Based on the recent discovery of GnRH multiplicity in fish and the increasing understanding of its functional significance, new GnRH agonists can be designed for more potent, affordable and physiologically-compatible spawning induction therapies. Future strategies for improved spawning manipulations will be based on understanding the captivity-induced alterations in the GnRH system, and on new approaches for their repair at the level of GnRH gene expression and release.

25. () 最早做為魚類催熟的材料是(1)生殖腺抽取物 (2)腦下垂體純化物 (3) GnRH (4)腦下垂體研磨液。
26. () 目前最新發展出來的魚類催熟藥物為 (1) LH (2) GnRH (3) GnRH_a (4) GnRH gene expression。
27. () 魚類催熟使用之促性腺激素純化物，材料來源不包括(1)哺乳類動物(2)鮭魚 (3)鯉魚(4)鯰魚。
28. () 一般養殖魚產生生殖障礙之內分泌原因為(1) steroid (2) gonadotropin (3) gonadotropin-releasing hormone (4) GnRH_a 分泌不足。
29. () 繁殖技術未來改善重點在於何種系統之研究？(1) LH (2) GnRH (3) multiple spawning (4) pituitary。
30. () 一般養殖雌魚在下列那一階段並不產生生殖障礙(1)卵黃生成期 (2)最終成熟期 (3)排卵期 (4)產卵期。