National
Qualifications
2025

2025 Graphic Communication

Advanced Higher

Question Paper Finalised Marking Instructions

These marking instructions have been prepared by examination teams for use by SQA appointed markers when marking external course assessments.

General marking principles for Advanced Higher Graphic Communication

Always apply these general principles. Use them in conjunction with the specific marking instructions, which identify the key features required in candidates' responses.

(a) Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.

(b) If a 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.

(c) For 'Describe' questions
Candidates must provide a statement or structure of characteristics and/or features, not just an outline or a list. For example they can refer to a concept, experiment, situation or facts in the context of and appropriate to the question. The number of marks available for a question indicates the number of factual/appropriate points required.

(d) For 'Explain' questions
Candidates must relate cause and effect and/or define relationships. This must be in the context of the question, or a specific area within the question.

(e) For 'Compare' questions
Candidates must demonstrate knowledge and understanding of the similarities and/or differences between things, methods, or choices. This must be in the context of the question, or a specific area within the question.

(f) Candidates can respond to any question using text, sketching, annotations or combinations of these. Award marks for the information conveyed. Do not award marks for the quality of sketching.

Marking instructions for each question

Question			Expected response	Max mark	Additional guidance
1.	(a)		**Line** • use of line has been used to clearly separate sections of the website making key information easily identified **Shape/Images** • arrow shapes make it clear that something will be actioned when clicking on this **Silhouette** • the use of simple images/ silhouettes for icons simplifies the graphic for the user and easily identifies the purpose of the home/search buttons for example **Contrast** • the use of contrast for the select buttons (orange on white) makes these stand out and clear to the user how to select specific options • the orange icons contrast against the dark background making the buttons stands out clearly to the user so that they know what each is for **Unity** • the use of common colour scheme ie white/black/orange linking key elements within page to make it easy to follow • the use of repeated circular/ square/rectangular shapes **Rhythm** • use of repeated rectangular/ circular shapes simplifies the graphic making it easy for the user to interpret and follow • equal spacing of elements/ sections across the website simplifies the graphic making it easy for the user to interpret and follow	**4**	1 mark for each correct response. **Do not award marks** for repeat answers ie marks cannot be given for two examples of line. **Do not award marks** for descriptions that simply describe how elements and principles have been used. **Accept any other response** that relates to elements and principles contained within the course specification documents (all levels) **with a description of how they improve navigation.** Also accept **Alignment** • the webpage employs a grid-based alignment, meaning that navigation links, images, and text blocks line up neatly along common edges. This consistency produces a clear structure that helps users quickly locate key features **Grid Structure** • the design is organized on a well-defined grid that segments the page into consistent, sections. Users can quickly scan and interpret the structure, making it easier to locate navigation elements **Pace** • the webpage achieves a steady pace by breaking the content into defined segments and providing white space between them. This ensures the information is easy to digest 'and the webpage simpler to navigate'

Question			Expected response	Max mark	Additional guidance
1.	(a)	(continued)			
			Emphasis • emphasis is placed on heading by making them bold making key information/meaning of titles easily identifiable for the viewer • emphasis on selected images within the image wheel by making them the largest and having the others transparent/smaller allows the viewer to understand what they are selecting/viewing **White Space** • use of white space across the webpage reduces how busy it is, simplifying the graphic and making it easy to identify key information **Balance** • symmetrical balance ensures the graphic is easy to follow where elements are easily placed throughout to support easy navigation **Rule of Thirds** • rule of thirds has been used to divide up the top and middle sections of the webpage. This organises the images/information, creates unity and leads the eye from the top to middle sections		**Focal Point** • establishing a clear focal point directs the user's attention to the most important element on the page. Through techniques such as using bright colours, larger images or text (eg, a bold "FIND OUT MORE" button). The eye is naturally drawn to this focal area first, before navigating other parts
	(b)		• allows for subtle changes in colour/tone (as each pixel can be a different colour) • JPEG is a raster graphic which creates rich and detailed images • compression of JPEG files reduces their size and the webpage will load more quickly • compressed JPEG images will still give required quality (can still be used for webpages if above 72 dpi)	**2**	**Do not accept** • small file size, JPEG is a raster graphic etc…without an explanation **Accept** • compression allows transferability between devices • JPEG compatible with multiple devices • JPEG can be opened/accessed on a variety of software

