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Digital society
Standard level
Paper 1

18 May 2026

Zone A afternoon | **Zone B** afternoon | **Zone C** afternoon

1 hour 30 minutes

Instructions to students

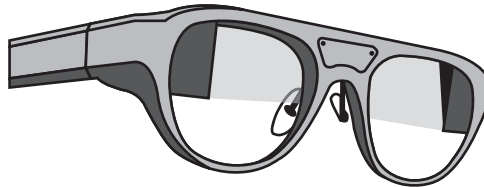
- Do not open this examination paper until instructed to do so.
- Answer two questions.
- The maximum mark for this examination paper is **[40 marks]**.

Answer **two** questions. Each question is worth [20 marks].

1. Augmented reality (AR) glasses

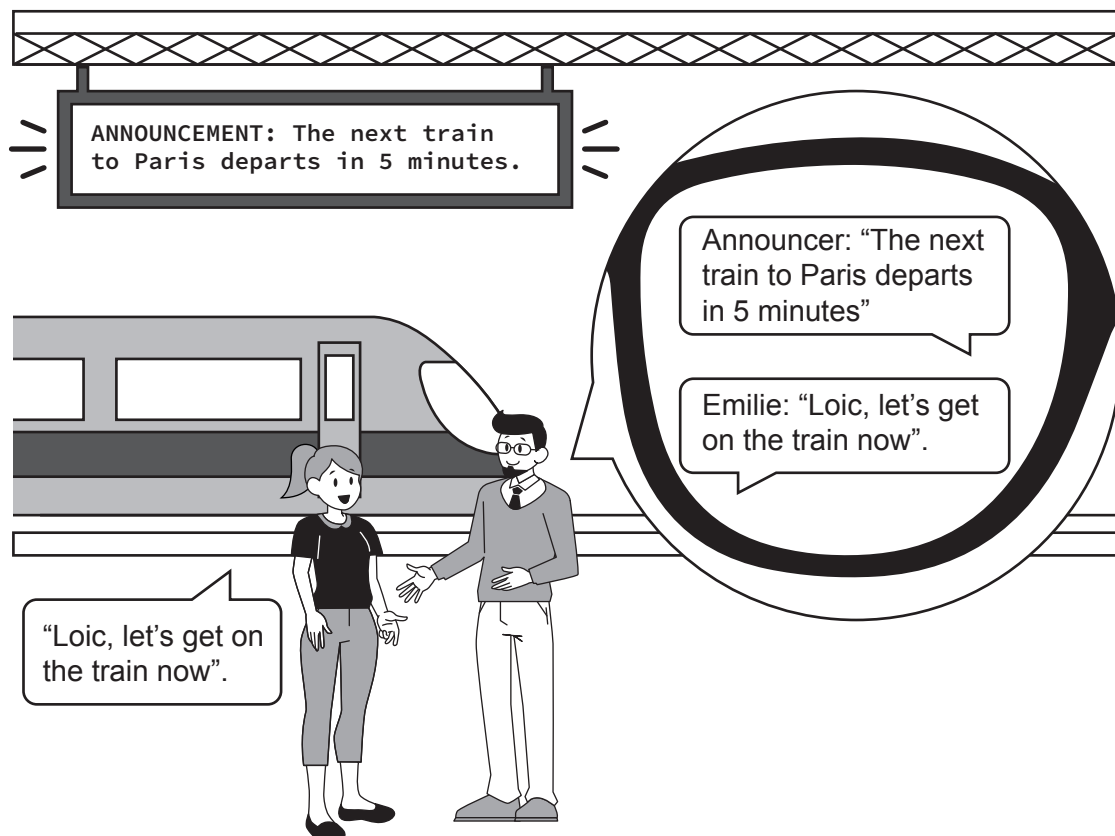
EyeTalk has developed augmented reality (AR) glasses (see **Figure 1**) that convert speech into text and display the text on the lenses of the glasses.

Figure 1: An example of augmented reality (AR) glasses



This allows a wearer of the augmented reality (AR) glasses, such as Loic, to read text versions of the conversations and other verbal communications that are taking place around them in real time (see **Figure 2**).

Figure 2: Speech captions on a lens of the augmented reality (AR) glasses, Loic's viewpoint



(This question continues on the following page)

(Question 1 continued)

The augmented reality (AR) glasses are an example of an Internet of Things (IoT) device. The glasses contain a low-powered microprocessor and require connectivity to an app on the user's smartphone.

EyeTalk has also developed translation services so that users will see the text in the glasses in their own language when someone speaks to them in another language.

- (a) (i) Identify **one** input device that would be used by the augmented reality (AR) glasses. [1]
- (ii) Identify **one** output device that would be used by the augmented reality (AR) glasses. [1]
- (iii) Identify the steps taken to convert speech to text. [4]
- (b) (i) Distinguish between augmented reality (AR) and virtual reality (VR). [2]
- (ii) Explain **one** way in which these augmented reality (AR) glasses are an example of an Internet of things (IoT) device. [2]
- (iii) Suggest **one** reason why the augmented reality (AR) glasses need to be connected to a smartphone. [2]
- (c) Discuss the opportunities **and** dilemmas of the use of augmented reality (AR) glasses. [8]

2. Online voting in national elections

Election authorities in several countries around the world use online voting for political elections. Online voting refers to casting a vote via the internet.

A voting website (see **Figure 3**) uses a secure web page where voters must be authenticated.

Figure 3: A voting website

Encryption is used to ensure the security of the data when it is stored or transmitted. The data is stored in the cloud.

In some countries, more than 50 % of citizens cast their votes online, whereas other countries have decided not to adopt online voting.

