



National
Qualifications
2018

2018 Graphic Communication

Advanced Higher

Finalised Marking Instructions

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General marking principles for Advanced Higher Graphic Communication

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this paper. These principles must be read in conjunction with the detailed marking instructions, which identify the key features required in candidate responses.

- (a) Marks for each candidate response must always be assigned in line with these general marking principles and the detailed marking instructions for this assessment.
- (b) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.
- (c) If a specific candidate response does not seem to be covered by either the principles or detailed marking instructions, and you are uncertain how to assess it, you must seek guidance from your team leader.
- (d) For each candidate response, the following provides an overview of the marking principles. Refer to the detailed marking instructions for further guidance on how these principles should be applied.
 - (i) **Questions that ask candidates to describe**
Candidates must provide a statement or structure of characteristics and/or features. This should be more than an outline or a list. Candidates may refer to, for instance, a concept, experiment, situation, or facts in the context of and appropriate to the question. Candidates will normally be required to make the same number of factual/appropriate points as there are marks available.
 - (ii) **Questions that ask candidates to explain**
Candidates must generally relate cause and effect and/or make relationships between things clear. These will be related to the context of the question or a specific area within a question.
 - (iii) **Questions that ask candidates to compare**
Candidates must generally demonstrate knowledge and understanding of the similarities and/or differences between, for instance, things, methods, or choices. These will be related to the context of the question or a specific area within a question.
- (e) Candidates can respond to any question using text, sketching, annotations or combinations where they prefer. No marks shall be awarded for the quality of sketching. Marking will relate only to the information being conveyed.

Detailed marking instructions for each question

Question			Expected response	Max mark	Additional guidance
1.	(a)	(i)	<p>Advantages of each technique in this context should include:</p> <p>Motion-capture</p> <ul style="list-style-type: none"> • Captures a range of customer/employee movement; how they use the cafe: entering, finding a seat, using the washroom etc. To create the animation. • Creates a realistic animation which will make the video more lifelike/believable. • Allows multiple characters to be animated at the same time. • Provides data on how the customer/employee interacts with products: opens doors, trays of food, furniture etc. • Provides real time data (over a specific time period) so will give a realistic idea over how long activities take. 	2	<p>Descriptions will make reference to the question context and each of the techniques in the response.</p> <p>2 marks per technique.</p> <p>If blend/fade/transitions mentioned in ‘motion-tweening’, or ‘motion-capture’ responses then the same advantage cannot be repeated in the ‘Transitions’ response.</p> <p>Other possible responses for both motion-capture and motion-tweening. Animated characters can be placed in a realistic virtual cafe environment.</p>
		(ii)	<p>Motion-tweening</p> <ul style="list-style-type: none"> • The animation will show the smooth changes in the position of characters moving to different places in the cafe or parts of characters eg hands in the animation. • Makes it easier to add multiple characters to the animation, each with their own movement, adding realism. • Frames in the animation are generated quickly speeding up the process. • Edits can be carried out more easily, eg edits to the path, adding transitions. 	2	<p>Accept:</p> <ul style="list-style-type: none"> • reduced cost compared to other forms of animation with <u>justification</u> • accept ‘only required start and end points’ provided it is <u>justified</u>, eg reduces time required or reduces expense • creating points and paths for camera positions eg in a fly through.

Question			Expected response	Max mark	Additional guidance
1.	(a)	(iii)	<p>Transitions</p> <ul style="list-style-type: none"> • Effective transitions can make the video appear more professional, dramatic or engaging. • It will allow the designer to include features of the interior without breaking up the animations flow. • A consistent use of same style of transition will unify the video. • It provides a way of including start and end points to different chapters/sequences in the animation. • It would be relatively easy to make edits to the transitions to suit the client, time taken, style eg fade. 	2	<p>Accept:</p> <ul style="list-style-type: none"> • responses that give appropriate examples of transitions eg fade, blend in relation to the context of the question.
	(b)		<p>File formats include:</p> <ul style="list-style-type: none"> • .MPEG OR • .3GP OR • .MV4 (or .M4V) OR • .MOV OR • .MP4 	1	<p>Accept:</p> <p>.AVI .WMV .WVF .3G2 .WVP</p>

