

Output8: Nutrition and Growth

Recognising Prior Learning (RPL)

Guidance: Multiple Choice

This series of **multiple-choice questions** have been designed so as there is only one possible correct and complete response. This allows prior knowledge to be established through pre-testing, using Response Tools.

MC-MA = Multiple Choice, Multi answer question

MC = Multiple choice question, one correct answer

Banks 1 – 11: a series of questions relating to fish nutrition in general. They are not specific to salmonids



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Title: NG Bank 1 Nutrients Energy MC-MA1

1) Which of the following nutrients are able to be used as an energy source by fish?

Select as many nutrients as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Carbohydrates
- b) Vitamins
- c) Minerals
- *d) Proteins
- *e) Fats

Title: NG Bank 1 Nutrients Energy MC-MA2

2) Which of the following nutrients found in a commercially produced fish feed diet are able to be used as an energy source by fish?

Select as many nutrients as you believe to be correct.

(Any number of answers, from 1 to 6, could be correct.)

- *a) Carbohydrates
- b) Pigments
- c) Vitamins
- d) Minerals
- *e) Proteins
- *f) Fats

Title: NG Bank 1 Nutrients Energy MC 1

3) Which nutrients are able to be used as an energy source by fish?

Select ONE answer.

- a) Proteins only
- b) Minerals and vitamins only
- c) Fats and carbohydrates only
- *d) Proteins, fats and carbohydrates only
- e) Proteins, fats, carbohydrates, minerals and vitamins

Title: NG Bank 2 Essential nutrient def MC-MA1

4) What is an essential nutrient?

Select as many statements as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) A nutrient that is required but cannot be synthesised by the fish
- *b) A nutrient that is synthesised by the fish but not in sufficient quantity
- *c) A nutrient that must be consumed to avoid nutritional deficiency diseases
- d) A nutrient that can be metabolised to provide an energy source to the fish

Title: NG Bank 2 Essential nutrient def MC-MA2

5) What is an essential nutrient?

Select as many statements as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- a) A nutrient only found in a sufficient quantity in carbohydrates
- *b) A nutrient that is required but cannot be synthesised by the fish
- *c) A nutrient that must be consumed to avoid nutritional deficiency diseases
- d) A nutrient that can be metabolised to provide an energy source to the fish

Title: NG Bank 3 Essential nutrients source MC-MA1

6) Which of the following compounds can contain essential nutrients?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- a) Carbohydrates
- *b) Vitamins
- *c) Minerals
- *d) Proteins
- *e) Fats

Title: NG Bank 3 Essential nutrients source MC-MA2

7) Which of the following compounds can contain essential nutrients?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Pigments
- *b) Vitamins
- *c) Minerals
- *d) Proteins
- *e) Fats

Title: NG Bank 4 Protein role MC-MA1

8) What are the TWO primary functions of protein in manufactured fish diets?

Select TWO.

- *a) To provide the resources for muscle growth
- b) To provide a source of pigments
- *c) To provide essential nutrients
- d) To provide an energy source

Title: NG Bank 5 Protein role MC-MA2

9) What are the TWO primary functions of protein in manufactured fish diets?

Select TWO.

- *a) To provide the resources for muscle growth
- b) To provide a dietary binding agent
- c) To provide a source of pigments
- *d) To provide essential nutrients

Title: NG Bank 6 Protein role MC1

10) What is the primary function of protein in manufactured fish diets?

Select ONE

- *a) To provide the resources for muscle growth
- b) To provide a dietary binding agent
- c) To provide a source of pigments
- d) To provide an energy source

Title: NG Bank 7 Carbohydrate role MC-MA1

11) What are the TWO primary functions of carbohydrate in manufactured fish diets?

Select TWO.

- a) To provide resources for muscle growth
- *b) To provide a low-cost energy source
- *c) To provide a dietary binding agent
- d) To provide essential nutrients

Title: NG Bank 7 Carbohydrate role MC-MA2

12) What are the TWO primary functions of carbohydrate in manufactured fish diets?

Select TWO.