- (a)
 - (i) Identify **two** hardware components that allow a computer to be connected to the internet. [2]
 - (ii) Identify **two** characteristics of encryption. [2]
 - (iii) Describe the difference between identification and authentication. [2]
- (b)
 - (i) Explain **two** advantages for election authorities of using the cloud to store voters' data. [4]
 - (ii) Explain **one** disadvantage of using the cloud to store voters' data. [2]
- (c) Discuss the opportunities **and** dilemmas of using online voting for political elections. [8]

3. Artificial intelligence (AI) in news generation

Online and television news agencies have adopted the use of artificial intelligence (AI) in the reporting of the news in several ways.

Artificial intelligence (AI) tools can be used to generate news articles that are published on news media platforms. They can also be used to generate images for online articles.

In some countries, television newsreaders have been threatened by people who oppose the views on which they are reporting. One strategy to address this is to use an artificial intelligence (AI)-generated actor (avatar) to present a news story instead of a real human (see **Figure 4**).

Figure 4: Examples of artificial intelligence (AI)-generated actors (avatars) that read the news

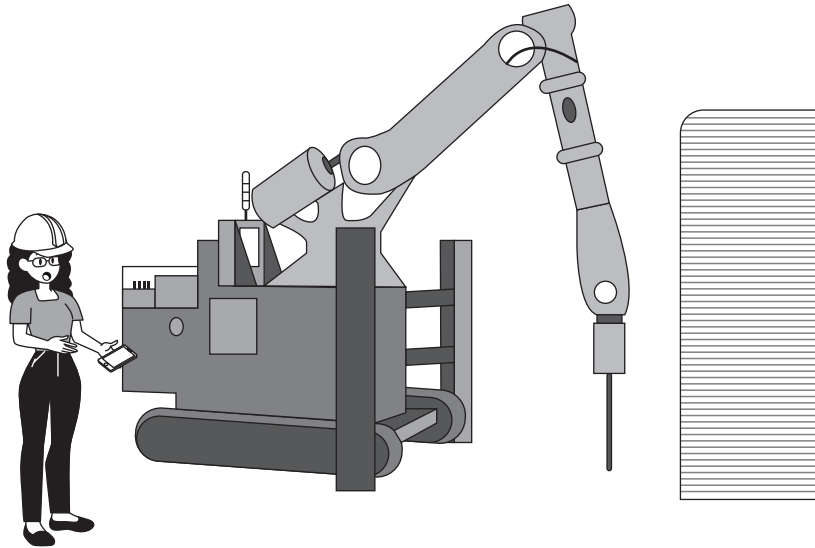


- | | | | |
|-----|-------|--|-----|
| (a) | (i) | Identify two types of artificial intelligence (AI). | [2] |
| | (ii) | Identify two components of an algorithm. | [2] |
| | (iii) | Identify two reasons why news stories are given hashtags when posted on an online news platform. | [2] |
| (b) | (i) | The text for news articles can be generated using supervised learning or unsupervised learning. | |
| | | Distinguish between supervised learning and unsupervised learning. | [2] |
| | (ii) | Explain two disadvantages of using artificial intelligence (AI)-generated actors (avatars) to present a news story. | [4] |
| (c) | | Discuss the opportunities and dilemmas of using artificial intelligence (AI) to generate news articles. | [8] |

4. House-building robots in South Africa

Some universities in South Africa are experimenting with robots fitted with a 3D-printing arm that can be used to construct low-cost housing and school buildings from concrete (see **Figure 5**).

Figure 5: A 3D-printing robot constructing a wall of a house



The walls of the building are constructed by extruding concrete (pushing the concrete through a nozzle) from the robot's arm while the arm moves (see **Figure 6**). The walls are built (printed) in layers from the bottom up. Once the walls have been printed, fittings such as doors and windows are manually fitted by construction workers. The walls of a small house can be constructed in eight hours.

Figure 6: The nozzle of the 3D-printing robot's arm as it constructs the wall of a house



The robots use open source software, installed on a mobile tablet device, to control the 3D-printing arm.

(This question continues on the following page)

(Question 4 continued)

- (a) (i) Identify **two** characteristics of a robot. [2]
 - (ii) Identify **two** types of robot **other than** industrial robots. [2]
 - (iii) Identify **two** uses of robotic arms **other than** constructing houses. [2]
 - (b) (i) Explain **two** advantages of using open source software for the robots. [4]
 - (ii) Explain **one** disadvantage of using open source software for the robots. [2]
 - (c) Discuss the opportunities **and** dilemmas of using 3D-printing robots to construct buildings in countries such as South Africa. [8]
-

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References:

- Figure 4** gorodenkoff, 2022. *TV Live News Program: Professional Female Presenter Reporting on Current Events. Television Cable Channel Anchorwoman Talks Confidently. Mock-up Network Broadcasting in Newsroom Studio. - stock photo.* [image online] Available at: <https://www.gettyimages.co.uk/detail/photo/professional-female-presenter-reporting-on-current-royalty-free-image/1408026681> [Accessed 3 March 2025]. Source adapted.
- gorodenkoff, 2022. *Beginning Evening News TV Program: Anchor Presenter Reporting on Business, Economy, Science, Politics. Television Cable Channel Anchorman Talks. Broadcast Network Newsroom Studio Concept. - stock photo.* [image online] Available at: <https://www.gettyimages.co.uk/detail/photo/beginning-evening-news-tv-program-anchor-presenter-royalty-free-image/1407334351> [Accessed 3 March 2025]. Source adapted.
- Figure 6** guteksk7, 2022. *3d printing single-family house with concrete. New technology house building using a modern CNC machine. 3d illustration - stock photo.* [image online] Available at: <https://www.gettyimages.co.uk/detail/photo/3d-printing-single-family-house-with-concrete-new-royalty-free-image/1449537414> [Accessed 3 March 2025]. Source adapted.