Question		Expected response	Max mark	Additional guidance
1.	(c)	<ul style="list-style-type: none"> • Print quality of 300 dpi for all printed media so quality of brand maintained. • Use of pantone colour matching system to ensure consistency of colour between different printing methods. • Vector files used so graphic and text can be scaled up without loss of quality. For example the logo for the menu scaled up for the window graphic. • Use of CMYK colour space. • Appropriate printing method for size of image. • Appropriate printing method so logo is the same quality on different substrates. • Appropriate printing method for spot colour that maintains the other colours in the logo/brand (see additional guidance). • Text converted to vector to maintain the quality of the text within the logo or original text file made available to printer. 	3	<p>Accept:</p> <ul style="list-style-type: none"> • the overprint of a spot colour will not affect the quality of the print/brand or logo • instead of text converted to vector original text file sent to printer.
	(d)	<ul style="list-style-type: none"> • Use of solvent free inks in the printing process. • Use the most efficient printing process. • Use of low energy/low waste printing method. • Make most efficient use of the substrate in terms of number of menus per sheet. • No chemical residue in the biodegrading process. • Select the most durable/wear resistant biodegradable plastic so it has a long life. • Use of recycled material to create the menu. 	2	<p>Accept:</p> <ul style="list-style-type: none"> • printing on both sides of menu or making the most effective use of the surface of the menu by using effective layout techniques • laminating or sealing the menus surface, using an environmental safe method, to extend its life • use recycled material for the initial substrate • sourcing menu material from a renewable source.

Question			Expected response	Max mark	Additional guidance
1.	(e)	(i)	Dynamic effect	1	Accept: <ul style="list-style-type: none"> • Contrast • Emphasis • Dominance
		(ii)	Responses such as: <ul style="list-style-type: none"> • provides a clear indication of position due to shape of the dot • flashing dot creates contrast with other dots that don't have the dynamic effect • grabs attention by its pulse and fade dynamic effect • blue colour contrasts with plain background colour making it easier to identify. 	2	
	(f)		Advantages of .DXF file in this context. <ul style="list-style-type: none"> • Allows the user to zoom in and out on the floor-plan image without loss of image quality because DXF is a vector file format. • DXF is easily opened or stored on mobile devices due to its compatibility with different software. • The smaller file size makes it easier to download or store on mobile devices. • Vector graphics give the most accurate representation of the features in the room. • Layers can be used to make different features distinctive. 	2	Accept: <ul style="list-style-type: none"> • a .DXF file does not need to be created using AutoCAD software making it easier for the App designer to produce. Do not accept: <ul style="list-style-type: none"> • it is a 2D file type.

Question			Expected response	Max mark	Additional guidance
1.	(g)	(i)	<ul style="list-style-type: none"> • Simple block colours in the map tool will reduce the file size making it quick to down load and quick to refresh. • JPEG files can be compressed to reduce file size. • Commonly used file types such as .JPG or .PNG can be opened easily in the app. (No file conversion needed). • Transparent background capability supported by .PNG raster file type which would be important for some icons on the map. 	1	<p>Note: ‘The JPG files can be compressed to reduce its file size’ and ‘JPG can be easily opened on most mobile devices’ are acceptable for both (i) and (ii) but the answer cannot be repeated.</p> <p>Also accept for (i)</p> <ul style="list-style-type: none"> • Mobile devices can cache maps <p>Also accept for (i) and (ii)</p> <ul style="list-style-type: none"> • .JPG less grainy than a GIF file but see note above <p>Accept JPG’s have smaller file sizes than the vector equivalent.</p>
		(ii)	<ul style="list-style-type: none"> • The vibrant colours of the food will be accurately reproduced on the menu page using JPG. • JPG’s are a commonly used file type and can be stored in/most mobile phones will open these. • JPG’s can be easily replaced so information on the menu is up to date. 	1	<p>Do not accept:</p> <ul style="list-style-type: none"> • ‘high quality images’ without justification

Question		Expected response	Max mark	Additional guidance
2.	(a)	<ul style="list-style-type: none"> • Small range of colours reduces expense of reproduction. • Simple shapes are easy to recognise/or memorable. This helping small companies to be distinct from competitors and may contribute to customer. • Simple shapes/text are easier to reproduce on both printed and digital media. • Simple logos with block colours are more easily saved as vector files which is more useful for scaling, modifying or sending electronically. • The house style can be easily applied to any new companies that join the corporate group in this case the circle/flame shape. • Block colours are easy to save in both raster and vector file formats making the logos versatile in terms of reproduction. 	2	
	(b)	<ul style="list-style-type: none"> • Left justified text used in each logo creates alignment of company name and leads the eye to the slogan or sub-text. • Close proximity of text to graphic in each logo makes the association between logo and company name as clear as possible. • Unity is created by using the bold large text for the company title and smaller regular text for the slogan. • A (asymmetrical) balance is achieved through the position of the graphic on the left and bold/large text on the right. • Emphasis/dominance on the company name is achieved by using large, bold text. 	3	Accept: <ul style="list-style-type: none"> • contrast is achieved between the bold company heading and the standard type subheading • contrast between the larger and smaller font sizes for the heading and subheading.