- a) To provide resources for muscle growth
- *b) To provide a low-cost energy source
- *c) To provide a dietary binding agent
- d) To provide a source of pigments

Title: NG Bank 8 Fats role MC-MA1

13) What are the TWO primary functions of fats in manufactured fish diets?

Select TWO.

- a) To provide resources for muscle growth
- b) To provide a source of pigments
- *c) To provide essential nutrients
- *d) To provide an energy source

Title: NG Bank 8 Fats role MC-MA2

14) What are the TWO primary functions of fats in manufactured fish diets?

Select TWO.

- a) To provide resources for muscle growth
- *b) To provide essential nutrients
- *c) To provide an energy source
- d) To provide a binding agent

Title: NG Bank 9 Fats role MC1

15) What is the primary functions of fats in manufactured fish diets?

Select ONE

- a) To provide resources for muscle growth
- c) To provide a dietary binding agent
- b) To provide a source of pigments
- *d) To provide an energy source

Title: NG Bank 10 Protein_Fat balance MC-MA1

16) What are the benefits of optimising the balance between proteins and fats in manufactured diets for carnivorous fish species?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Ammonia excretion polluting the aquatic environment is reduced
- *b) Less expensive nutrients provide the fish's energy requirement
- *c) Expensive proteins are not metabolised as an energy source
- *d) Food is converted into growth more efficiently
- *e) Fish growth rates can be maximised

Title: NG Bank 10 Protein_Fat balance MC-MA2

17) What are the advantages of balancing the protein and fat content of diets for carnivorous fish species such as Atlantic salmon and Rainbow trout?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Ammonia excretion polluting the aquatic environment is reduced
- *b) Less expensive nutrients provide the fish's energy requirement
- *c) Expensive proteins are not metabolised as an energy source
- *d) Food is converted into growth more efficiently
- *e) Fish growth rates can be maximised

Title: NG Bank 11 Minerals MC-MA1

18) From the following list of minerals, select the TWO that are needed in fish diets in the HIGHEST quantities.

Select two.

- a) Iron
- b) Iodine
- *c) Calcium
- d) Sodium
- *e) Phosphorus

Title: NG Bank 11 Minerals MC-MA2

19) Select TWO minerals from the list below that are required in the HIGHEST quantities in commercially produced fish feed diets.

Select two.

- a) Iron
- b) Sodium
- *c) Calcium
- d) Potassium
- *e) Phosphorus

Title: NG Bank 11 Minerals MC-MA3

20) Select TWO minerals from the list below that are required in the HIGHEST quantities in commercially produced fish feed diets.

Select two.

- a) Iron
- b) Iodine
- *c) Calcium
- d) Potassium
- *e) Phosphorus

Banks 12 – 16: a series of questions relating to salmonid feeds specifically

Title: NG Bank 12 Salmonid feed ingredients MC-MA1

21) Which of the following ingredients provide a source of protein in salmonid diets?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 6, could be correct.)

- a) Fish oil
- *b) Fish meal
- *c) Blood meal
- d) Astaxanthin
- *e) Wheat gluten
- *f) Soya bean meal

Title: NG Bank 12 Salmonid feed ingredients MC-MA2

22) Which of the following ingredients provide a source of protein in salmonid diets?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 6, could be correct.)

- a) Fish oil
- b) Tapioca
- *c) Fish meal
- *d) Flava beans
- e) Astaxanthin
- *f) Maize gluten

Title: NG Bank 13 Marine replacement MC-MA1

23) Why are some of the marine oil and protein sources being replaced by alternative non-marine sources in salmonid diets?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Marine oils and proteins could become very expensive
- b) Many marine oils and proteins can taint the flavour of fish flesh
- c) Marine oils and proteins contain high levels of toxins damaging to fish health
- d) Marine oils and proteins contain high levels of toxins damaging to human health
- *e) Marine oils and proteins are already heavily exploited and limit aquaculture expansion

Title: NG Bank 13 Marine replacement MC-MA2

24) Why are non-marine sources of protein and oils, such as vegetable proteins and oils, being used in salmonid diets as a replacement for marine oils and proteins?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Vegetable proteins and oils are cheaper than marine sources
- b) Many marine oils and proteins can taint the flavour of fish flesh
- c) Marine oils and proteins contain high levels of toxins damaging to fish health
- d) Marine oils and proteins contain high levels of toxins damaging to human health
- *e) The production of vegetable proteins and oils is more sustainable than marine production

