

Mark Scheme

Principal Learning

Sample Assessment Material EG208 Engineering Level 2 Unit 8: Exploring Engineering Innovation, Enterprise and Technological Advancements

Question Number	Answer	Mark
1 (a)	Patents are used to legally protect a new idea, innovation product or process [1 mark]. Registration of a design legally protects the appearance of a product [1 mark]. A trade mark is used for the identification of a brand and is used to identify companies or products [1 mark]. A copyright is used to protect a creative skill or item of work and is not required to be registered [1 mark].	(4)
(b)	Lucy will be able to be acknowledged for her good idea [1 mark], she will be able to legally stop others from using her idea without permission [1 mark] and be able to sell her product for financial gain or charge others to use her idea [1 mark].	(3)
(c)	A design, trademark or copyright would not be appropriate at this time as the final design of the <i>RoboMop</i> may be very different [1 mark], the product is not yet established [1 mark] and copyright does not apply to ideas for artefacts [1 mark].	(3)

Question Number	Answer	Mark
2 (a)	Lucy will need to research three of the following areas: <ul style="list-style-type: none"> • The market potential. [1 mark] • The existence of similar or competitive products. [1 mark] • The views and thoughts of potential users. [1 mark] • The financial cost of launching the product. [1 mark] 	(3)
(b)	The market potential of the product to determine if anyone will want to use the product and if the product will sell [1 mark], The existence of any similar or competitive products to determine who the main competitors are and what in addition our product will offer [1 mark], the financial cost of launching the product is required to determine if the funds are available [1 mark].	(3)
(c)	Primary sources could include questioners [1 mark], interviews [1 mark] and surveys [1 mark] to determine the needs and views of potential users Secondary sources could include the internet [1 mark] to research competitors and the market potential of the product, magazine [1 mark], research publication [1 mark]. <i>Or 1 mark for any other suitable answer</i>	(4)

Question Number	Answer	Mark
3 (a)	<p>For the product to succeed Lucy will need to ensure that sufficient funds are available for the following key areas;</p> <ul style="list-style-type: none"> • To carry out sufficient research & development [1 mark] • To pay for the production and manufacture, including design process, parts and labour [1 mark] • Money to publicise and sell the product [1 mark] • Money for training and customer support [1 mark] 	(4)
(b)	Funds can be raised by finding a suitable sponsor [1 mark] or borrowing money from a bank [1 mark] or alternatively applying for a grant [1 mark]	(3)
(c)	<p>Suitable sponsors may include manufacturers of similar products such as Dyson, Hoover, or Electrolux [1 mark]. Small business loans can be applied for at high street banks such as Barclays or NatWest [1 mark] and government grants may be applied for if the product meets a specified need for example to help the elderly [1 mark]</p> <p><i>Or any other suitable answer</i></p>	(3)

Question Number	Answer	Mark
4	<p>The outer casing of <i>RoboMop</i> is required to be durable [1 mark], solvent resistant (resistant to chemical detergents) [1 mark], stable at normal household temperatures [1 mark] and capable of being reused [1 mark]</p> <p>A thermoplastic material would be most suitable [1 mark] as this would be cost effective [1 mark] and recyclable [1 mark].</p> <p>A suitable material would be Ultra Polyvinylchloride (UPVC) [1 mark] as this would be appropriate for moulding [1 mark] and therefore manufacturing in quantity [1 mark]</p> <p><i>(These are suggested answers but suitable alternatives would also be acceptable)</i></p>	(10)

Question Number	Answer	Mark
5	<p>Lucy's invention would be helpful to people who are unable to clean their own floors at home [1 mark]. It may also assist in cleaning offices and workplaces [1 mark] and could also be used in industrial applications to clean factories and large industrial spaces [1 mark].</p> <p>People who could benefit from this at home would include the elderly[1 mark], people with disabilities and anyone who is short on time [1 mark]. Office managers and cleaning companies would benefit in the workplace [1 mark]. Factory floor mangers, hospitals and large industrial companies could also benefit from this product [1 mark].</p> <p>Lucy's invention would allow people who may previously be unable to clean their floors at home the opportunity to do so [1 mark]. It will also allow for savings on the cost of cleaning within the workplace [1 mark]. By adapting the cleaning solution used <i>RoboMop</i> could be used in industrial cleaning or sterilisation for industrial and clinical needs [1 mark].</p> <p><i>(These are suggested answers but suitable alternatives would also be acceptable)</i></p>	(10)

Question Number	Answer	Mark
6 (a)	<p>Consideration needs to be given to the use of biodegradable [1 mark] and recyclable [1 mark] products throughout the manufacture of <i>RoboMop</i> to reduce the need of raw materials. To keep waste to a minimum lean manufacture is to be encouraged [1 mark] and the forming and finishing process is to be kept to a minimum to reduce manufacturing time and the consumption of energy and resources [1 mark].</p>	(4)
(b)	<p>In the operating instructions Lucy could encourage the use of "Grey water" or rain water instead of tap water for use with diluting the detergent [1 mark]. She could also ask the user to consider how frequently they need to clean their floor to help reduce energy from unnecessary use [1 mark]. In addition she could encourage the use of environmentally friendly detergents [1 mark]</p> <p><i>(These are suggested answers but suitable alternatives would also be acceptable)</i></p>	(3)
(c)	<p>The use of battery power would be ideally suited for <i>RoboMop</i> due to its mobility [1 mark], as the product is intended to be used at night the batteries could be charged throughout the day and the use of solar cells [1 mark] would give sufficient power to charge the batteries. Therefore the product would need to be stored by a window during the day to gain a sufficient charge.[1 mark]</p>	(3)