

BIOLOGY X- A PLUS PROGRAM 2015

MARK SCHEME

QUESTION 1

No	Criteria	Marks
(a)	Aorta	1
(b)	P1 : Left ventricle produces greater pressure / force P2 : To pump blood to all body tissues except lungs	1 1
(c)	Valve A : bicuspid / tricuspid valve Valve B : semi lunar valve	1 1
(d)	Advantage : Extend lifespan // useful when there is no other treatment available Disadvantages : low success rate // device has limited lifespan // battery needs to be recharged // risk of infection (Choose any two)	1 2
(e)	It doesn't cause an immune response or it isn't rejected / damaged by white blood cells // It is a long lasting material / doesn't decompose // It is strong (to withstand pressure) // It doesn't leak / can prevent backflow (Choose any two)	2
(f) (i)	Age // not on medication // BMI // diet	1
(f) (ii)	Patients were at rest // not moving // not using muscles	1
(f) (iii)	1. Monitor records heart rate over long period of time 2. Monitor records heart rate over a range of activities in one day // pulse rate only records a single set of activity (limited activity) 3. Errors might occur when count pulse in one minute (Choose any one)	1

QUESTION 2

No	Criteria	Marks
(a)	<p>P1 : Place 30 m tape measure from one woodland to another</p> <p>P2 : Place quadrat next to the tape</p> <p>P3 : Count and record the number of <i>mimosa pudica</i> sp. In the quadrat</p> <p>P4 : Repeat every two metres</p>	3
(b)	Less light // less nutrient // water in the soil // unsuitable pH of the soil // compete with the trees	1
(c)	Foot path for animals // poisoned by animal waste // cut down	1
(d)	Compare the results with other groups // Repeat by using other parts of the field	1

QUESTION 3

No	Criteria	Marks
(a)	P1 : No change in the rate of blood flow in brain; but others fall	1
	P2 : Brain controls other organs; therefore need onstant supply of oxygen	1
	P3 : Lungs not // less used // Seal can hold their breath underwater // can conserve oxygen	1
	P4 : Less oxygen used ; therefore heart rate decreases	1
(b) (i)	P1 : Shivering causes more muscles to contract	1
	P2 : Increase respiration // more heat released	1
(b) (ii)	Blood vessels dilate	1
(b) (iii)	P1 : Blood vessels dilate more	1
	P2 : Increase heat loss	1
	P3 : Body temperature decreases easily	1
(c) (i)	Air bubbles form (in blood) when surfacing	1
(c) (ii)	Possible problem : fainting // headache // prevent blood flow // lead to death // damage organs	1
	How to avoid : need to come up slowly // dive for less time // not go so deep	1

QUESTION 4

No	Criteria	Marks
(a) (i)	Can wash clothes at high temperature // Enzyme action is faster // Enzyme is not destroyed at high temperature <i>(Choose any two)</i>	2
(ii)	P1 : Higher temperature uses more energy // fuel P2 : More carbon dioxide released P3 : More released of hot water	2
(b) (i)	Can save cost as less concentration of enzymes used Can save cost as the reaction can occur faster at 35 °C	2
(ii)	Trypsin breaks down protein molecules Make the food to be softer	2

QUESTION 5

No	Criteria	Marks
(a)	<p>The answer must be about reducing energy lost</p> <p>P1 : Reduce organisms in the food chain</p> <p>P2 : Restrict movement of the animals</p>	2
(b)	<p>Advantages :</p> <p>P1 : Low in saturated fat, cholesterol</p> <p>P2 : Less likely to cause heart disease</p> <p>P3 : Uses less land areas</p> <p>P4 : Less risk of transfer of disease</p> <p>P5 : High source of amino acid</p> <p><i>(Choose any two)</i></p> <p>Disadvantage :</p> <p>P1 : Different in taste // texture</p> <p>P2 : Less / lack of iron</p> <p>P3 : Lost of farming job</p> <p>P4 : Might be expensive</p> <p><i>(Choose any two)</i></p>	2 2
(c) (i)	To conserve organisms for future uses	1
(ii)	Almost double increase in size	1
(iii)	<p>P1 : More carbon dioxide output</p> <p>P2 : As longer time required to raise the cow</p>	2

QUESTION 6

No	Criteria	Marks
(a)	<p>Feeds only at dawn and at dusk</p> <p>The food contain moisture</p> <p>Stays in the shade</p> <p>Less heat lost , less evaporation of water</p> <p>Liver and heart shrink in size</p> <p>Less oxygen required</p> <p>Less cellular respiration</p> <p>Less water lost</p>	2
(b)	<p>Get water from food //</p> <p>Produce more concentrated urine (more reabsorption of water)</p> <p>Produce dry faeces (more reabsorption of water)</p> <p>Live in cool place</p> <p>Does not sweat</p> <p><i>(Choose any two)</i></p>	2
(c)	<p>Consume fruits // Leaves // Plants</p> <p>Dive in seawater for a few minutes for cooling effect</p> <p>Stay under shelter</p> <p>Collect rain water as source of drinking water</p> <p><i>(Choose any three)</i></p>	1
(d)	<p>P1 : Sweat produced cannot be released because of high humidity</p> <p>P2 : Less heat released</p>	1

QUESTION 7

No	Criteria	Marks
(a)	Amount of nicotine in cigarettes // The ability to absorb nicotine // volume of blood // frequency of smoking //types of cigarettes // body mass <i>(Choose any two)</i>	2
(b)	Agree : Those who smoke, should know the risks // The money can be used for other purposes e.g education // vaccine is expensive Disagree : Unethical not to treat // less money to treat lung problems in the future P2 : Increase respiration // more heat released	1 1
(c) (i)	Antibiotics don't kill viruses (because measles) virus / pathogen lives inside cells	1
(c) (ii)	(bacteria / pathogens) develop resistance (to antibiotic)	
(d)	Too busy // concerned about side effects // allergic to vaccines // fear to needles // expensive // religion <i>(Choose any two)</i>	2

QUESTION 8

No	Criteria	Marks
(a)	76.04	2
(b)		
(c)	Public awareness // law enforcement	1
(d) (ii)	Law enforcement // use small fishing net (bacteria / pathogens) develop resistance (to antibiotic)	
(ii)	The fish are fed more often, so can produce more energy The fish are fed with (high protein) // better food , can build more cells ; more energy produced The fish movement is restricted // not so much energy used for movement	2