Title: NG Bank 14 pigment MC-MA1

25) Which of the following salmonid feed ingredients pigment the fish flesh?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- a) Fish oil
- b) Minerals
- *c) Shrimp meal
- *d) Astaxanthin
- *e) Canthaxanthin

Title: NG Bank 14 pigment MC_MA2

26) Which of the following salmonid feed ingredients pigment the fish flesh?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- a) Fish oil
- b) Fish meal
- *c) Astaxanthin
- *d) Canthaxanthin
- e) Soya bean meal

Title: NG Bank 14 pigment MC-MA3

27) Which of the following salmonid feed ingredients pigment the fish flesh?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- a) Fish oil
- b) Minerals
- *c) Shrimp meal
- *d) Astaxanthin
- e) Soya bean meal

Title: NG Bank 14 pigment MC-MA4

28) Which of the following salmonid feed ingredients pigment the fish flesh?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- a) Fish oil
- b) Minerals
- *c) Astaxanthin
- *d) Canthaxanthin
- e) Soya bean meal

Title: NG Bank 15 Extruded pellets MC-MA1

29) What happens to grain meal during the extrusion process when manufacturing high energy pelleted salmonid feeds for the marine growing stage?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) The carbohydrate becomes more digestible by salmonids
- *b) The carbohydrate expands to create a porous pellet
- c) Essential minerals are made more available
- d) The proteins are made more available

Title: NG Bank 15 Extruded pellets MC-MA2

30) What does the extrusion process, used in manufacturing high energy fish feed diets, do to grain meal?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) The carbohydrate becomes more digestible by salmonids
- *b) The carbohydrate expands to create a porous pellet
- c) Essential minerals are made more available
- d) The proteins are made more available

Title: NG Bank 16 Extruded pellets Adv MC-MA1

31) What are the main advantages of EXTRUDED pelleted feeds as opposed to alternative pelleted feeds for salmonids?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) The carbohydrate becomes more digestible by salmonids
- b) They are cheaper to produce than any other pellet
- *c) More oil can be added to create high energy feeds
- *d) They can float or sink at a reduced rate

Banks 17 – 24: a series of questions relating to fish growth specifically

Title: NG Bank 17 Fish Growth Env MC-MA1

32) Which environmental factors can influence fish feeding activity and growth rate?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) Light intensity
- *b) Water temperature
- *c) Water quality (purity)
- *d) Dissolved oxygen levels

Title: NG Bank 17 Fish Growth Env MC-MA2

33) Which environmental factors can influence fish feeding activity and growth rate?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) pH
- *b) Suspended solids
- *c) Water temperature
- *d) Dissolved oxygen levels

Title: NG Bank 17 Fish Growth Env MC-MA3

34) Which of these environmental factors can influence fish feeding activity?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) Light intensity
- *b) Suspended solids
- *c) Water temperature
- *d) Dissolved oxygen levels

Title: NG Bank 18 Fish Growth Physio MC-MA1

35) Which physiological factors influence the feeding activity and growth rate of fish?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Size
- *b) Health status
- *c) Smoltification
- d) Flesh pigmentation
- *e) Sexual maturation

Title: NG Bank 18 Fish Growth Physio MC-MA2

36) Which of the following physiological factors influence the feeding activity and growth rate of fish?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Genetics
- *b) Stress levels
- *c) Smoltification
- d) Flesh pigmentation
- *e) Sexual maturation

Title: NG Bank 19 Highest food consumption stage MC1

37) Which ONE of the following fish stocks would consume the highest percentage of their own biomass in food?

- *a) Salmon fry in a hatchery averaging 1 Gram
- b) Salmon par in a hatchery averaging 5 Grams
- c) Salmon in sea cages averaging 1 Kilogram
- d) Salmon in sea cages averaging 2 Kilograms
- e) Salmon in sea cages averaging 4 Kilograms

Title: NG Bank 20 Optimum temp MC1

38) What is the OPTIMUM TEMPERATURE RANGE for marine cage farmed Atlantic Salmon feeding and growth, assuming fish stocks are healthy and dissolved oxygen levels are 100% saturation?