Question		Expected response	Max mark	Additional guidance
2.	(c)	<ul style="list-style-type: none"> • So if it is copied/appears to be copied by another company there is legal protection in copyright law. • So that the reputation of the company's products or services are not compromised (by association with an inferior brand). • So there is no confusion between different companies which would affect customer loyalty, public perception of the company, purchasing etc. • So that your logo cannot be used by another company and take away your business. • Protection is needed to maintain the company's brand identity. 	2	
	(d)	<p>Any four issues from this list.</p> <ul style="list-style-type: none"> • Some RGB colours cannot be reproduced accurately using CMYK process colour inks. • Pantone colour matching may be needed to maintain colour space. • Differences in screen resolution (72 dpi) and print resolution (300 dpi) must not affect the clarity of the branding. • Digital rights management issues may be different between online and printed media. • Make sure converting images or fonts from raster to vector format does not affect appearance. • File types for printed and digital media will be different so compatible or exchange file formats will need to be used. • Selecting an appropriate printing method to ensure quality is maintained. • Selecting an appropriate substrate for printed media to ensure quality is maintained. 	4	<p>Each issue max 1 mark</p> <p>Note:</p> <ul style="list-style-type: none"> • responses must relate to the transition between printed and digital media. <p>Accept:</p> <ul style="list-style-type: none"> • if there are changes on the website or in a digital advertisement it may take time for the change to be made to printed media. The logo design should be simple for this reason: so it is easy to update, reproduce or reformat.

Question			Expected response	Max mark	Additional guidance
2.	(e)	(i)	<p>Depth of field</p> <ul style="list-style-type: none"> • The blurred or out of focus parts of the background image have been used to concentrate the reader's eye onto the face of the woman. • The blurred or out of focus parts of the background image also increases the contrast between this and the woman's face. <p>Shape</p> <ul style="list-style-type: none"> • The series of overlapping circles in the logo lead the eyes to the woman's face. • The dots and overlapping circles in the logo links emphasises the woman's face and her eyes in particular. <p>Radial balance</p> <ul style="list-style-type: none"> • The words 'TRAINING ' etc are arranged to lead the eye to and from the focal point which emphasises both. • Other content including the logo, slogan and text boxes are all arranged in a radial pattern around the focal point which gives it more emphasis. 	3	<p>Note:</p> <ul style="list-style-type: none"> • Response must relate to the webpage.
		(ii)	<ul style="list-style-type: none"> • By making the focal point the woman's face this will help to grab the attention of the new graduates/young adults as she is likely to be of a similar age. • The determination in the woman's face communicates a particular mood or message that the site wants to convey ie reflecting the attitude required in/of successful graduates. • It could be seen as an unusual image for engineering recruitment as it shows a leisure activity. 	2	Candidates must make reference to the web page as this is in the stem of the question.

Question			Expected response	Max mark	Additional guidance
2.	(e)	(iii)	<p>White space</p> <ul style="list-style-type: none"> Divides up each section of the report making it easier to understand the content. The information contained in the report may be demanding. The white space makes it more accessible by giving the publication a more relaxed feel/rest for the eyes. <p>Grid structure</p> <ul style="list-style-type: none"> The grid structure organises the information into narrow columns (2 on each panel) making the text easier to read. The short paragraphs, wide margins and gutters makes potentially complex information more accessible. <p>Unity</p> <ul style="list-style-type: none"> Unity in colour: links the background image colours to colours in the logo and the text tying parts of the publication together. Unity in shape: the circle links some of the content in the information graphics to the logo and also the graphics within the background image. Unity in typeface: The same typeface of different sizes is used throughout the publication connecting logo, headings, and statistics. 	3	<p>Candidates must make reference to the leaflet as this is in the stem of the question.</p> <p>Also accept:</p> <ul style="list-style-type: none"> unity in shape: the sloping edges/parallelogram shapes connects the top and bottom of the leaflet unity in shape: the sloping edges/ parallelogram shapes leads the eye forward through the leaflet and creates a sense of movement.

