Question 1 **(6 marks)**

(a) Which diagram, A or B, **best** represents the biomass relationship between the organisms within a farm ecosystem? (1 mark)

Description	Marks
States diagram A	1
Total	**1**

(b) Explain your choice in part (a). (3 marks)

Description	Marks
Explains clearly the relationship between the trophic levels, referring to the how biomass is lost leaving only a small amount of biomass available	3
Outlines that biomass is lost at each trophic level leaving less for use at the next level	2
States that biomass is lost as you move up the trophic level/food chain	1
Total	**3**

Answer could include:

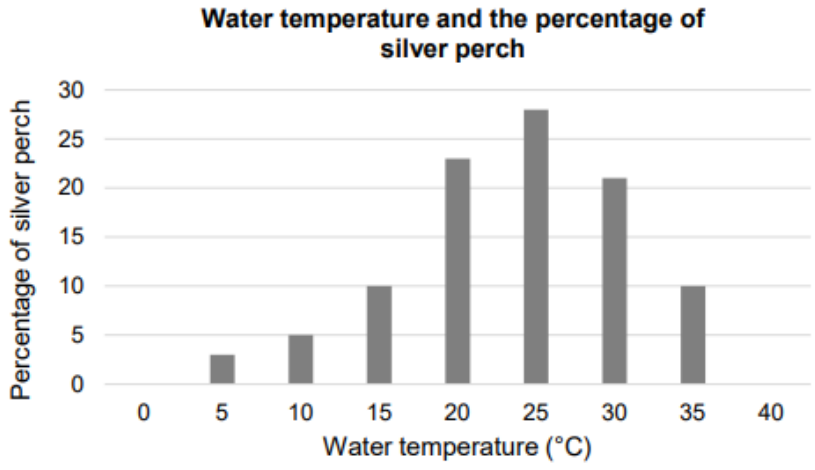
Reflects the flow of biomass from producers to consumers, with the greatest amount at the bottom, as at each level biomass is lost. Only 10% of biomass is transferred to the next trophic level, as most energy is lost as heat

Question 2 **(15 marks)**

(a) Draw a graph showing the data in the table above. (5 marks)

Description	Marks
Draws a column graph (discrete data)	1
Title appropriate with both independent and dependent variables included	1
X-axis correctly labelled with linear scale and units	1
Y-axis correctly labelled with linear scale	1
Correctly plot points	1
Total	**5**

Answer could include:



(b) For the investigation, identify the dependent variable and the independent variable. (2 marks)

Description	Marks
Dependent variable: percentage of perch	1
Independent variable: water temperature	1
Total	**2**

(c) Use your graph or the table of data to describe the relationship between water temperature and silver perch populations. (3 marks)

Description	Marks
Describes clearly the relationship between the water temperature and the number of perch, including optimum temperature	3
Outlines the relationship between water temperature and the percentage of perch	2
States some relevant information about the relationship between water temperature and the percentage of perch	1
Total	**3**
Answer could include: The percentage of silver perch increases with an increase in temperature to an optimum temperature of 25 °C, where it then begins to decline	

(d) Explain **one** way in which water temperature could affect the body functions of fish in environments such as the Murray-Darling Rivers. (3 marks)

Description	Marks
Explains clearly one effect of temperature on the body functions of fish	3
Outlines one effect of temperature on the body functions of fish	2
States some information on the body functions of fish	1
Total	**3**
Answer could include: • metabolic rate increases as temperature increases due to increased enzyme activity **or** • gas exchange/amount of oxygen changes at different temperatures affecting amount of oxygen available to the silver perch.	
Accept other relevant answers	