- a) Above 21⁰C
- b) 19 -21⁰C
- *c) 14-18⁰C
- b) 9- 13⁰C
- e) 4- 8⁰C

Title: NG Bank 21 Oxygen MC1

39) What happens to the oxygen requirement of the Atlantic Salmon after it has been fed?

- a) It reduces
- b) It stays the same
- *c) It increases

Title: NG Bank 22 Specific growth rate MC1

40) What does Specific Growth Rate mean?

- a) The rate at which the fish grows per day in kilos
- *b) The percentage increase in body weight per day
- c) Fish growth in grams divided by the time taken in days
- d) The weight of food consumed in kilos to achieve 1 kilo of growth

Title: NG Bank 23 Highest specific growth rate MC1

41) At what stage of a fish's life cycle is the specific growth rate at its highest?

- *a) When the fish is young
- b) After the fish has spawned
- c) When the fish is fully mature
- d) When the fish is approaching sexual maturation

Title: NG Bank 24 Growth rate factors MC-MA1

42) Which of these factors can affect farmed fish growth rates?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) Fish stocking density
- *b) How much the fish are fed
- *c) The time of day fish are fed
- *d) The health status of the fish

Title: NG Bank 24 Growth rate factors MC-MA2

43) Which of these factors can affect farmed fish growth rates?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) pH level
- *b) Stress level
- *c) How much the fish are fed
- *d) The health status of the fish

Title: NG Bank 24 Growth rate factors MC-MA3

44) Which of these factors can affect farmed fish growth rates?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) Stress level
- *b) Water temperature
- *c) How much the fish are fed
- *d) The health status of the fish

Title: NG Bank 25 Feed rate factors MC-MA1

45) Which two factors below determine the recommended feed rates provided by feed manufacturers' feed tables?

Select the two factors that are correct.

- a) The total biomass of fish fed
- b) Dissolved oxygen levels
- *c) Average size of the fish
- *d) Water temperature

Title: NG Bank 25 Feed rate factors MC-MA2

46) Which two pieces of information, from the list below, are required to establish a daily feed rate from a manufacturer's feed table?

Select the two factors that are correct.

- a) The average biomass of fish fed
- b) Dissolved oxygen levels
- *c) Average size of the fish
- *d) Water temperature

Title: NG Bank 26 Daily feed ration MC-MA1

47) What information do you need to work out a daily feed ration for a stock of fish?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) The total biomass of fish
- *b) Average size of the fish
- c) The fish stock density
- *d) Water temperature
- e) The number of fish

Title: NG Bank 26 Daily feed ration MC-MA2

48) What information do you need to work out a daily feed ration for a stock of fish?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- a) The Food Conversion Ratio (FCR)
- b) The Specific Growth Rate (SGR)
- *c) The total biomass of fish
- *d) Average size of the fish
- *e) Water Temperature

Title: NG Bank 27 Biomass calculation MC-MA1

49) What information do you need to calculate the biomass of fish in a holding unit?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- a) The size distribution in the population
- *c) The number of fish in the holding unit
- b) The volume of the holding unit
- *d) The average size of the fish

Title: NG Bank 27 Biomass calculation MC-MA2

50) Which of the following pieces of information are required to calculate the biomass of a circular holding unit?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) The number of fish in the holding unit
- b) The volume of the holding unit
- *c) The average size of the fish
- d) The stocking density

Title: NG Bank 28 Stock density calculation MC-MA1

51) What do you need to know to calculate the stock density of fish in a holding unit?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- a) The size distribution in the population
- b) The number of fish in the holding unit
- *c) The biomass of the fish population
- *d) The volume of the holding unit

Title: NG Bank 28 Stock density calculation MC-MA2

52) What information is required to calculate the stock density of Atlantic salmon in a sea cage?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- a) The average length of fish in the population
- b) The number of fish in the holding unit
- *c) The biomass of the fish population
- *d) The volume of the holding unit

Title: NG Bank 29 Feed pellet size MC-MA1

53) What do you need to know when deciding whether to increase the feed pellet size for a population of farmed fish?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- *a) Average size of the fish
- *b) Water temperature trends
- c) The number of fish in the population
- *d) The size distribution in the population

Title: NG Bank 29 Feed pellet size MC-MA2

54) What do you need to know when deciding whether to increase the feed pellet size for a population of farmed fish?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- a) Stocking density
- *b) Average size of the fish
- *c) Water temperature trends
- *d) The size distribution in the population

Title: NG Bank 30 Biological FCR MC1

55) What is the BIOLOGICAL food conversion ratio for a stock of fish?