Question		Expected response	Max mark	Additional guidance
3.	(a)	<p>Artist's impression</p> <ul style="list-style-type: none"> • It is more easily understood by a non-technical audience. • To get a clear idea of proposed land use (through use of shape and colour). • To get an indication of the heights of buildings from the shadows. • To get a more realistic impression of what areas of the site will look like. • Use of a key to explain the key features. 	2	<p>Also accept:</p> <ul style="list-style-type: none"> • the colours clearly show how different areas of the site will be used • it will give audience an idea of the scale/size of the development.
	(b) (i)	<p>British Standards site plan</p> <ul style="list-style-type: none"> • Access roads • Scale • Drainage • Trees* • North sign • Contours • Boundaries • Dimensions 	2	<p>Note:</p> <p>*Tree is acceptable as is 'proposed tree', 'existing tree to be removed' and 'existing tree' but no other variations.</p>
	(ii)	<p>The landscape architect would use:</p> <ul style="list-style-type: none"> • the contours to work out the amount of earthmoving required to make his design • the north sign is important as it will help determine prevailing wind/the aspect of each slope/sunposition or shadows cast at different times of day • the position of the drainage system so it is not damaged during landscaping • the scale so the project can be costed • position of 'existing trees' or 'proposed trees' which may affect the type of planting or position of 'trees to be removed' which effect costing • the dimensions/scale/boundary will help determine the costing of the project. 	2	<p>Accept:</p> <ul style="list-style-type: none"> • existing contour lines to understand the lie of the land/best position for plants or landscaping features • position of the drainage system so planting is appropriate.

Question			Expected response	Max mark	Additional guidance
3.	(c)	(i)	<p>The purpose of the underground survey is to show:</p> <ul style="list-style-type: none"> • Geology • Soil composition • Depth of bedrock • Water table • Mine workings • Previous land use • Any harmful material. 	2	<p>Accept:</p> <ul style="list-style-type: none"> • composition of the layers in the ground.
		(ii)	<p>Structural engineer</p> <ul style="list-style-type: none"> • Materials/construction method used for the foundations. • Structure effectively supported by the ground. • The depth of the foundations. • The time required to prepare the ground ready for construction. • Whether the ground might be prone to flooding which would affect nature of the foundation or necessitate flood defences. 	2	<p>Some answers may be relevant to both (ii) and (iii) but a repeat response will only gain a mark if it is explained in relation to the user.</p>
		(iii)	<p>Conservation body</p> <ul style="list-style-type: none"> • Whether the site is destroying natural habitat, underground survey may reveal the soil composition (or some other data) is important in supporting specific plants /animals. • Whether the site is of historical/social significance. • Whether the soil/rock is particularly valuable for another purpose. 	2	<p>Accept:</p> <ul style="list-style-type: none"> • safe disposal of any hazardous material.

Question		Expected response	Max mark	Additional guidance
3.	(d)	<ul style="list-style-type: none"> • Increased amount of time on this phase in order to get rid of the hazardous material. • Delaying completion date of the project. • Increased expenditure due to employing the excavation team for a longer period. • Increased amount of resources. • Rescheduling of the times when construction materials/ equipment might be required on site. • Rescheduling of when the construction trades would be required on site. • Review/ updating of the planning chart to see when lost time could be made up (particularly if excavation period went beyond critical target dates). • Implementation of contingency planning. • Revision of intermediate targets. 	3	