Question			Expected response	Max mark	Additional guidance
1.	(c)		• depth of field has been used on image 1 or 2 by blurring the background, ensuring the cyclist at the front stands out (creating a focal point) • rule of thirds has been used on image 1 by placing the cyclist on the first third on the left of the page. This draws the eye toward the cyclist emphasising the subject of the picture/webpage • rule of thirds has been used on image 2 by placing the cyclist on the third right of the page. This draws the eye toward the cyclist emphasising the subject of the picture/webpage	2	**Do not accept** • two depth of field answers or two rule of third answers
	(d)		• vrml allows the user to interact with the graphic eg rotate to see all features/angles • vrml allows zoom to see all detailed features • vrml allows customisation/ customer choice/change of colours/materials/textures/ lighting/(even) animating features so that the user can see an accurate mock-up of what their final design will look like	2	**Do not accept** • repeat answers • 'makes it look realistic', without mentioning some type of customisation
	(e)		• dynamic effects have been created by using triangle/lighting shapes to suggest that the bike is moving/create an aerodynamic look • dynamic effects have been added to the wheels by making them elliptical and tilting them to emphasise the idea of movement • negative space looks like it is travelling through the box/ extending beyond the box	2	**Do not accept** • the bike is designed to provide movement, or the bike is an object that moves

Question			Expected response	Max mark	Additional guidance
1.	(f)		• CMYK vs RGB. Colours must be converted correct from CMYK to RGB to ensure they remain consistent across both printed and digital media • using pantone colours will ensure consistency between digital and printed colour space or ensure digital and printed colours are the closest match • resolution must be minimum of 300dpi and 72ppi to ensure consistency/clarity in the quality of the logo • 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	**Do not accept** • repeat answers
	(g)		• to ensure the companies brand reputation/image is protected. • to avoid inferior products being produced using the companies branding • to ensure a permission/payment system is in place if another company wishes to use their images • so other companies cannot pass off the brand/features of the brand as their own	2	**Accept** • to maintain the uniqueness of the brand

Question			Expected response	Max mark	Additional guidance
2.	(a)		**Advantages:** • records the position and movement of humans accurately • the data captured can be edited to create unique movements and character traits • rapid/real time results can be achieved • creates a realistic animation that will make the video appear more life-like **Disadvantages:** • costly process to setup or outsource to specialist teams • requires the use of experienced and trained actors to get the correct movements • vast amount of data provided so requires specialist animators to be able to manage post processing requirements	**4**	1 mark for each advantage with a maximum of two marks available. 1 mark for each disadvantage with a maximum of two marks available. **Accept**: The data generated can be used in a variety of ways within the animated movie.

Question			Expected response	Max mark	Additional guidance
2.	(b)		Illustration techniques in image: **Materials** • materials could be applied to enhance the realism of environment designs **Texture Mapping** • texture mapping would allow materials to be scaled correctly within environments to ensure they worked with the size of items such as buildings etc within the setting **Bump Mapping** • bump mapping could be used to enhance materials/character costumes/surfaces to add more texture using rough/variable/ irregular surfaces **Reflection** • reflective surfaces could be added for realism by reflecting the scene or individual elements within the environment **Specularity** • additional highlights added to gloss/metallic/reflective surfaces to enhance reflective material and/or emphasise direction of lighting **Ambience** • ambient mood/feeling produced by light/colour schemes to create a positive ambience within the environment **Volumetrics** • inclusion of air-born particles (for example dust/smoke etc) within an environment • used to create added realism to water features showing the depth and volume of these features **Directional Lighting** • could be used to replicate directional sunlight coming through or casting daylight throughout scenes/environments	**8**	1 mark for each combined technique identified and description of that technique. For texture mapping scale must be mentioned. **Accept:** • displacement mapping that creates 3D variation in the surface to add realism • For specularity accept that this may appear as rings of light/lens flair for a unique effect **Do not accept** • repeat answers

Question			Expected response	Max mark	Additional guidance
2.	(b)	(continued)			
			Ambient light • could be used to produce an overall light with no specific direction to ensure all areas have general illumination **Spotlight** • could be used in scenes where a specific feature/character has to be emphasised **Area Light** • could be used to create internal lights within scenes to ensure the type of lighting fits the styling/ interior of the design **Point Light:** • could be used to create internal lights within scenes to ensure the type of lighting fits the styling/ interior of the design **Image Based Lighting/IBL** • used to simulate how the surrounding environment effects the lighting of objects • images/lighting of real-life environments can be translated to the movie/game to ensure the lighting within the environment is as accurate as possible **HDRI (High Dynamic Range Imagery)** • will ensure the range of shade/ luminosity is accurate to how real/natural lighting would affect darker/lighter areas or adjustment of light within scenes or environments		
	(c)		• freeform modelling allows creation of organic designs which would be well suited to character design • polygon meshes used within freeform modelling allows for manipulation (of points/edges/ faces to provide a greater level of detail when) editing features of characters • freeform modelling provides designers creative freedom to manipulate and tweak the model	**2**	This is an explain question so answer should include 'cause' and 'effect' eg (cause): polygon meshes or dividing the surface results in (effect): increase creative freedom **Accept:** • tools such as mirror help with modelling characters/symmetrical features