- a) The rate at which the fish grows per day in kilos
- b) The percentage increase in body weight per day
- c) The weight of food fed in kilos to achieve 1 kilo of growth
- *d) The weight of food consumed in kilos to achieve 1 kilo of growth

Title: NG Bank 30 Biological FCR MC2

56) What is the BIOLOGICAL food conversion ratio for a stock of fish?

- a) The daily increase in food consumption
- b) The percentage increase in body weight per day
- c) The weight of food fed in kilos to achieve 1 kilo of growth
- *d) The weight of food consumed in kilos to achieve 1 kilo of growth

Title: NG Bank 31 Apparent FCR MC1

57) What is an APPARENT food conversion ratio for a stock of fish?

- a) The rate at which the fish grows per day in kilos
- b) The percentage increase in body weight per day
- *c) The weight of food fed in kilos to achieve 1 kilo of growth
- d) The weight of food consumed in kilos to achieve 1 kilo of growth

Title: NG Bank 31 Apparent FCR MC2

58) What is an APPARENT food conversion ratio for a stock of fish?

- a) The daily increase in food consumption
- b) The percentage increase in body weight per day
- *c) The weight of food fed in kilos to achieve 1 kilo of growth
- d) The weight of food consumed in kilos to achieve 1 kilo of growth

Title: NG Bank 32 Biological v apparent FCR MC-MA1

59) What can cause a difference between a BIOLOGICAL food conversion ratio and an APPARENT food conversion ratio?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Feed wastage
- *b) Predation of fish stocks
- c) Dissolved oxygen fluctuations
- d) Water temperature variations
- *e) Fish escaping from the holding unit

Title: NG Bank 32 Biological v apparent FCR MC-MA2

60) What can cause a difference between a BIOLOGICAL food conversion ratio and an APPARENT food conversion ratio?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Feed wastage
- *b) Underfeeding
- *c) Feeding a maintenance ration
- d) Water temperature variations
- *e) Fish escaping from the holding unit

Title: NG Bank 33 Biological FCR with age MC1

61) What happens to the BIOLOGICAL food conversion ratio as fish get older?

- a) It stays the same
- *b) It gets higher
- c) It gets lower

Title: NG Bank 34 Biological FCR with density MC1

62) What happens to the BIOLOGICAL food conversion ratio as fish stock densities increase above the optimum?

- a) It stays the same
- *b) It gets higher
- c) It gets lower

Title: NG Bank 35 Biological FCR sexual mature MC1

63) What happens to the BIOLOGICAL food conversion ratio when a stock of fish approach sexual maturation?

- a) It stays the same
- *b) It gets higher
- c) It gets lower

Title: NG Bank 36 Apparent FCR overfeed MC1

64) What happens to the APPARENT food conversion ratio when the fish stock is overfed?

- a) It stays the same
- *b) It gets higher
- c) It gets lower

Title: NG Bank 37 Factors affecting FCR MC-MA1

65) What factors can determine the fish stock's food conversion ratio?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Food wastage
- *b) Feeding equipment
- c) Water temperature
- *d) The quality of the feed
- *e) The personnel controlling the feeding

Title: NG Bank 37 Factors affecting FCR MC-MA2

66) What can cause the food conversion ratio to become poorer?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5, could be correct.)

- *a) Food wastage
- *b) High levels of stress
- *c) Predation of fish stocks
- d) Water temperature variation
- *e) Poor health status of the fish

Title: NG Bank 38 FCR calculation MC1

67) How do you calculate the Food Conversion Ratio of fish stock over a given period?

