

**GCE**

**Design and Technology**

Unit **F524/02**: Product Design: Component 2

Advanced GCE

**Mark Scheme for June 2015**

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2015

Annotation	Meaning of annotation
	Blank Page – this annotation <b>must</b> be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.

### Subject-specific Marking Instructions

that apply across the whole question paper to be included here.

	Answer	Mark	Guidance
	<p><b>(S) Specification points which are qualified and justified</b></p> <p>A clear relevant statement – (1 mark), clear relevant justification – (1 mark) No marks awarded for generic statements or repeated information given in question.</p> <p><b>(R) Range of developed ideas</b></p> <p><b>0–5</b> A limited range of ideas with little evidence of innovation and little development.</p> <p><b>6–10</b> A good range of appropriate innovative ideas with limited development of some or all ideas.</p> <p><b>11–15</b> A wide range of significantly different innovative ideas, which are developed as far as possible.</p> <p><b>(D) Consideration of manufacturing/construction detail</b></p> <p><b>0–4</b> Limited consideration of appropriate techniques, justification of appropriate materials and components and measurements.</p> <p><b>5–8</b> Some consideration of appropriate techniques, justification of appropriate materials and components and measurements.</p> <p><b>9–12</b> Detailed consideration of appropriate techniques, justification of appropriate materials and components and measurements.</p>	<p>3 x 2</p> <p><b>[6]</b></p> <p><b>[15]</b></p> <p><b>[12]</b></p>	

	Answer	Mark	Guidance
	<p><b>(E) Evaluation of ideas with reference to the specification and volume production</b></p> <p><b>0–2</b> Limited evidence of evaluation or reference to volume production.</p> <p><b>3–4</b> Some evidence of subjective evaluation or reference to volume production.</p> <p><b>5–6</b> Detailed evidence of objective evaluation or reference to volume production.</p> <p><b>(F) Chosen features for FDO and justification of choices made</b></p> <p><b>0–3</b> Limited identification and justification of features.</p> <p><b>4–6</b> Some identification and justification of features.</p> <p><b>7–9</b> Detailed identification and justification of features.</p> <p><b>(C) Communication skills and techniques</b></p> <p><b>0–2</b> Limited level of graphical skill and annotation.</p> <p><b>3–4</b> Reasonable level of graphical skill and annotation appropriately used.</p> <p><b>5–6</b> High level of graphical skill and concise annotation that can be easily followed by a third party.</p>	<p><b>[6]</b></p> <p><b>[9]</b></p> <p><b>[6]</b></p> <p><b>[54]</b></p>	
	<b>Paper Total</b>	<b>[54]</b>	

	Answer	Mark	Guidance
1	<p><b>Built Environment and Construction</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"> <li>• The cycle storage unit must allow cycles to be secured using standard security devices so that residents can choose their own security products.</li> <li>• The cycles must be held firmly in position so that they are stable and do not fall onto each other.</li> <li>• The cycles must be protected from rain so that they do not deteriorate</li> <li>• It must be possible to store a variety of different cycles (eg. road bikes, mountain bikes, small/large wheels etc) to cater for individual needs.</li> <li>• It must be possible to see cycles in storage so that potential thieves are not hidden from view to allow them to disable security devices undisturbed.</li> <li>• There should be storage for essential cycling accessories such as helmets and lights so that residents can leave them with their cycle ready for use.</li> </ul>		

	Answer	Mark	Guidance
2	<p><b>Engineering</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"> <li>• The bracket must hold the projector firmly to avoid vibration that would affect the quality of the images displayed.</li> <li>• The bracket must hold the projector firmly without causing any damage to it.</li> <li>• It must be possible to attach all wires and cables to the projector easily and keep them held tidily and safely when in use.</li> <li>• The bracket should have some means of adjusting the height and/or angle of the projector.</li> <li>• All fixings and adjustment points must be tamper-proof to prevent theft of the projector.</li> <li>• It should be possible to make any necessary adjustments without the need for tools, whilst maintaining security of the projector.</li> </ul>		

	Answer	Mark	Guidance
3	<p><b>Food</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"> <li>The product must be a main meal as it may be the main source of nutrients for the day. (<i>it could be any other meal fully justified</i>)</li> <li>The product must be able to be prepared /reheated/cooked quickly so that it will suit a student lifestyle</li> <li>The product may be stored in a refrigerator/or freezer so that it can be purchased in advance.</li> <li>The product must be creative and innovative to compete with other similar on the market/or to appeal to the target group.</li> <li>The product should rich in other nutrients such as iron, calcium, iodine, vitamin B12, vitamin D as these are often lacking in a vegan diet.</li> <li>The product should not be too bulky( high in fibre) as this will prevent the consumer from having enough of the essential nutrients</li> </ul>		<p><u>Ingredients to look for:</u></p> <p>Alternate proteins: Pulses- all peas/beans/lentils/nuts Dehydrated TVP (Textured vegetable Proteins) can be bought flavoured or unflavoured, it is made from Soya beans. Excellent source of high biological protein, usually fortified with vitaminB12</p> <p>Tofu( soya bean curd), Tempeh( fermented soya bean paste), miso( a fermented condiment made from soya beans or rice), soya sauces contain HBV protein Soya milk and soya dairy products have a lower fat content, usually fortified with vitamin D, B12, and calcium Micoprotein, known as Quorn® is a source of protein, biotin, fibre, iron, and zinc Wheatpro is made from the gluten (protein) in flour to resemble meat.</p> <p><u>Other sources of nutrients:</u> Calcium-almonds/sesame/pulses/vegan cheese/tofu/soya milk Iodine-edible seaweeds/iodized salt. Iron- green vegetables/cereal foods/nuts/pulses Zinc- - bread/cereals Vitamin B12- yeast extract/ fortified soya milk/fortified breakfast cereals. Vit D – breakfast cereals/soya yoghurts all fortified.</p>

