***‘Modern technology and UK laws mean privacy is dead.’***

**Discuss the extent to which you agree with this statement.**

**Mark Band 3–High Level (9-12 marks)**

* *The candidate demonstrates a thorough knowledge and understanding of the technical and legal aspects of privacy. The material is generally accurate and detailed.*
* *The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation.*
* *The candidate is able to weigh up both sides of the argument which results in a supported and realistic judgment as to how achievable privacy is.*
* *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.*

**AO1 Knowledge and Understanding**

The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive:

* Modern encryption is easy to access.
* The strongest encryption is (as far as is known). unbreakable even by government agencies.
* People leave a digital footprint wherever they go (mobile phones can track our location, store cards record our shopping habits).
* Our online activities can be tracked by IP address and 3rd party cookies.
* CCTV is ubiquitous. Most people carry round phones capable of taking video/photos.
* Facial recognition AI techniques mean we may be filmed whilst unaware and subsequently identified.
* The Data Protection Act aims to protect people’s data.
* Computer Misuse Act Prosecutes those gaining unauthorised access to computer systems which may deter attempts to gain unauthorised access to data.
* The Regulation of Investigatory Powers Act regulates how the authorities can monitor our actions.

**AO2.1: Application**

The selected knowledge/examples should be directly related to the specific question. Examples may include but are not limited to:

* People can secure their data using encryption but the Regulation of Investigatory Powers Act can force them to share their key with the authorities.
* The government is becoming increasingly worried about encryption and there is the possibility of laws to limit its use in the future.
* Laws such as the Computer Misuse Act can act as a deterrent but the Internet is global and it is hard to pursue and prosecute offenders from other countries.
* Trying to be in a location anonymously is very difficult as movements are tracked in many different ways and this is becoming increasingly automated.

**AO3.3: Evaluation**

Having considered the different sides to the argument candidates will need to reach a supported judgment based on the evidence included in their response.

There should be no bias in marks as to which viewpoint is chosen but especially in the top mark band there must be a clear link between the points candidates have made and justification.

***“Developments in Artificial Intelligence mean that in twenty years’ time most people will be unemployed.”***

**Discuss whether or not you agree with this statement.**

**Mark Band 3–High Level (7-9 marks)**

* *The candidate demonstrates a thorough knowledge and understanding issues around computers and the workforce and Artificial Intelligence. The material is generally accurate and detailed.*
* *The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation.*
* *The candidate provides a thorough discussion which is well balanced. Evaluative comments are consistently relevant and well-considered.*
* *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.*

**AO1 Knowledge and Understanding**

Artificial Intelligence (AI) is the study of computers displaying intelligent behaviour (usually characterised by decision making).

AI techniques include neural networks, evolutionary computation, Bayesian networks etc.

Computers are well suited to certain jobs and as AI techniques improve the range of jobs they can do is likely to increase.

**AO2.1 Application**

**For the argument:**

* Many jobs have already been taken over by computers.
* Manual job such as work in the automotive industry has been replaced by robots.
* Computer based systems are attractive to employers, they don’t require paying, don’t get sick and can work 24/7 without making mistakes.
* Computer systems can be used for work that is considered dangerous for humans
* And for repetitive and menial tasks.
* Future developments may make computers better at highly skilled tasks making computers preferable
* And in the case of certain tasks (e.g. surgery) would make the use of human workers unethical.
* May cite recent developments in AI (e.g. beating world Go Champion)

**Against the argument:**

* As technology develops people will be required to design these new systems.
* It is likely to assist but not take over all roles
* Producing a more skilled workforce
* Developments in AI have been forecast for many decades but never materialised.
* Forecasts as to the development of AI have always been wildly optimistic
* There is debate as to whether AI will ever be able to show human levels of intelligence.
* Tasks that humans find inherently ‘easy’ are still beyond the reach of computers.
* Crucially for many areas of work computers will have to pass the Turing Test – i.e. converse to such a level that will enable them to pass as human…

…Most believe this is still well beyond our current understanding. Laws would need changing as currently people have the right to have automated decisions checked over by humans (DPA)

**AO3.3 Evaluation**

Candidate should have come to a well-reasoned conclusion for or against the argument. They could come down on either side, the important thing is they have considered both points of view and based their conclusion on the evidence they have discussed.