Select the correct FCR calculation.

- a) Weight of food fed DIVIDED BY the change in the average weight of the stock
- b) The change in the biomass of the stock DIVIDED BY the weight of food fed
- c) Weight of food fed MULTIPLIED BY the change in the biomass of the stock
- *d) Weight of food fed DIVIDED BY the change in the biomass of the stock

Title: NG Bank 39 Feeding time MC1

68) When, in any 24 hour period, do Atlantic Salmon in the marine on-growing phase naturally consume most of their daily feed intake?

- a) During the night time
- *b) Evening and early morning
- c) They feed evenly throughout the day
- d) Mid-day when light levels have peaked

Title: NG Bank 40 Feed rate calculation MC1

69) What is the daily feed rate for a stock of Atlantic Salmon averaging 2 kg with the water temperature at 8°C?

Refer to the feed table provided.

- a) 0.56 %
- *b) 0.57 %
- c) 0.69 %
- d) 0.81 %
- e) 1.72 %

Title: NG Bank 40 Feed rate calculation MC2

70) What is the feed rate for a stock of Atlantic Salmon averaging 500 grams with the water temperature at 12°C?

Refer to the feed table provided.

- a) 0.71 %
- b) 0.87 %
- c) 0.97 %
- *d) 1.03 %
- e) 1.33 %

Title: NG Bank 40 Feed rate calculation MC3

71) What is the daily feed rate for a stock of Atlantic Salmon averaging 8 grams with the water temperature at 6°C?

Refer to the feed table provided.

- a) 0.98 %
- b) 1.37 %
- *c) 1.51 %
- d) 1.56 %
- e) 1.72 %

Title: NG Bank 40 Feed rate calculation MC4

72) What is the daily feed rate for a stock of Atlantic Salmon averaging 44 grams with the water temperature at 14°C?

Refer to the feed table provided.

- a) 1.52 %
- b) 1.56 %
- *c) 1.83 %
- d) 2.02 %
- e) 2.15 %

Title: NG Bank 41 Feed ration calculation MC1

73) What is the daily feed RATION for a 150 kg biomass of Atlantic Salmon averaging 20 grams with the water temperature at 8°C?

Refer to the feed table provided.

- a) 2.12 kg/day
- *b) 2.34 kg/day
- c) 2.46 kg/day
- d) 2.58 kg/day

Title: NG Bank 41 Feed ration calculation MC2

74) What is the daily feed RATION for a 345 kg biomass of Atlantic Salmon averaging 125 grams with the water temperature at 4°C?

Refer to the feed table provided.

- a) 1.83 kg/day
- *b) 2.21 kg/day
- c) 2.66 kg/day
- d) 2.80 kg/day

Title: NG Bank 41 Feed ration calculation MC3

75) What is the daily feed RATION for a 3,020 kg biomass of Atlantic Salmon averaging 800 grams with the water temperature at 12°C?

Refer to the feed table provided.

- a) 21.44 kg/day
- *b) 26.27 kg/day
- c) 29.29 kg/day
- d) 31.11 kg/day

Title: NG Bank 41 Feed ration calculation MC4

76) What is the daily feed RATION for a 5,160 kg biomass of Atlantic Salmon averaging 485 grams with the water temperature at 6°C?

Refer to the feed table provided.

- a) 22.19 kg/day
- *b) 28.90 kg/day
- c) 32.00 kg/day
- d) 35.60 kg/day

Title: NG Bank 42 Stock fish growth MC-MA1

77) How can the growth of a stock of fish be determined on a fish farm?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 3, could be correct.)

- *a) By subtracting the biomass of the fish stocked from the biomass of fish harvested
- *b) By forecasting growth using food conversion ratio and feed input data
- *c) By sampling the fish stocks to determine their average weight

Title: NG Bank 42 Stock fish growth MC-MA2

78) Which of these methods can be used to calculate the growth of stocks on a fish farm?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 3, could be correct.)

- *a) Sampling the fish stocks to determine their average weight
- *b) Forecasting growth using food conversion ratio and feed input data
- *c) Subtracting the biomass of the fish stocked from the biomass of fish harvested

Title: NG Bank 43 Stock fish growth accuracy MC1

79) Which of the methods below is the most accurate for determining the growth of fish stock in a holding unit?