Question		Expected response	Max mark	Additional guidance
4.	(a)	<p>Technique: IBL Description</p> <ul style="list-style-type: none"> To reflect the surroundings/sky in the office windows/glass surfaces. <p>Technique: Texture mapping Description</p> <ul style="list-style-type: none"> To add suitable materials to items in different parts of the building. <p>Technique: Bump mapping/Bump map Description</p> <ul style="list-style-type: none"> To add suitable surface finish to add realism in the apparent depth roughness/smoothness of the surface. <p>Technique: Applied Lighting (accept ambient lighting) Description</p> <ul style="list-style-type: none"> Realistic shadows both on the building and around the/in the environment. Suitable lighting that would suggest a particular time of day or the relevant global position. <p>Technique: Depth of field Description</p> <ul style="list-style-type: none"> Using depth of field would create a realistic foreground and background by blurring out certain features of the environment. <p>Technique: Specularity or reflection Description</p> <ul style="list-style-type: none"> Indicate the amount of light that bounces back off a particular material or feature on the building. 	8	<p>Each technique worth 1 mark.</p> <p>Each description worth 1 mark.</p> <p>Answers must relate to the model in the environment.</p> <p>Also accept:</p> <p>Technique: Volumetrics Description</p> <ul style="list-style-type: none"> To create more atmosphere through adding for example mist or cloud or visible beams of light. <p>Technique: Displacement mapping Description</p> <ul style="list-style-type: none"> To show surface geometry of the building to create realistic. <p>Do not accept</p> <ul style="list-style-type: none"> HDRI

Question			Expected response	Max mark	Additional guidance
4.	(b)	(i)	FEA or Finite Element Analysis	1	
		(ii)	<ul style="list-style-type: none"> Identifies flaws or weakness in the building. Change the material used. Change the number of supports. Change the dimensions of the material. The FEA output can be viewed as a video or series of high res images for showing others in the construction design team. It could be used in promotional material to show the quality of the images/data that this company produce. 	2	<p>Accept:</p> <ul style="list-style-type: none"> FEA allows the CAD technician/structural engineer to change the design before by changing the type. <p>Responses must consider FEA in relation to the context of the construction.</p> <p>Generic FEA responses are not acceptable.</p>
	(c)	(i)	As CFD shows how air moves so it could be used to show how the smoke and flames are moved by the air around the building.	1	
		(ii)	<ul style="list-style-type: none"> It would show areas of greatest heat that should be targeted by the fire service. It would show places where modifications to the building's design may be required. For example where fire resistant materials/sprinklers/additional walls or windows/staircases should be installed. The customer/client may request evidence that the necessary safety checks have been carried out on the structure. 	1	

Question		Expected response	Max mark	Additional guidance
4.	(d)	<p>VRML (Virtual Reality Modelling Language)</p> <ul style="list-style-type: none"> • Supports animation data and could show a simulated evacuation of people from the building. • Supports a rendered model of the building which can be viewed from different positions and with camera positions could show inside and outside the building. • Allows the use of accurately scaled, animated and rendered human figures. • The software accurately represents how the humans would move throughout the building. • Can support the rendered image of the building and the animation of the people in a single file that can be viewed on various platforms. • Can be easily transferred to websites for ease of viewing online. 	2	<p>Accept:</p> <ul style="list-style-type: none"> • user can interact with the model.

Question		Expected response	Max mark	Additional guidance
5.	(a)	<ul style="list-style-type: none"> • Create section sketch (from enlarged view C) (dimensions not required). • Create path sketch on a perpendicular work plane (perpendicular work plane must be stated or clear from the sketch). • Use sweep/extrude along a path to create the frame. • Use extrude subtract to create the top profile (accept irregular chamfer). • Use extrude subtract to create bottom profile (this profile can be created using). • Use radial array (though 360 degrees) to create the 4 frame arm. 	6	<p>Note: If orientation or number of features were clear from the sketches then marks could be awarded.</p> <p>Accept:</p> <ul style="list-style-type: none"> • Assembling the 4 arms provided all appropriate constraints are applied. <p>Accept this alternative method</p> <ul style="list-style-type: none"> • Creating the profile of the frame arm (2 marks) • Revolving 360 degrees (1 mark) • Using extrude subtract to leave only the 4 frame arms (2 marks) • Use extrude subtract or irregular chamfer to create the top profile (1 mark)
	(b)	(i)	1	
		(ii)	2	

Question		Expected response	Max mark	Additional guidance
5.	(c)	<ul style="list-style-type: none"> Profile circle and axis (diameter of circle 1 mm and create axis 14 mm away). (1 mark) Use helix to create a single spring revolution. (1 mark) Create axis and use radial array to create 80 spring revolutions (axis at the correct orientation relative to the helix axis 73 mm away). (1 mark) 	3	<p>Note: If orientation or number of features were clear from the sketches then marks could be awarded.</p> <p>Alternative method:</p> <ul style="list-style-type: none"> profile circle circular axis helix created with correct number of 'coils' or the pitch size. <p>Note: Dimensions are not necessary to get full marks in this response.</p>

[END OF MARKING INSTRUCTIONS]