Question			Expected response	Max mark	Additional guidance
3.	(a)		**Stage 1** • ellipse profile major axis 100mm and minor axis 88mm, Circle profile 100mm and offset workplane 40mm **(1 mark)** • use of loft command **(1 mark)** • use of radius 30mm fillet on bottom edge **(1 mark)** • circle 95mm extruded to 4mm **(1 mark)** **Stage 2** • helix profile diameter 1 (or R0.5) and position **(1 mark)** • helix command used with pitch set to 3mm with 1 revolution **(1 mark)** **Stage3** • circle profile 18mm in correct position, path created at radius 50mm **(1 mark)** • extrude along a path subtract/ sweep subtract command used **(1 mark)** **Stage 4** • centre point of rectangular profile 20x4 created on PCD 70 **(1 mark)** • rectangular profile 18x2, offset workplane 20 and use of loft command **(1 mark)** • irregular fillets 0.5mm to 1 mm applied to all four corners **(1 mark)** • radial array blade feature 6 times **(1 mark)**	**12**	**Accep**t: Stage 3 • extrude along a path subtract or sweep subtract (or sweep with subtract or extrude along a path with subtract) • revolve subtract for 2 marks the position of the revolve axis must be clear **Note** Candidates may achieve the irregular fillet mark if the sizes of the radius (R0.5, R1) appear on both loft profile sketches.

Question			Expected response	Max mark	Additional guidance
3.	(b)	(i)	• component B could be modelled using the projected geometry from the rim/ridge of component A to ensure an accurate fit • the subtracted helix on component B could be taken from the geometry of component A to ensure an accurate fit • component C could be made to fit the diameter and notches shown on component B ensuring an accurate fit	**2**	A maximum of 1 mark can be awarded for candidates who mention **projecting geometry** to create a generic part of component B.
		(ii)	• allows the designer more creative freedom as polygon meshes can be applied • allows for the creation of organic shapes eg the inclusion of the finger indents • use of thicken/offset ensures a uniform wall thickness that conforms to the organic form • thin wall thickness used in the product makes it suitable for modelling using this technique	**2**	This is an explain question so there should be evidence of 'cause' and 'effect' eg (cause) polygon meshes or dividing the surface results in (effect): increase creative freedom. **Accept**: • variations in wall thickness can be achieved with surface modelling
	(c)		Symbol D: Surface finish symbol **(1 mark)** Description: Indicates a surface finish is applied to all surfaces and determines the quality of finish on the product. **(1 mark)** Symbol E: Datum **(1 mark)** Description: Indicates the point from which all dimensions should be measured/checked for inspection/ QA purposes. **(1 mark)**	**4**	**Accept:** • determines the quality of finish on the product/applied to the surface
	(d)		• a general tolerance F is included in the title block and provides an overall/general tolerance for manufacturers to ensure interchangeability of parts/ consistent quality of parts/assembly of parts • tolerance G is a specific functional tolerance used to ensure accuracy in the assembly of component A and B	**2**	Response needs to include specific reference to how the tolerance is used. **Note** Candidates do not need to include the words 'functional' or 'general' provided they show how the tolerance is used.

Question			Expected response	Max mark	Additional guidance
4.	(a)		• simple colour scheme with only a few block colours used • simple shape/design that is easily produced using screen printing. • screen printing ink would adhere well/penetrate the canvas fabric improving durability • the bag would have to be cleaned and screen printing is good when using durable inks	**3**	**Accept**: • inks used in screen printing penetrate the fabric improving durability • screen printing is particularly effective in creating vibrant/stand out colours • less equipment that other print methods (reducing costs) • applies layered colours well eg white leaf on the green background
	(b)		• dwg is a vector graphic which means the logo is scalable • accuracy of dwg vector allows for the logo to remain crisp/clear once laser cut • dwg can be converted easily to enable CAM production	**3**	**Accept**: • dwg files can be easily edited • dwg files could be used make the laser cut screens/stencils accurate
	(c)		**Advantages:** • reduces environmental waste as no need to print hardcopies • reduces environmental waste as no solvent-based inks used • although production of screens has an initial environmental impact, they are better long term as screens can last a long period of time • use of renewable energies to run display screens has a positive impact on the environment **Disadvantages:** • LED screens create light pollution in cities/urban areas • producing LEDS/digital screens uses a vast amount of natural resources which can harm the environment • requires the use of electricity to power displays which depending on the source can impact the environment negatively	**4**	**Accept**: • installation of digital screens has a heavier impact on the environment • frequent changes of paper-based advertising has a negative impact on the environment