Select the most accurate method.

- *a) Subtracting the biomass of the fish stocked from the biomass of fish harvested
- b) Forecasting growth using the food conversion ratio and feed input data
- c) Sampling the fish stocks to determine their average weight

Title: NG Bank 44 Accuracy Ave Wt MC-MA1

80) What determines the accuracy of the average weight assessment for a stock of fish when they are sample weighed?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5 , could be correct.)

- *a) The accuracy of fish counting
- b) The volume of the holding unit
- *c) The size range in the population
- *d) The sample size captured and weighed
- *e) Whether fish are crowded during sampling

Title: NG Bank 44 Accuracy Ave Wt MC-MA2

81) Which of these factors affect the accuracy of sample weighing when assessing the average weight of fish stocks?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5 , could be correct.)

- *a) The accuracy of fish counting
- b) The volume of the holding unit
- *c) Whether the fish are fed or not
- *d) The sample size captured and weighed
- *e) Whether fish are crowded during sampling

Title: NG Bank 44 Accuracy Ave Wt MC-MA3

82) Which of these factors affect the accuracy of sample weighing when assessing the average weight of fish stocks?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5 , could be correct.)

- *a) The sampling method
- *b) The accuracy of fish counting
- c) The volume of the holding unit
- *d) The calibration of the weigh scales
- *e) The sample size captured and weighed

Title: NG Bank 45 Grading MC-MA1

83) What are the DISADVANTAGES of feeding a poorly-graded stock of fish which has a large size range in the population?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 4, could be correct.)

- a) Lower food conversion ratios
- *b) Less accurate sample weights
- *c) Domination of the food supply
- *d) Harder to select the right pellet size

Title: NG Bank 46 Feeding methods_on-growing MC-MA1

84) Which method(s) can be used to deliver feed to Atlantic Salmon in the marine on-growing phase in 16 metre diameter cages?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5 , could be correct.)

- *a) Hand feeding
- *b) Cannon feeders
- c) Automatic feeders
- d) Pendulum demand feeders
- *e) Camera controlled feeding systems

Title: NG Bank 47 Feeding methods_freshwater phase MC-MA1

85) Which method(s) can be used to feed Atlantic Salmon in the freshwater phase in 5 metre diameter tanks?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5 , could be correct.)

- *a) Hand feeding
- b) Cannon feeders
- *c) Automatic feeders
- d) Pendulum demand feeders
- e) Camera controlled feeding systems

Title: NG Bank 48 Feeding methods_rainbow trout MC-MA1

86) Which method(s) can be used to feed Rainbow Trout in freshwater held in concrete raceways?

Select as many as you believe to be correct.

(Any number of answers, from 1 to 5 , could be correct.)

- *a) Hand feeding
- b) Cannon feeders
- *c) Automatic feeders
- *d) Pendulum demand feeders
- e) Camera controlled feeding systems

Feed Table

Fish Size (g)	Water temperature									
	<4 ⁰ C	4 ⁰ C	6 ⁰ C	8 ⁰ C	10 ⁰ C	12 ⁰ C	14 ⁰ C	16 ⁰ C	18 ⁰ C	>18 ⁰ C
8 - 10	*	1.22	1.51	1.72	2.12	2.40	2.76	3.03	3.53	*
11 - 20	*	1.18	1.37	1.56	1.89	2.17	2.57	2.85	3.29	*
21 - 40	*	1.02	1.21	1.41	1.64	1.83	2.15	2.47	2.81	*
41 - 80	*	0.81	0.98	1.08	1.31	1.52	1.83	2.02	2.24	*
81 - 150	*	0.64	0.77	0.98	1.18	1.33	1.56	1.83	1.95	*
151 - 300	*	0.53	0.62	0.81	1.07	1.21	1.37	1.52	1.76	*
301 - 500	*	0.43	0.56	0.69	0.95	1.03	1.16	1.31	1.44	*
500+	*	0.32	0.44	0.57	0.71	0.87	0.97	1.01	1.20	*