***The company wants users to be able to register with its website. Users will provide details such as their weight, height, any allergies and pre-existing medical conditions. The system will use this information along with the data on their calories burnt to recommend meal plans for the user.***

**Discuss the legal and ethical issues the company needs to consider for such a system.**

**Mark Band 3–High Level**

**(7-9 marks)**

* *The candidate demonstrates a thorough knowledge and understanding of a wide range of legal and ethical issues the company needs to consider; the material is generally accurate and detailed.*
* *The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation.*
* *The candidate provides a thorough discussion which is well-balanced. Evaluative comments are consistently relevant and well-considered.*
* *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.*

**If only legal or ethical considered – MAX 5 marks.**

**AO1: Knowledge and Understanding**

The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive:

**Ethical**

* System has no knowledge of individuals.
* May not take into account specific circumstances not covered in the data taken in.
* Putting their health at risk.
* Individuals may have medical conditions they are unaware of.
* Individuals may have eating disorder.
* Unable to take this into account.
* Discussion of how the data is used to make judgments.
* Potential damage caused by incorrect meal planning.
* Are religious or cultural concerns accounted for?

**Legal**

* System will store personal data including sensitive, medical data.
* Therefore Data Protection Act applies and company has to store this data securely.
* If recommendations given have a negative effect on a user’s health.
* Company may find itself being sued or subject to criminal prosecution.

**AO2.1: Application**

* The selected knowledge/examples should be directly related to the specific question. The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive:
* Discussions around data mining and its uses/limitations.
* Discussion of how the data is used to come up with a meal plan.
* Discussion of how issues can be avoided in the design of the system.

**AO3.3: Evaluation**

* Candidates will need to consider a variety of issues in relation to the question and will make some evaluative comments about the issues and solutions they are discussing. The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive:
* Discussion of how any moral issues highlighted before, can it be avoided and how effective these solutions are.
* Discussion of how any ethical issues highlighted before, can it be avoided and how effective these solutions are.
* Discussion of how the system is evaluated and how effective the evaluation is.
* Consideration of potential testing and prototyping.

***“Technology is changing too quickly for the law to keep up.”***

**Discuss to what extent you agree with the statement above. In your discussion you should explain which laws regulate the use of technology and how advancements in technology have made the laws difficult to enforce/implement.**

**Mark Band 3–High Level (9-12 marks)**

*The candidate demonstrates a thorough knowledge and understanding of computing related laws and modern issues that fall under them. The material is generally accurate and detailed.*

*The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation.*

*The candidate is able to assess the extent to which the law is able to keep up with changes in technology.*

*There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.*

**AO1 Knowledge and Understanding**

Laws that regulate technology include:

* the Data Protection Act… …which regulates how personal data is stored.
* The Computer Misuse Act… …which regulates unauthorised access.
* The Copyright and Patents Act… …regulated intellectual property.
* Regulation of Investigatory Powers Act… …Regulates how government agencies can use IT for surveillance

**AO2 Application**

* Computer Misuse Act is harder to enforce with the increased use of DDoS attacks (often involving unwitting participants). The Internet of things is likely to make such attacks even more common place.
* People are connecting to the internet in new ways using mobile networks/public Wi-Fi making attacks potentially difficult to track.
* Films/Music etc. are being shared in new ways. Streaming is common – often this is legitimate but the global nature of it can bring licensing issues into play. Fast internet speeds, peer to peer and the dark web all contribute to making piracy more prevalent and harder to track.
* Digital watermarking can be used to track piracy.
* End to end encryption makes government monitoring of communications trickier.

**AO3 Evaluation**

* May conclude that although technology develops quickly the laws are broad enough to cover all eventualities.
* Alternatively, may conclude that people are always looking for ways of using technology to access loophole in the law / to avoid detection.
* Look for a well-reasoned conclusion. Could decide either for or against but should be backed up with examples.