Question			Expected response	Max mark	Additional guidance
4.	(d)		• radial balance is around the globe image in the background emphasising the message of protecting the planet • radial balance is used in positioning the letters in text along a path, with the key message being connected to the circular shape and focusing on the message save the earth • radial leaf design follows the shape of the main graphic and emphasises the natural/environmental qualities of the product • the recycling logos etc. are connected to the main circle through radial balance emphasising the qualities of the product	**2**	**Accept:** • it emphasises the cyclical nature of recycling/the recycling symbol

Question			Expected response	Max mark	Additional guidance
5.	(a)	(i)	• will be able to create scaled models of designs using 3D printing (or other suitable methods) for visualisation • physical models can be tested to check design features, proportions and the overall look and scale of the design	**2**	**Accept**: • provides a prototype that serves as a communication tool for both design refinement and stakeholder presentation • helps with Visualising the Footprint/Spatial Layout • could create representation of Dynamic Components/to test movement • assists with deciding on Assembly Methods/Maintenance access
		(ii)	• can ensure the structure will be safe enough to operate the rollercoaster • can consider what materials would be best for design • can determine the best joining methods/welds/bolts used in the assembly • can determine where structural supports are required to ensure the design is safe • can support with the planning of/appropriateness of the foundations	**2**	**Accept**: ensures • correct load distribution and foundation integrity • correct design and connection of supports: • safety in extreme conditions
		(iii)	• can ensure mechanical features of the design will work as intended eg brakes • can plan and test features such as the location of wheels on rails and best tension for these • can ensure the smooth operation of wheels to make the ride as comfortable/safe as possible	**2**	**Accep**t: ensure • correct dynamic analysis of moving components: • correct component and material selection • integration of assembly and maintenance methods • can determine the best joining methods within the mechanism/sub-assemblies

Question			Expected response	Max mark	Additional guidance
5.	(b)		**FEA** • can be used to test the stress of the structure under variable loads • can assess at which point the design will fail and determine where supports/structural improvements are required • can test a range of materials to determine which is best for the design • can determine the details of the joining/assembly methods **CFD** • can test the aerodynamics of the ride to reduce drag on riders • can determine if riders are exposed to, too much G Force • can test aerodynamic of the carriage to improve performance • can test how the structure will react under different weather conditions such as high winds	**4**	Candidates who mix up FEA and CFD can gain a maximum of 2 marks, provided their descriptions are valid. **Accept:** • for FEA – determine the effect G forces on the joints or structure • for CFD – can determine the impact of the wind/drag/ passengers on the speed of the carriage

Question			Expected response	Max mark	Additional guidance
5.	(c)		• will ensure the land is suitable to build on i.e. there are no features underground that could impede the build eg waterlines, drainage, animal dens, items of historical significance • will determine the suitability of the substrate • will help to determine the depth/nature of the foundations	**2**	**Accept**: • from the survey engineers can mitigate risks or ensure long-term safety of the roller coaster
	(d)		• will enable the design to be planned around undulating land • can help with determining any land/soil that needs to be excavated to enable the construction of the design • can determine the surrounding area and best position for planning/constructing the design • can determine areas of flood risk to ensure the foundations are not at risk of damage with water intake etc	**2**	**Accept:** • optimize construction efficiency • ensures seamless integration with the environment

Question			Expected response	Max mark	Additional guidance
6.	(a)	(i)	• the method gives 100% control over the outline shape/image • vectors can be easily edited and scaled to suit each design • vectors handle block colours well • vectors can be drawn over the top of photographs of key landmarks to create unique design styles • digital sketching allows for unique brushes, edits, functions increasing the creativity of/ options in the solutions	**2**	**Accept**: • reduces the likelihood of digital rights/copyright infringement
		(ii)	• costs attached to using the images • designer loses creative control as images are created by someone else • some images may have editing restrictions meaning creativity is lost	**2**	**Accept**: • the images will not be uniquely associated with your brand or product
	(b)		• simplified silhouettes make key landmarks easily identifiable to the viewer which makes it clear what city is being referenced • silhouettes create a contrast adding a dramatic effect to the design and enhancing visual impact • silhouettes can be in different tones creating depth	**2**	**Do not accept:** • repeat answers i.e. two references to landmark silhouettes
	(c)		• commonly used file type across mobile devices • low file size ensures quick load time without delaying quality of playback • compatible on many devices allowing for easy sharing/ distribution	**2**	This is an explain question so there should be evidence of 'cause' and 'effect' eg (cause) good compatibility (effect) means the file is accessible on a wide range of devices.

Question			Expected response	Max mark	Additional guidance
6.	(d)		• setting of key deadlines so that all creators know when work must be finished • intermediate targets can be set to establish key activities that must be completed within main tasks • resources can be planned for allocation at key point of the project • deployment of human resources can be planned for key stages. • communication with client can be factored for review of progress/ work	**2**	

[END OF MARKING INSTRUCTIONS]