	Answer	Mark	Guidance
4	<p><b>Graphics</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"><li>• When using the product there must not be a predetermined outcome for the children so that creativity and imagination are stimulated.</li><li>• The product should be appropriate for use by both girls and boys to discourage gender stereotyping.</li><li>• The product must encourage a small group of children to engage in open ended role play to develop their social skills.</li><li>• The product should be easily set up and packed away by the children to encourage their independence.</li><li>• The product should be usable with common classroom items, such as toys cars or small figures, because this will enhance its usefulness.</li><li>• The product should engage the imagination of children through role play or small world play as this will encourage creativity through story telling.</li></ul>		

	Answer	Mark	Guidance
5	<p><b>Manufacturing</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"> <li>• The product must hold a typical washer-full of wet washing so that the student can dry everything at once.</li> <li>• There should be some way of catching drips of water from really wet washing so that the floor beneath is not damaged.</li> <li>• The items of clothing should be reasonably well spaced so that there is enough flow of air to dry the clothes efficiently.</li> <li>• The product should fold or collapse in some way so that it is easy to store when not in use.</li> <li>• The product should be water resistant so that wet washing does not cause it to deteriorate.</li> <li>• It should be possible to wipe the product clean so that it does not transfer dirt onto freshly washed clothing.</li> </ul>		

	Answer	Mark	Guidance
6	<p><b>Resistant Materials</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"><li>• The product must be resistant to corrosion and degradation as it may be used in an outdoor environment.</li><li>• The product must be able to be assembled and dismantled easily and quickly so as not to waste valuable lesson time.</li><li>• The product must be stable in use to prevent injury, as the activity may involve movement.</li><li>• The product may be carried – handles or straps must be comfortable to transport the product to different parts of the school grounds.</li><li>• The product parts must not be too heavy so as to cause difficulty when transporting to different areas.</li><li>• The product should be adjustable to best suit the different sizes and physical abilities of 7 to 11 year</li></ul>		

	Answer	Mark	Guidance
7	<p><b>Systems and Control</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"> <li>• The product must increase the visibility of the dog and owner to motorists, cyclist and other pedestrians so that collisions can be avoided.</li> <li>• The product should have switchable white/red lighting so that when walking with or against the flow of traffic the relevant colour can be shown.</li> <li>• The product should be fully waterproof because dogs must be walked even when it is raining and some dogs like to swim.</li> <li>• The product should be washable/wipe-able because it will get wet and muddy when in use.</li> <li>• The product must make the dog and owner visible from a distance so that motorists have chance to avoid the dog/person without an emergency manoeuvre.</li> <li>• The product must not restrict the movement of the dog or the owner so that they can walk freely.</li> </ul>		

	Answer	Mark	Guidance
8	<p><b>Textiles</b></p> <p>Specification points could be:</p> <ul style="list-style-type: none"> <li>• The product must be machine washable because parents will want to be able to keep all bed linen clean.</li> <li>• It should be possible to machine wash and quickly dry the product so that it can be returned to the child's bed within one day.</li> <li>• The product should give the child the sensation of enclosure to mimic the feeling of being placed in a cot.</li> <li>• The product should be suitable for use with any common single bed to increase its marketability.</li> <li>• The product could incorporate a safe light to reassure the child during the night.</li> <li>• The product must not have any detachable or loose components that could become a choke hazard to an unattended child.</li> </ul>		

**OCR (Oxford Cambridge and RSA Examinations)**  
1 Hills Road  
Cambridge  
CB1 2EU

**OCR Customer Contact Centre**

**Education and Learning**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

[www.ocr.org.uk](http://www.ocr.org.uk)

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

**Oxford Cambridge and RSA Examinations**  
is a Company Limited by Guarantee  
Registered in England  
Registered Office; 1 Hills Road, Cambridge, CB1 2EU  
Registered Company Number: 3484466  
OCR is an exempt Charity

**OCR (Oxford Cambridge and RSA Examinations)**  
Head office  
Telephone: 01223 552552  
Facsimile: 01223 552553

© OCR 2015

